Volume III – Appendices to Environmental Impact Assessment Report

Proposed Residential Development

Lands at Capdoo & Abbeylands, Clane, Co. Kildare

Westar Investments Ltd.

December 2020

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Appendix 2.1 Description of Alternative Designs Considered

Consideration of Alternatives

3.1 Introduction

The scheme proposed has undergone development design appraisals and through a number of development design changes as part of the evolving master plan process, while taking into account the parameters of the local area plan and other statutory requirements.

The broad parameters of the scheme are set by the Urban Design Concept principles for the site known as ‘’Key Development Area 1’’ in Clane Local Area plan (2017 – 2023).

Set out here are 3 intermediate design development iterations of the scheme that illustrate the evolution of the concept into its current proposed.

3.2 Iteration 1

The Initial concept sketch layout below was informed by the Planners report from An Bord Pleanala for the previous refused application. The requirements to be considered was to reduce the overall impact of vehicular road movement around the site, to remove the impact of visible at grade surface car parking particularly to the North – West section of the site where apartments blocks are proposed, and to retain as much as possible the existing mature hedge/tree lines that are eclipsing the site and through the site. In this Initial Sketch proposal, we looked at the natural sub-divisions of the site by the existing mature hedge row lines crossing the site, and set up our initial development zones base on the least impact on said natural features. We also looked at reducing the scope of vehicular service roads through the site. We looked at reducing the impact of surface parking by introducing concealed under croft parking under a raised garden deck to the rear of the proposed Apartment blocks to the Eastern quadrant of the Site.

Fig 1: *- Initial Sketch Site Plan issued for first consultation with Client & Kildare County Council.*

3.3 Iteration 2

The main changes here as per sketch below, relate to a lot of the housing units were backing onto a lot of the existing hedge rows, Kildare County Council requested that all our housing front onto the existing natural features (existing hedge rows), we implemented this and also a gateway block housing the require creche as we enter the proposed development site. Also, we looked to move the proposed apartment blocks to the eastern portion of the site to be contained to the North – eastern area of the site freeing up more area to develop semi-detached housing neighbourhood blocks. We also looked to create a hardened Urban edge to flank the linear Liffey Park.

<u>Fig 2:</u> *- Developed option Sketch Site Plan issued for Second consultation with Client & Kildare County Council.*

3.4 Iteration 3

The main changes here as per sketch below, relate to the removal of the concealed under croft parking under a raised garden decks to the rear of the proposed Apartment blocks to the North-Eastern quadrant of the Site, as they were cumbersome and a physical barrier to amenity access for the apartments blocks inheritance. We looked to keeping the required parking at grade concealed to the rear of the said apartment blocks and by implementation of screening landscaping and the breaking up of parking bays with intermittent planting, reducing its overall visual impact in landscape.

Fig 3: *- Developed option Sketch Site Plan issued for Tri Partite meeting with Client & Kildare County Council & An Bord Pleanala.*

Appendix 4.1 Site Specific Flood Risk Assessment prepared by IE Consulting

WESTAR INVESTMENTS LTD

PROPOSED DEVELOPMENT AT CAPDOO & ABBEYLANDS,

DUBLIN ROAD, CLANE, CO. KILDARE

SITE SPECIFIC FLOOD RISK ASSESSMENT

IE CONSULTING

WATER-ENVIRONMENTAL-CIVIL

WESTAR INVESTMENTS LTD

PROPOSED DEVELOPMENT AT CAPDOO & ABBEYLANDS,

DUBLIN ROAD, CLANE, CO. KILDARE

SITE SPECIFIC FLOOD RISK ASSESSMENT

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1 Introduction

IE Consulting was requested by Westar Investments Ltd to undertake a Site Specific Flood Risk Assessment (SSFRA) for an area of lands at Capdoo, Clane, Co Kildare.

This project consists of an application for a Strategic Housing Development by Westar Investments Limited (the applicant) for a new residential development on lands measuring approximately 10.36 hectares at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. The application is for a development that includes 333 dwellings consisting of: 121 no. 2, 3 & 4 bedroom housing units, 144 no. 1, 2 & 3 bedroom apartments, 68 no. 1, 2 & 3 bedroom duplex & maisonette type units, a crèche and a public park adjacent to the River Liffey with 3 no. vehicular/pedestrian accesses and site, landscaping and associated infrastructural works. The subject site is situated on the eastern side of Regional Road R403 in the eastern environs of Clane Town, c. 650m from the Town Centre'

The purpose of this SSFRA is to assess the potential flood risk to the proposed development site and to assess the impact that development of the site may or may not have on the hydrological regime of the area.

Quoted ground levels or estimated flood levels relate to ordnance datum Malin unless stated otherwise.

This flood risk assessment study has been undertaken in consideration of the following guidance document:-

'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009.

2 Proposed Site Description

2.1 General

The proposed development site is located approximately 660m east of Clane town centre, Co Kildare.

The site is bounded to the north and north-west by agricultural lands, to the east by the River Liffey, to the south-east by a drainage channel and to south by an existing residential development. The total area of the proposed development site is approximately 10.36 hectares.

The location of the proposed development site is illustrated on *Figure 1* below and shown on *Drawing Number IE2181-001-A in Appendix A*.

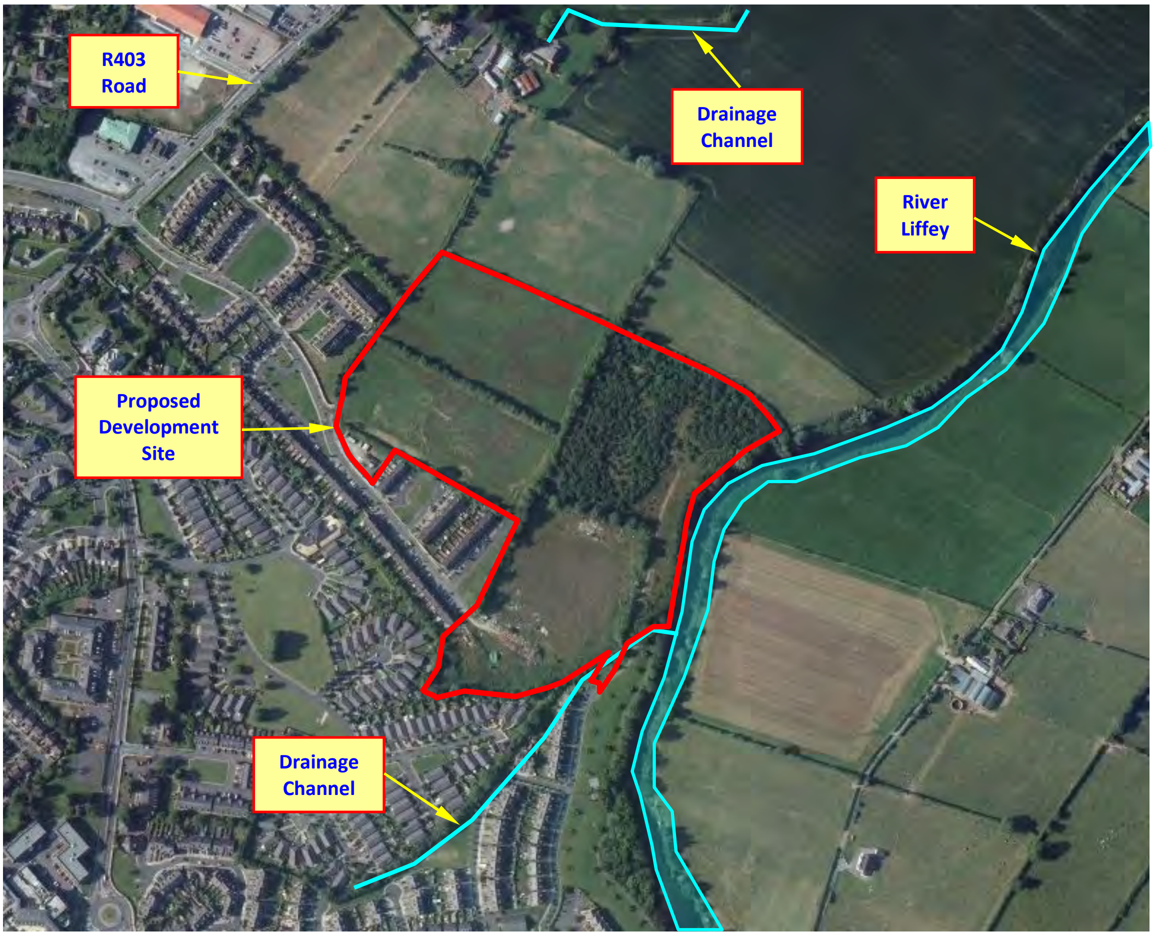


Figure 1 - Site Location

2.2 Existing Topography Levels at Site

The north-west part of the proposed site slopes moderately from a high point at the centre of the site towards the north, north-west and north-east site boundaries at an average gradient of approximately 1.23% (1 in 81). The southern half of the proposed site slopes moderately from a high point at the centre of the site towards the south, south-west and south-east site boundaries at an average gradient of approximately 0.81% (1 in 123). The north-east part of the proposed site slopes moderately from a high point at the centre of the site towards the north and east site boundaries at average gradients of approximately 0.77% (1 in 129) and 4.54% (1 in 22) respectively.

Existing ground elevations within the site boundary range from approximately 67.56 mOD (Malin) at the centre of the site to 63.408mOD (Malin) at the eastern boundary of the site.

2.3 Local Hydrology, Landuse & Existing Drainage

The most significant hydrological feature in the vicinity of the proposed development site is the River Liffey located adjacent to the eastern site boundary. The River Liffey is a controlled watercourse along the reach upstream and downstream of Clane. Discharge volumes in the River Liffey along this reach are controlled and monitored by the ESB and are dependent on inflows to Pollaphuca and Golden Falls dams. These dams have a significant beneficial effect in attenuating flood flows in the River Liffey.

At the location of the proposed development site the River Liffey generally flows in a south to north direction. Utilising the OPW Flood Studies Update (FSU) Portal software, the catchment area of the River Liffey was delineated. As illustrated in *Figure 2* below, the total catchment area of the River Liffey was found to be approximately **647.32 km^2** to a point downstream of the site. Assessment of the River Liffey upstream catchment area indicates that the catchment is predominantly rural in nature with urban development accounting for approximately 3.03% of the total catchment area.

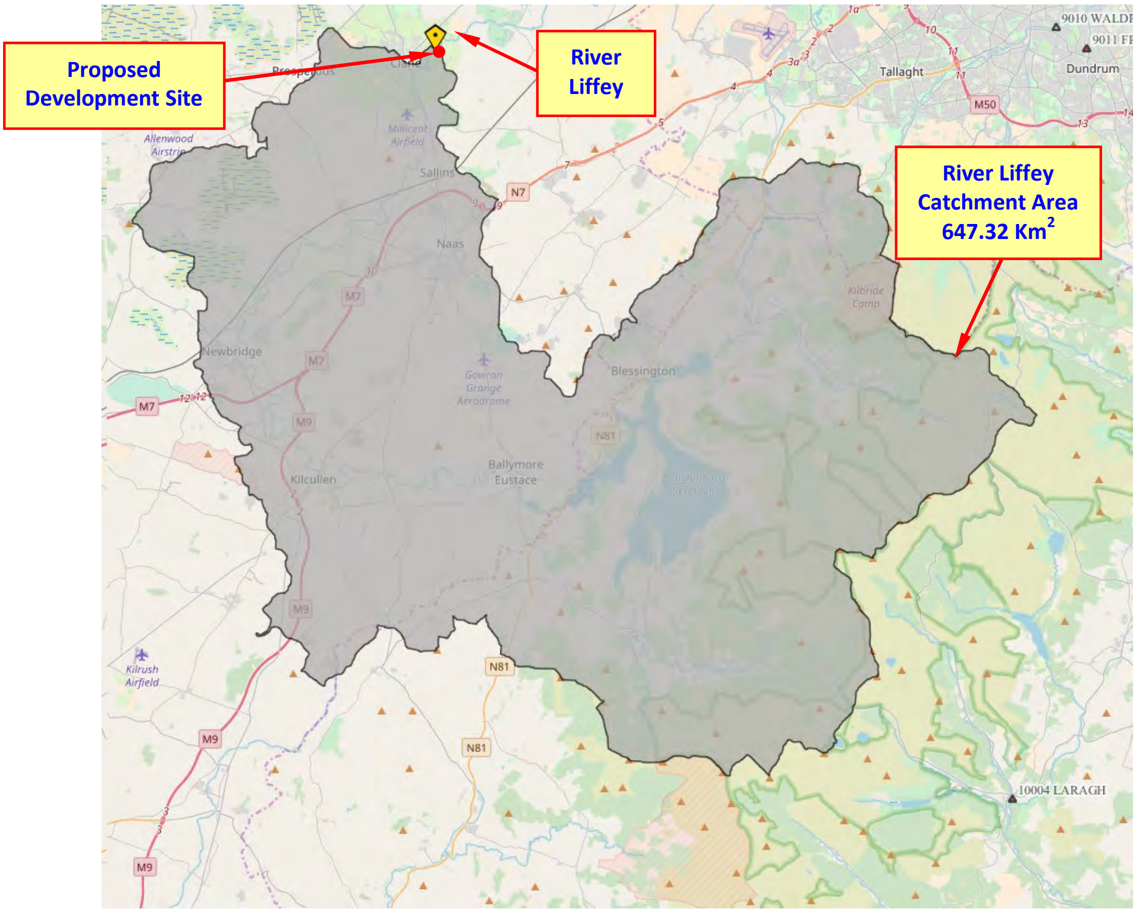


Figure 2 – River Liffey Upstream Catchment Area

3 Initial Flood Risk Assessment

The flood risk assessment for the proposed development site is undertaken in three principle stages, these being *'Step 1 – Screening', 'Step 2 – Scoping'* and *'Step 3 – Assessing'*.

3.1 *Possible Flooding Mechanisms*

Table 1 below summarises the possible flooding mechanisms in consideration of the proposed development site:-

Source/Pathway	Significant?	Comment/Reason
Tidal/Coastal	No	The site is not located in a coastal or tidally influenced region
Fluvial	Yes	The River Liffey is located adjacent to the eastern site boundary
Pluvial (urban drainage)	No	There is no significant urban drainage infrastructure in the vicinity of the site
Pluvial (overland flow)	No	There site is not surrounded by significantly elevated lands and does not provide an important discharge location to runoff from surrounding lands
Blockage	No	There are no significant hydraulic structures in the vicinity of the site
Groundwater	No	There are no significant springs or groundwater discharges recorded in the immediate vicinity of the site

Table 1

The primary potential flood risk to the proposed development site can be attributed to an extreme fluvial flood event in the River Liffey located adjacent to the eastern site boundary.

In accordance with 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities - DOEHLG 2009' the potential flood risk to the proposed development site is analysed in the subsequent 'Screening Assessment' and ''Scoping Assessment'' section of this study report.

4 Screening Assessment

The purpose of the screening assessment is to establish the level of flooding risk that may or may not exist for a particular site and to collate and assess existing current or historical information and data which may indicate the level or extent of any flood risk.

If there is a potential flood risk issue then the flood risk assessment procedure should move to *'Step 2 – Scoping Assessment'* or if no potential flood risk is identified from the screening stage then the overall flood risk assessment can end at *'Step 1'*.

The following information and data was collated as part of the flood risk screening assessment for the proposed development site:-

4.1 OPW/EPA/Local Authority Hydrometric Data

Existing sources of OPW, EPA and local authority hydrometric data were investigated. As illustrated in *Figure 3* below, this assessment has determined that there are three hydrometric gauging stations located on the River Liffey in the general regional area of the proposed development site.

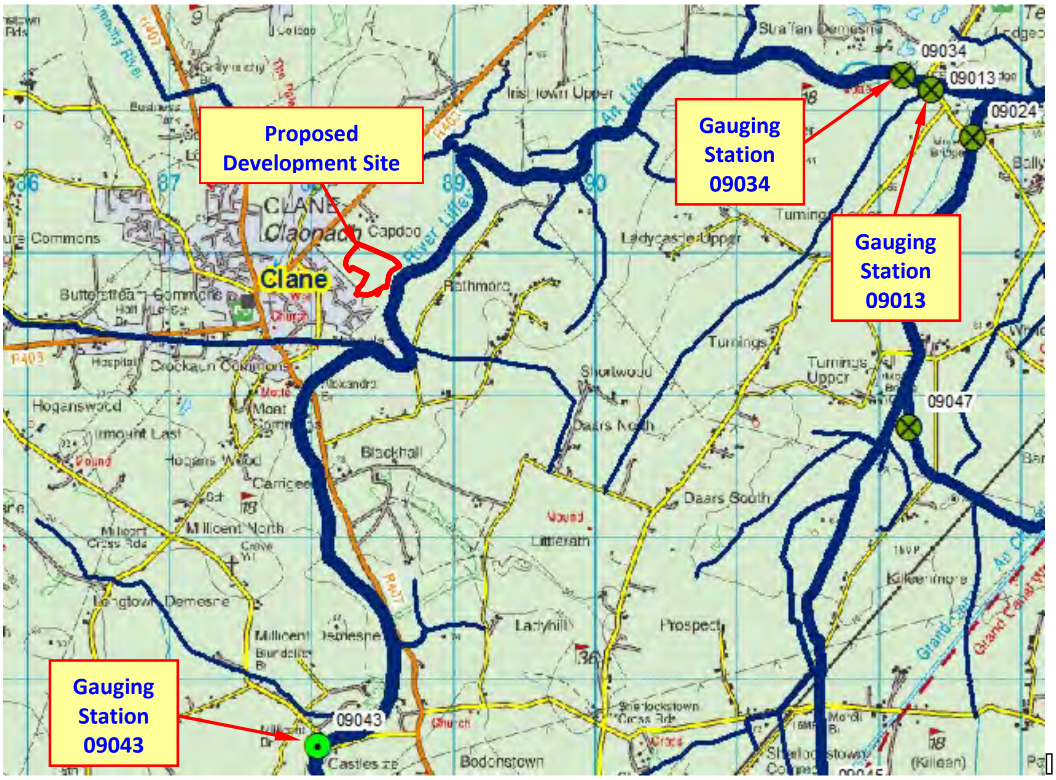


Figure 3 – Hydrometric Gauging Stations

Gauging Station 09043 (Millicent Bridge) is entered in the Register of Hydrometric Stations of Ireland as an inactive staff gauge station with flow measurements recorded for hydrometric years 2000 to 2003. Gauging Station 09034 (Straffan Upstream) is entered into the Register of Hydrometric Stations in Ireland as a data logger station. Gauging Station 09013 (Straffan Downstream) is entered in the Register of Hydrometric Stations of Ireland as an active recorder station.

4.2 *OPW PFRA Indicative Flood Mapping*

Preliminary Flood Risk Assessment (PFRA) Mapping for Ireland was produced by the OPW in 2011. OPW PFRA flood map number 2019/MAP/236/A illustrates indicative flood zones within this area of County Kildare.

Figure 4 below illustrates an extract from the above predictive flood map in the vicinity of the proposed development site.

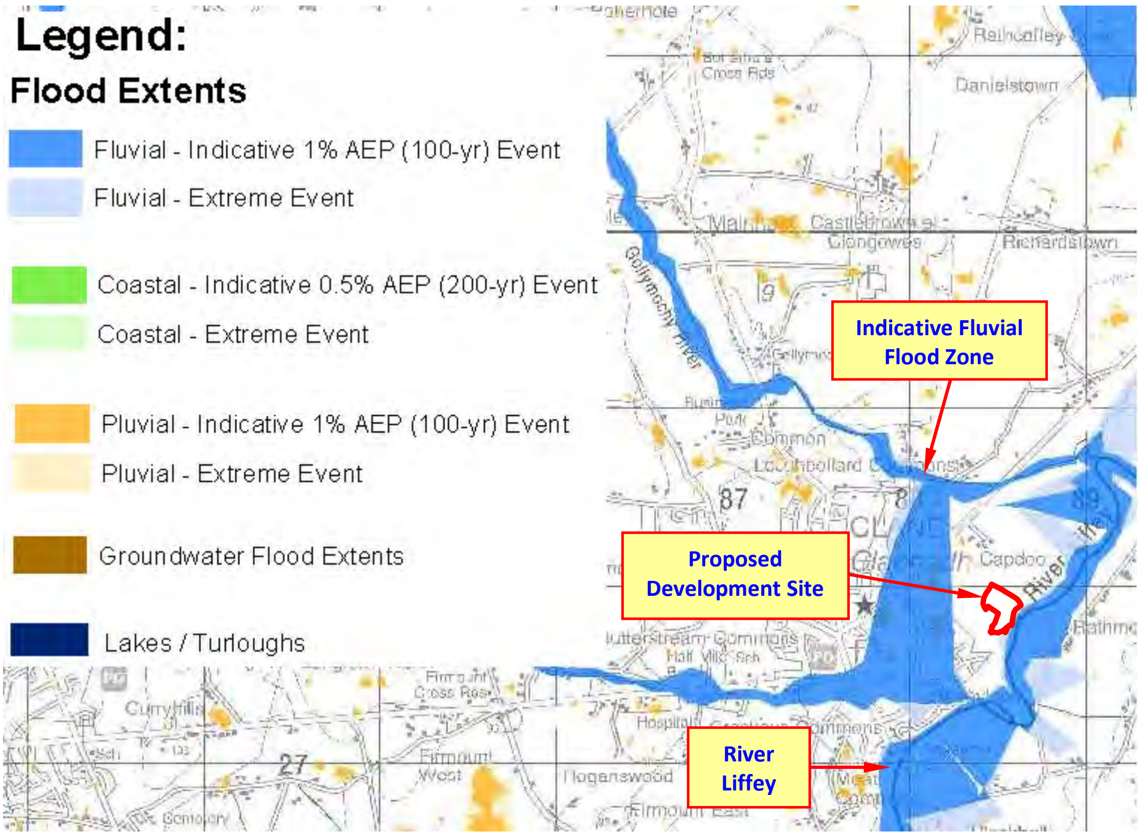


Figure 4 – PFRA Mapping

The PFRA flood mapping indicates an indicative fluvial flood zones adjacent to the east site boundary.

No pluvial or groundwater flood zones are mapped within the boundary of the proposed development site.

Figure 5 below illustrates the PFRA predictive flood zones from *Figure 4* overlaid onto higher resolution background mapping.

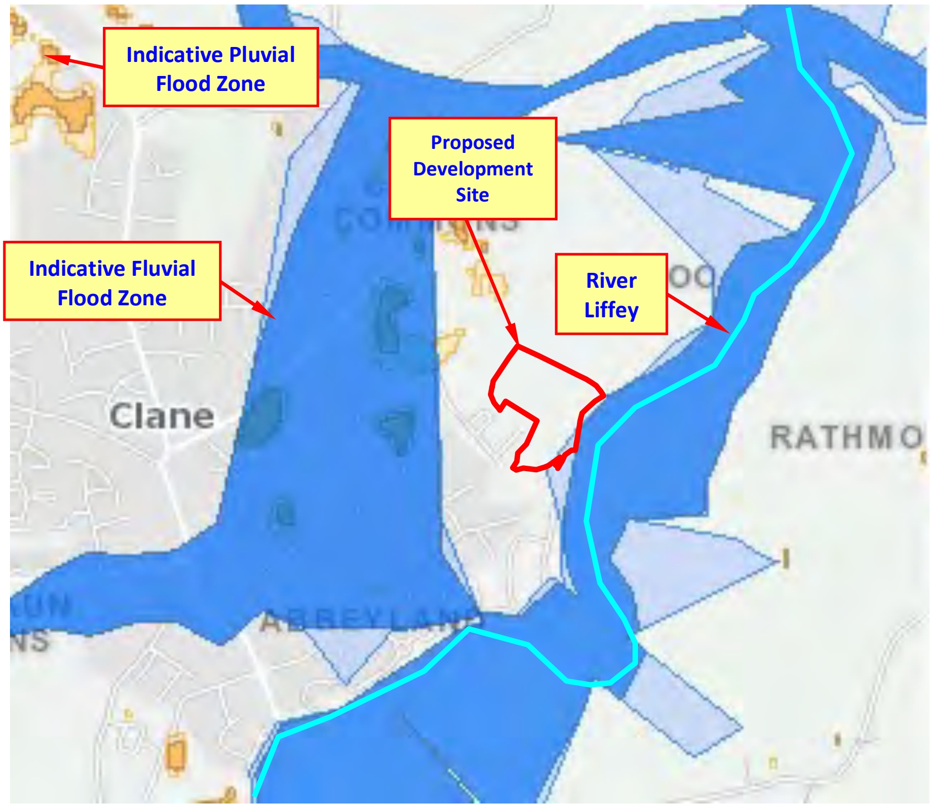


Figure 5 – PFRA Indicative Fluvial Flood Mapping

It should be noted that the predicted extent of flooding illustrated on these maps was developed using a low resolution digital terrain model (DTM) and illustrated flood extents are intended to be indicative only. The flood extents mapped on the PFRA maps are not intended to be used on a site specific basis.

4.3 OPW Flood Maps Website

The OPW Flood Maps Website (www.floodmaps.ie) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrences in the vicinity of the proposed development site. *Figure 6* below illustrates mapping from the Flood Maps website in the vicinity of the site.

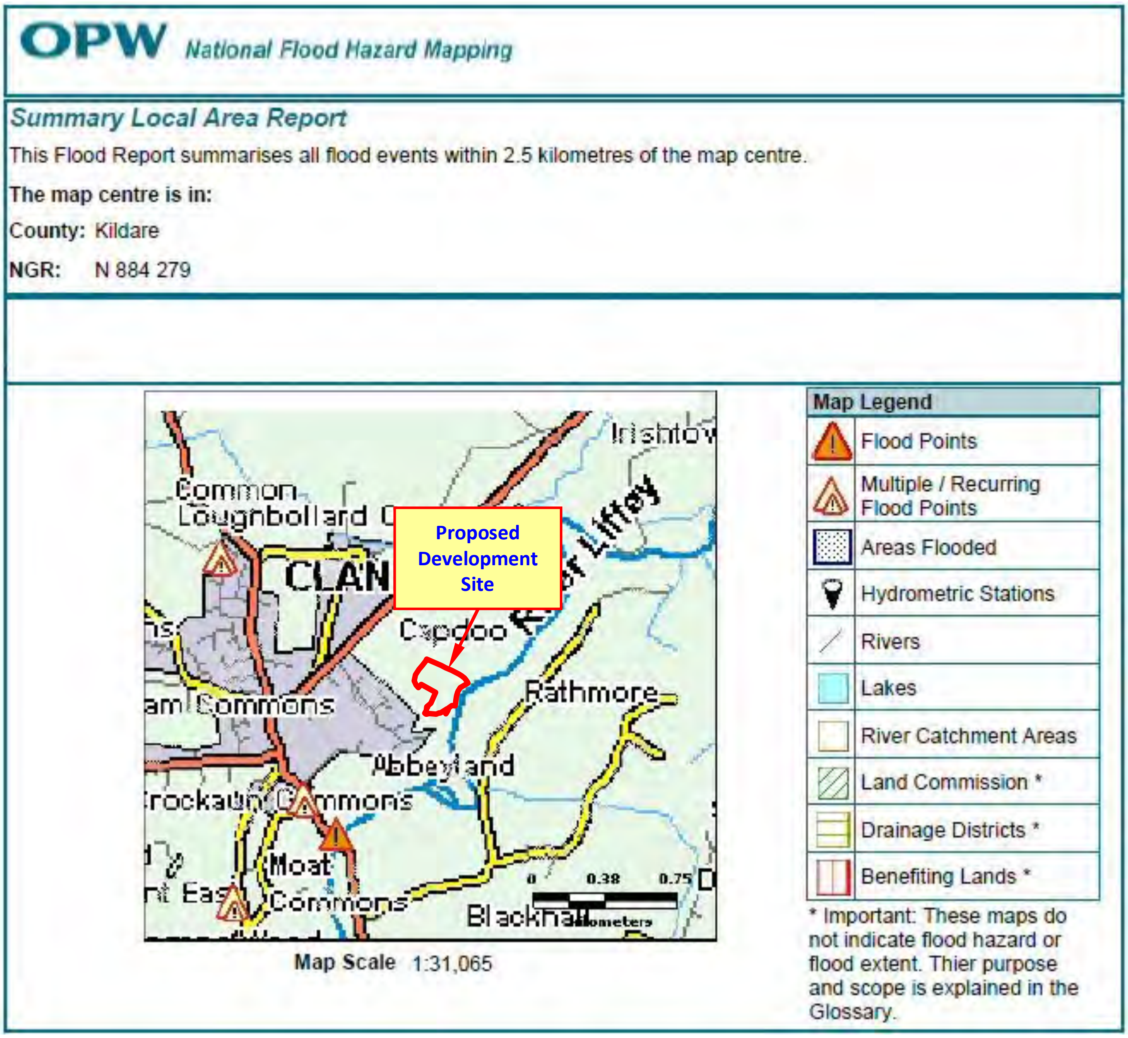


Figure 6 – OPW Flood Maps

Figure 6 above indicates no historic instances of flooding recorded within or adjacent to the proposed development site. A number of historical or anecdotal instances of flooding which have occurred in Clane are indicated, most notably at Loughbollard, in the vicinity of Alexander Bridge, Millicent Road and Commons.

The OPW Flood Maps website also contains a number of ESB maps that illustrate recorded flood levels during the flood of 1954. This has been documented as a significant flood event in the middle catchment of the River Liffey. *Figure 6A* below illustrates an extract of recorded flood levels at Alexandra Bridge, Clane, which is approximately 1360m upstream of the proposed development site.

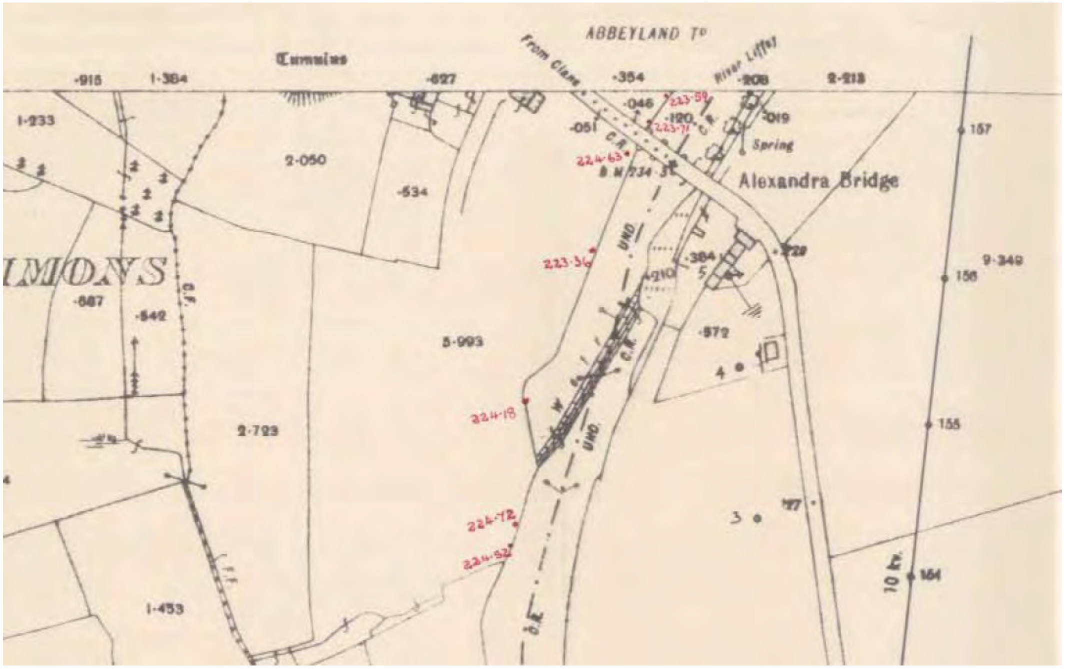


Figure 6A

The levels illustrated in *Figure 6A* above are in feet and reduced to Poolbeg datum. Converting to metres and reducing to Malin datum the recorded flood levels range from 65.49m (OD) to 65.38m (OD) in the vicinity of Alexandra Bridge. The flood event of 1954 has an estimated return period of 1 in 75 years.

Non of the historic flood events listed above are indicated as having impacted the area of the proposed development site.

4.4 Ordnance Survey Historic Mapping

Available historic mapping for the area was consulted, as this can provide evidence of historical flooding incidences or occurrences. The maps that were consulted were the historical 6-inch maps (pre-1900), and the historic 25-inch map series.

Figures 7 and *8* below show the historic mapping for the area of the proposed development site.

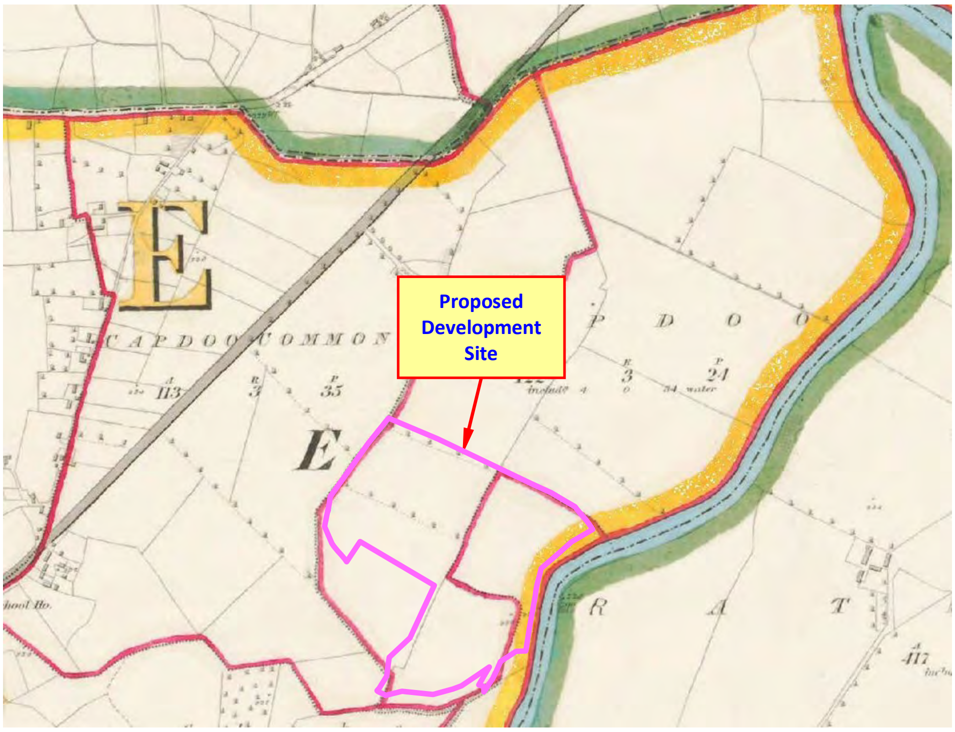


Figure 7 – Historic 6-Inch Mapping

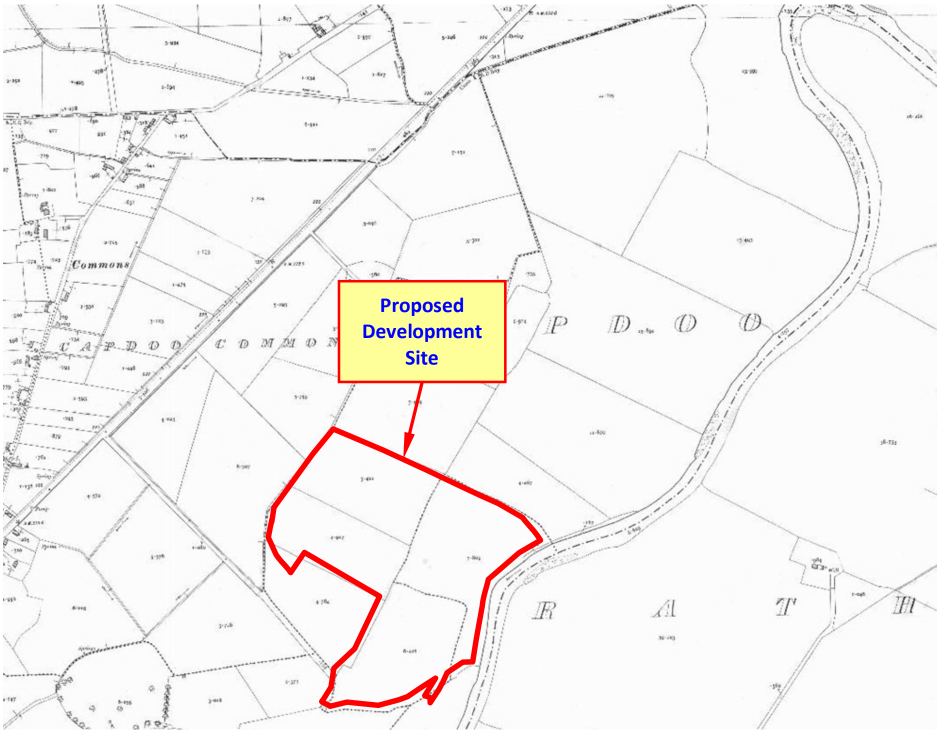


Figure 8 – Historic 25-Inch Mapping

The historic 6 inch and 25 inch mapping does not indicate any historical or anecdotal instances of flooding within or adjacent to the boundary of the proposed development site.

4.5 Geological Survey of Ireland Mapping

The alluvial deposit maps of the Geological Survey of Ireland (GSI) were consulted to assess the extent of any alluvial deposits in the vicinity of the proposed development site. Alluvium deposits can be indicative of areas that have flooded in the recent geological past.

Figure 9 below illustrates the sub-soils mapping for the general area of the proposed development site.

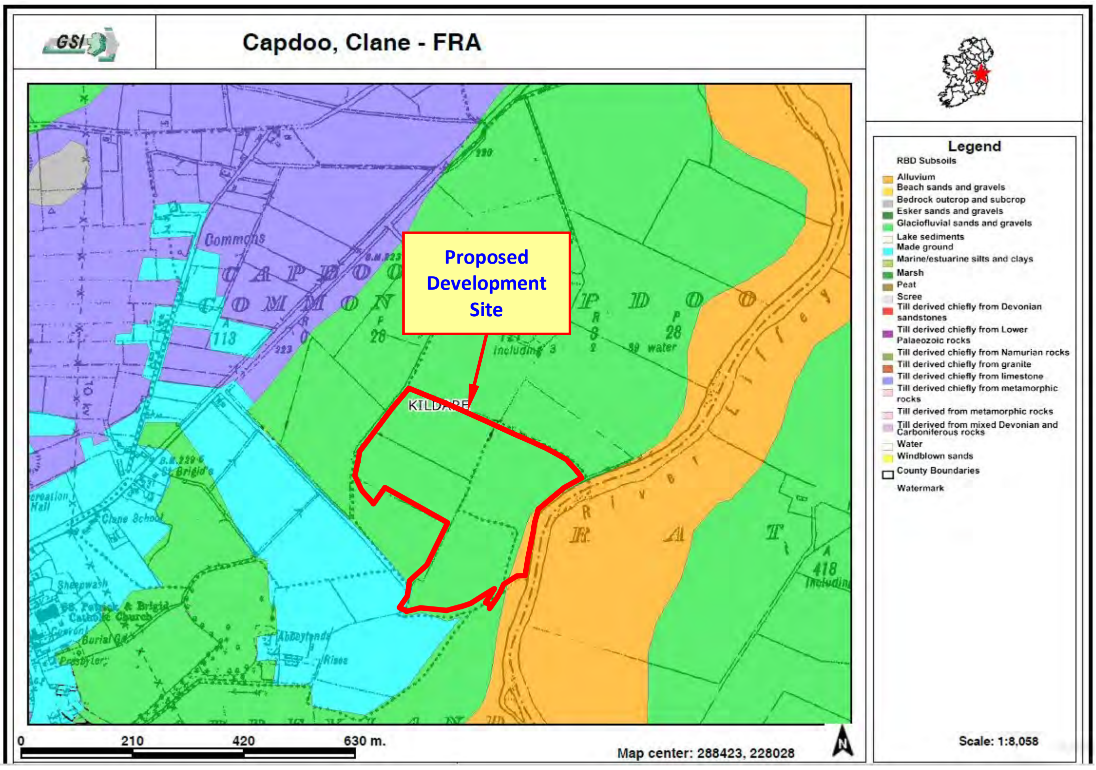


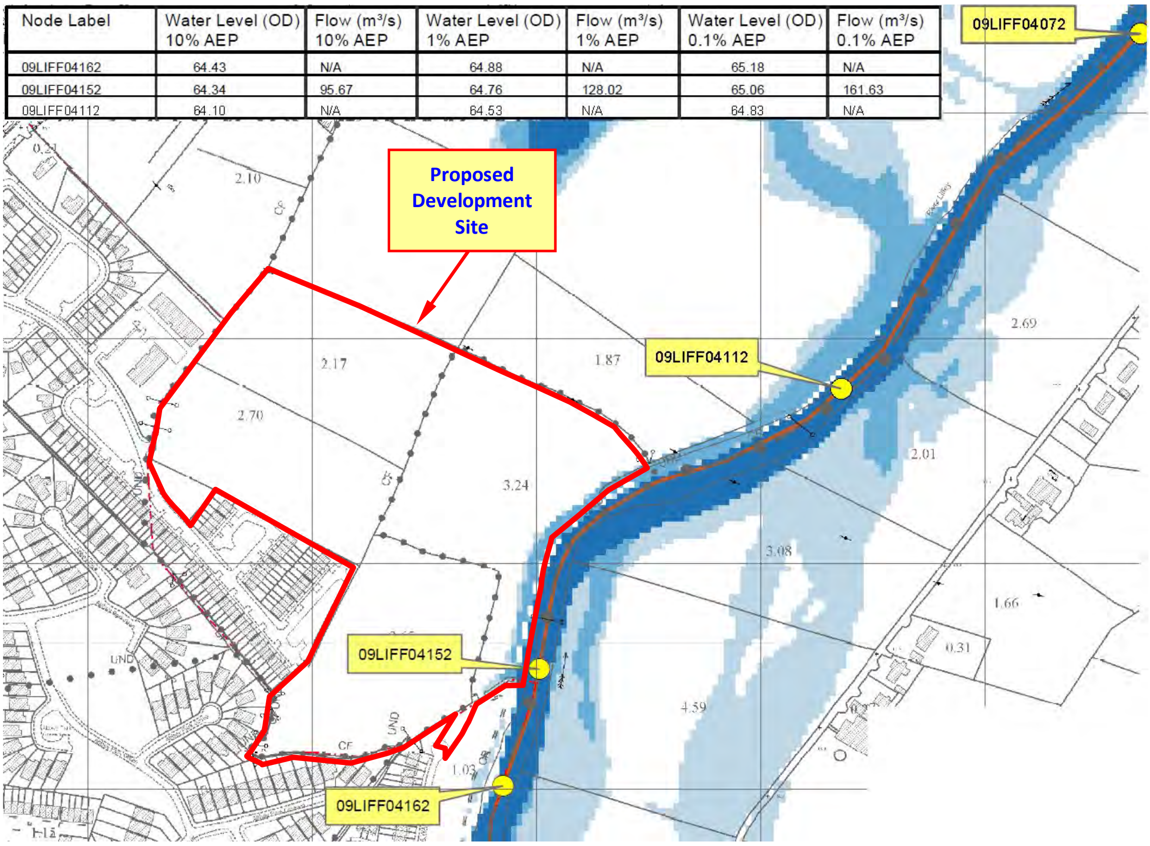
Figure 9 – GSI Subsoil Mapping

Figure 9 above indicates that the sub-soil conditions at the proposed development site consist mostly of Glaciofluvial sands and gravel. A small area of Alluvium deposits is mapped adjacent to the eastern boundary of the site.

4.6 Eastern CFRAM Study

The Eastern Region Catchment Flood Risk & Management Study (CFRAMS) has been undertaken by the OPW and the Final version of the flood maps were issued in June 2016. Flood risk extent and depth maps for further assessment areas within Co Kildare have also been produced. OPW CFRAMS predictive flood map number *E09LA_EXFCD_F1_10* illustrates predictive extreme fluvial flood extent zones associated with the River Liffey in the vicinity of the proposed development site.

Figure 10 below (extracted from CFRAMS flood map *E09CAM_EXFCD_F1_24*), illustrates the predicted extreme 10% AEP (1 in 10 year), 1% AEP (1 in 100 year) or 0.1% AEP (1 in 1000 year) fluvial flood extents in the vicinity of the proposed development site.



Node Label	Water Level (OD) 10% AEP	Flow (m^3/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m^3/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m^3/s) 0.1% AEP
09LIFF04162	64.43	N/A	64.88	N/A	65.18	N/A
09LIFF04152	64.34	95.67	64.76	128.02	65.06	161.63
09LIFF04112	64.10	N/A	64.53	N/A	64.83	N/A

Figure 10 – Eastern CFRAMS Fluvial Flood Maps

Figure 10 above indicates that a limited area adjacent to the eastern boundary of the proposed development site falls within a predictive 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood zone.

The CFRAMS flood map also provides information on predictive water levels & flows for the 10% AEP, 1% AEP and 0.1% AEP fluvial flood events at various node points along the River Liffey.

The node points closest to the proposed development site are referenced as node point *09LIFF04162* located upstream of the proposed site, node point *09LIFF04152* located adjacent to the proposed site and *node point 09LIFF04112* located beyond the downstream boundary of the proposed site. Details of the predicted extreme fluvial flood levels & flood volumes for the CFRAMS node points in the general vicinity of the proposed development site are listed in *Table 2* below, which has been extracted from CFRAMS flood map reference *E09CAM_EXFCD_F1_24.*

Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
09LIFF04162	64.43	-	64.88	-	65.18	-
09LIFF04152	64.34	95.67	64.76	128.02	65.06	161.63
09LIFF04112	64.10	-	64.53	-	64.83	-

Table 2 –CFRAMS Fluvial Map - Predicted Flood Volumes & Levels

Predictive fluvial flood depth maps have also been produced as part of the Eastern CFRAM Study.

Figure 11 and *Figure 12* below, duplicated from the Eastern CFRAM Study, illustrate the predictive flood depths for the area of the proposed development for the 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood events respectively.

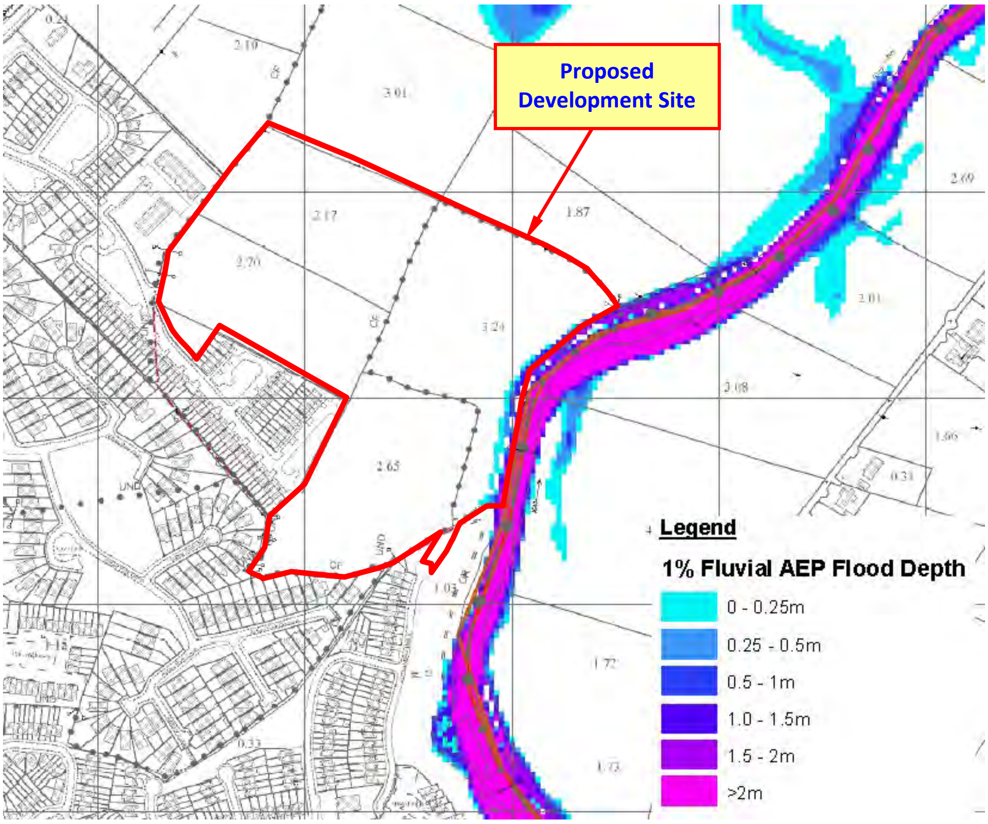


Figure 11 – Eastern CFRAMS 1% AEP Fluvial Flood Depth Map

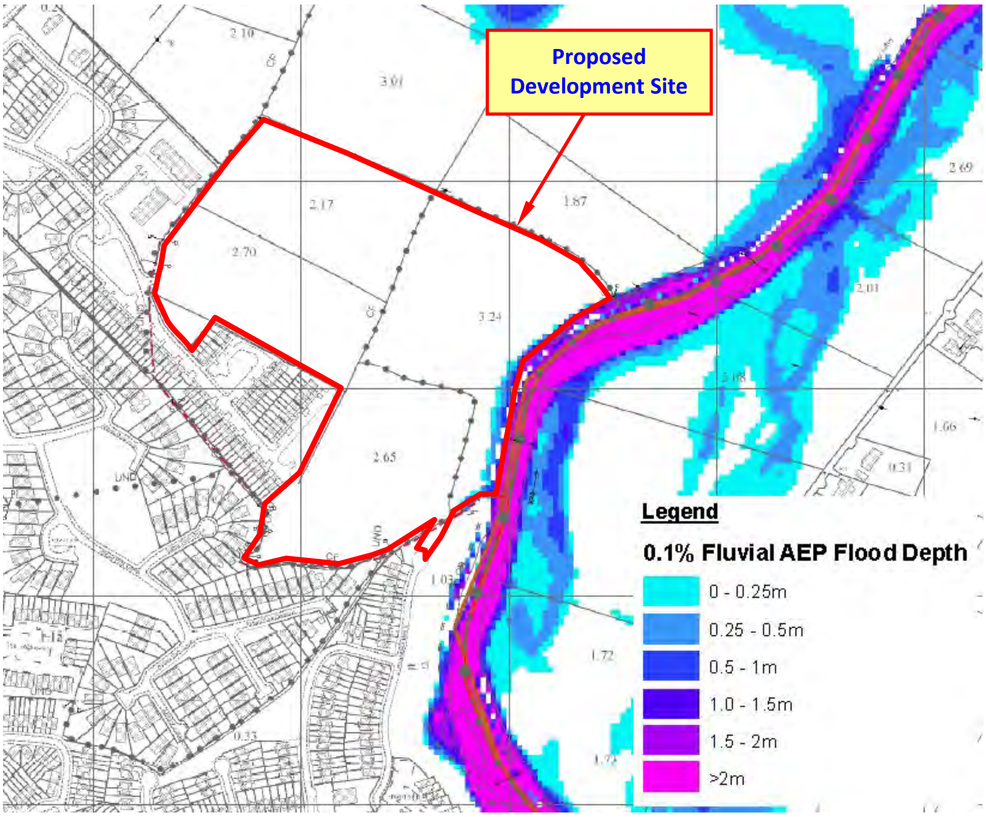


Figure 12 – Eastern CFRAMS 0.1% AEP Fluvial Flood Depth Map

Figure 11 and *Figure 12* above indicate predicted 1% AEP and 0.1% AEP fluvial flood depths of 0.25m-1.0m within a limited area adjacent to the eastern boundary of the proposed development site.

The Eastern CFRAM flood maps are predictive flood maps, in that they provide predicted flood extent and depth information for a 'design' flood event that has an estimated probability of occurrence (e.g., the 1% AEP event), rather than information for floods that have occurred in the past.

4.7 Kildare County Development Plan

Reference to Map 9.1 (Drawing Number 200/16/1000) of the Kildare County Development Plan 2017-2023 indicates a limited area of Strategic fluvial 'Flood Zone A' and 'Flood Zone B' adjacent to the eastern site boundary. An extract from the above map is illustrated in *Figure 13* below:-

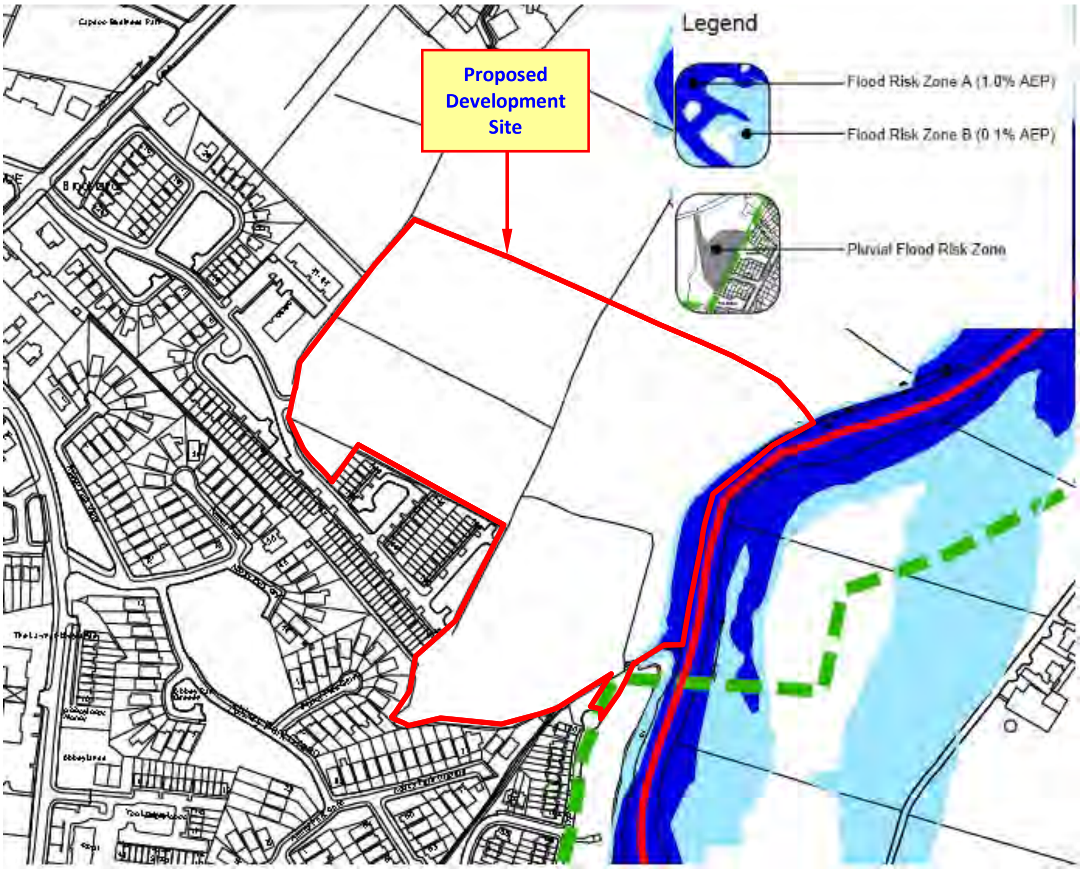


Figure 13 – Kildare County Development Plan Map

Figure 13 above indicates that the proposed development site would not be significantly impacted by a 1% AEP (1 in 100 year) or 0.1% AEP (1 in 1000 year) fluvial flood event.

5 Scoping Assessment

The purpose of the scoping stage is to identify possible flood risks and to implement the necessary level of detail and assessment to assess these possible risks, and to ensure these can be adequately addressed in the flood risk assessment. The scoping exercise should also identify that sufficient quantitative information is already available to complete a flood risk assessment appropriate to the scale and nature of the development proposed.

The above screening assessment indicates that a limited area of proposed development site adjacent to the eastern boundary may be at risk from fluvial flooding but that the area of the site is not at significant risk from pluvial or groundwater flooding.

In consideration of the information collated as part of the screening exercise, and the availability of other information and data specific to the area of the proposed development site, it is considered that sufficient quantitative information to complete an appropriate flood risk assessment for the proposed development site cannot be derived from the information collated as part of the screening exercise alone.

While the current flood extent maps for the area produced as part of the Eastern CFRAM study are based on the results of detailed hydraulic modelling undertaken along the River Liffey and do provide a reasonably accurate delineation of flood zones and prediction of flood depths in the general vicinity of the proposed development site, this mapping is based on a localised digital terrain model (DTM) of the general Clane area and can be subject to local DTM errors or variations. It is therefore necessary to undertake a more accurate site specific delineation of the predictive 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood extents at the location of the proposed development site.

The potential flood risk to the proposed development site is assessed in the subsequent 'Assessing Flood Risk' stage of this study report.

6 Assessment of Flood Risk

Flood risk from a particular watercourse is normally assessed for a 1 in 100 year (1% AEP) and 1 in 1000 year (0.1% AEP) flood event, in accordance with the Kildare County Council development plan and with the DOEHLG guidelines *'The Planning System and Flood Risk Management Guidelines'*.

The following sections present an analysis and assessment of the estimated 1 in 100 year (1% AEP) and 1 in 1000 year (0.1% AEP) extreme flood events in the River Liffey adjacent to the proposed development site.

6.1 Estimation of Extreme Flood Levels in the River Liffey

Extreme flood levels at the location of the proposed development site have been derived as part of the Eastern CFRAM Study. The most relevant node points in respect of the proposed development site are Node Point *09LIFF04162, 09LIFF04152* and *09LIFF04112* that are located just upstream, adjacent to the east site boundary and 185m downstream of the site respectively. Predicted 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) flood levels at these node points are applicable for the purpose of assessing fluvial flood risk to the proposed development site.

Table 2 above lists the predicted extreme flood levels for these node points.

6.2 Climate Change

In general, it is a requirement of Kildare County Council that the required Design Flow to be used for flood extent delineation is the 1 in 100 year flood flow event plus 20% in order to allow for climate change'.

'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009 Technical Appendix A, Section 1.6 recommends that, where mathematical models are not available climate change flood extents can be assessed by using the Flood Zone B outline as a surrogate for Flood Zone A with allowance for the possible impacts of climate change. Therefore, in accordance with the above guidelines, the predicted 0.1% AEP (1 in 1000 year) flood levels listed in *Table 2* above are considered to be representative of the mid-range future climate change scenario 1% AEP (1 in 100 year) plus climate change food levels.

6.3 Topographical Survey & Contour Mapping

In order to assist in the assessment of any potential flood inundation in the general location of the proposed development site, topographical survey information was used to develop a detailed Digital Terrain Model (DTM) of the existing site area. Development of a DTM allows the predicted extreme flood levels listed in *Table 2* above to be analysed in more detail at the specific location of the proposed development site.

The DTM and contour mapping was developed utilising digital survey information of the proposed development site and the Autodesk Civil 3D 2019 software package. The DTM and contour mapping developed for the proposed development site is illustrated in *Figure 14* and *Figure 15* below.

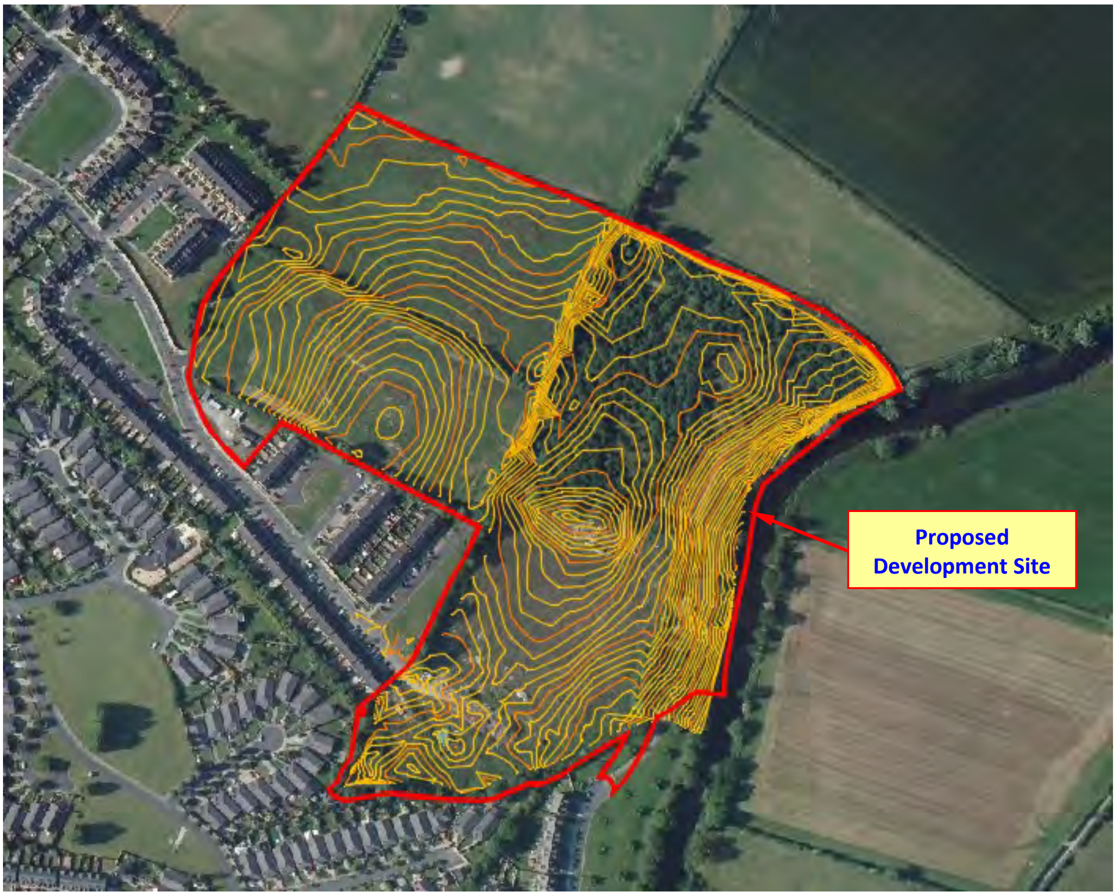


Figure 14 – Contour Mapping

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	63.40	63.62	
2	63.62	63.84	
3	63.84	64.06	
4	64.06	64.28	
5	64.28	64.50	
6	64.50	64.72	
7	64.72	64.94	
8	64.94	65.16	
9	65.16	65.38	
10	65.38	65.60	
11	65.60	65.82	
12	65.82	66.04	
13	66.04	66.26	
14	66.26	66.48	
15	66.48	66.70	
16	66.70	66.92	
17	66.92	67.14	
18	67.14	67.36	
19	67.36	67.58	
20	67.58	67.80	

Figure 15 – Topographical Survey Derived DTM

6.4 Flood Zone Mapping & Delineation

Utilising the DTM illustrated in *Figure 14* and *Figure 15* above, and the 1 in 100 year (1% AEP) and 1 in 1000 year (0.1% AEP) extreme flood levels for the River Liffey along the reach adjacent to the proposed development site, the Site Specific 1% AEP and 0.1% AEP flood zones were delineated using the hydrology module of an appropriate software package. The software enables a user defined flood level to be mapped and modelled onto a DTM over the full extent of the area being assessed.

Drawing Number IE2181-002-A, Appendix A illustrates the delineated 1 in 100 year flood extent (Flood Zone ‘A’) and 1 in 1000 year flood extent (Flood Zone ‘B’) over the full area of the proposed development site.

Drawing Number IE2181-003-A, Appendix A illustrates representative cross-sectional elevations through the site, illustrating existing and proposed ground levels and finished floor levels relative to predictive 1% AEP and 0.1% AEP flood levels in the River Liffey.

The above analysis and flood zone delineation undertaken as part of this Site Specific Flood Risk Assessment (SSFRA) indicates that the area of the site where development is proposed does not fall within a delineated flood zone. The area of the site where development is proposed is therefore not susceptible to flood risk during the occurrence of an extreme fluvial event in the River Liffey.

In order to ensure sustainable development of this particular site the following is recommended:-

- *Proposed finished ground levels (road levels, etc) should be constructed to a minimum level of 0.15m above the maximum predicted 0.1% AEP flood level – i.e. 65.18m + 0.15m =* ***65.33m OD****.*
- *Proposed finished floor levels should be constructed to a minimum level of 0.30m above the maximum predicted 0.1% AEP flood level – i.e. 65.18m + 0.30m =* ***65.48m OD****.*
- *The proposed development site should incorporate an appropriately designed stormwater management system that should limited stormwater runoff from the site to existing pre-development runoff rates.*

In consideration of the assessment and analysis undertaken as part of this Site Specific Flood Risk Assessment, and the recommendations presented above, the development as proposed is not at significant risk due to the occurrence of an extreme fluvial flood event in the River Liffey. The development as proposed would not result in an adverse impact to the existing hydrological regime of the area and would not result in an increased flood risk elsewhere.

6.5 Assessment of Potential Residual Pluvial Flood Risk

As illustrated on the Proposed Foul & Surface Water Drainage layout drawing prepared by BCA Consulting Engineers, the stormwater management system to serve the proposed development has been designed in general consideration of the Kildare County Council drainage policy and the GDSDS guidelines.

In order to access any potential residual pluvial flood risk associated with the stormwater drainage network to serve the proposed development the network has been subject to an additional hydraulic simulation analysis utilising the Micro-Drainage software package in order to demonstrate the following:-

- Analysis to demonstrate that the proposed development storm water drainage and management system has been designed not to flood any part of the site in a 1 in 30 year return design storm and to ensure a free-board of 300mm below each manhole cover level & inclusive of climate change allowance and inclusive of allowance for urban creep (GDSDS Level of Service – Site Flooding criteria)

- Analysis to check for exceedence up to the 1 in 100 year return design storm and inclusive of climate change allowance and inclusive of allowance for urban creep (GDSDS Level of Service – Site Flooding criteria)
- Additional simulation analysis in consideration of 1 in 1 year and 1 in 2 year return design storm event (inclusive of climate change allowance).

The output of the Micro-Drainage hydraulic simulation analysis is presented in *Appendix B*.

As presented in the hydraulic simulation analysis output in *Appendix B*, under 'Summary of Critical Results by Maximum Level (Rank 1) for Storm', the simulation criteria for each simulated return period (1 in 1 year, 1 in 2 year, 1 in 30 year & 1 in 100 year) has applied a 'Margin of Flood Risk Warning' of 300m. This criteria has been set in order to ensure that in the event of an extreme rainfall event, and where surcharging of the storm water drainage pipes and manholes is predicted to occur during these events, then a freeboard of 300mm is maintained between each manhole cover level and the surcharged water level in each manhole.

As summarised in the Micro-Drainage hydraulic simulation output analysis presented in *Appendix B*, in consideration of a 1 in 30 year return period design storm, inclusive of climate change, a minimum freeboard of 300mm is maintained within the storm water drainage system (Page 32-35 of Micro-Drainage calculations).

In consideration of a 1 in 100 year return period design storm, inclusive of climate change, maximum water levels within the storm water drainage system would not exceed proposed manhole cover levels and would therefore not present a residual pluvial flood risk to the proposed development site (Page 37-40 of Micro-Drainage calculations).

In summary the storm water drainage and management system to serve the proposed strategic housing development is not predicted to present a residual pluvial flood risk to the development and is considered to comply with the GDSDS Level of Service – Site Flooding Criteria.

7 Proposed Development in the Context of the Guidelines

In the context of the *'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'* three flood zones are designated in consideration of flood risk to a particular development site.

Flood Zone 'A' – where the probability of flooding from rivers and watercourses is the highest (greater than 1% or 1 in 100 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

Flood Zone 'B' – where the probability of flooding from rivers and watercourses is moderate (between 0.1% or 1 in 1000 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

Flood Zone 'C' – where the probability of flooding from rivers and watercourses is low or negligible (less than 0.1% of 1 in 1000 year for both river and watercourse and coastal flooding). *Flood Zone 'C'* covers all areas that are not in *Zones 'A'* or '*B*'.

The *'Planning System and Flood Risk Management Guidelines'* list the planning implications for each flood zone, as summarised below:-

Zone A – High Probability of Flooding. Most types of development would not be considered in this zone. Development in this zone should be only be considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and where the *'Planning System and Flood Risk Management Guidelines'* justification test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space and outdoor sports and reaction would be considered appropriate in this zone.

Zone B – Moderate Probability of Flooding. Highly vulnerable development such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses, strategic transport and essential utilities infrastructure would generally be considered inappropriate in this zone, unless the requirements of the justification test can be met. Less vulnerable development such as retail, commercial and industrial uses and recreational facilities might be considered appropriate in this zone.

In general however, less vulnerable development should only be considered in this zone if adequate lands or sites are not available in *Zone 'C'* and subject to a flood risk assessment to the appropriate level of detail to demonstrate that flood risk to the development can be adequately managed and that development in this zone will not adversely affect adjacent lands and properties.

Zone C – Low to Negligible Probability of Flooding. Development in this zone is appropriate from a flood risk perspective. Developments in this zone are generally not considered at risk of fluvial flooding and would not adversely affect adjacent lands and properties from a flood risk perspective.

In the context of the '*Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'* this flood risk assessment has determined that the area of the proposed development site where development is proposed (residential units, roads, site access/egress, etc) works is not at risk of direct fluvial, pluvial or groundwater flooding and therefore falls within Flood Zone 'C'.

Development of the site as proposed is therefore not subject to the requirements of The Justification Test.

8 Summary Conclusions

In consideration of the findings of this site specific flood risk assessment and analysis the following conclusions and recommendations are made in respect of the proposed development site:-

- *A Site Specific Flood Risk (SSFRA) assessment, appropriate to the type and scale of development proposed, and in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009' has been undertaken.*
- *The area of the proposed development site has been screened, scoped and assessed for flood risk in accordance with the above guidelines.*
- *The primary flood risk to the proposed development site can be attributed to potential fluvial flooding from the River Liffey.*
- *The proposed development site is not at risk from pluvial or groundwater flooding.*
- *Utilising the Eastern CFRAM study estimated extreme flood water levels and a detailed DTM developed utiising topographical survey data of the existing site, the 1 in 100 year (1% AEP) and 1 in 1000 (1% AEP) flood extents were delineated.*
- *The analysis and flood zone delineation undertaken as part of this Site Specific Flood Risk Assessment (SSFRA) indicates that the area of the site where development is proposed does not fall within a delineated flood zone. The area of the site where development is proposed is not susceptible to flood risk during the occurrence of an extreme fluvial event in the River Liffey and therefore falls within Flood Zone 'C'.*
- *Development proposals for the site are therefore not subject to the requirements of the Justification Test.*
- *The storm water drainage and management system to serve the proposed strategic housing development is not predicted to present a residual pluvial flood risk to the development and is considered to comply with the GDSDS Level of Service – Site Flooding Criteria.*
- *In summary, and in consideration of the findings and recommendations of this Site Specific Flood Risk Assessment, development of the site as proposed would not result in an adverse impact to the existing hydrological regime of the area and would not result in an increased flood risk elsewhere.*
- *The development as proposed is therefore considered to be appropriate from a flood risk perspective.*

9 Summary Recommendations

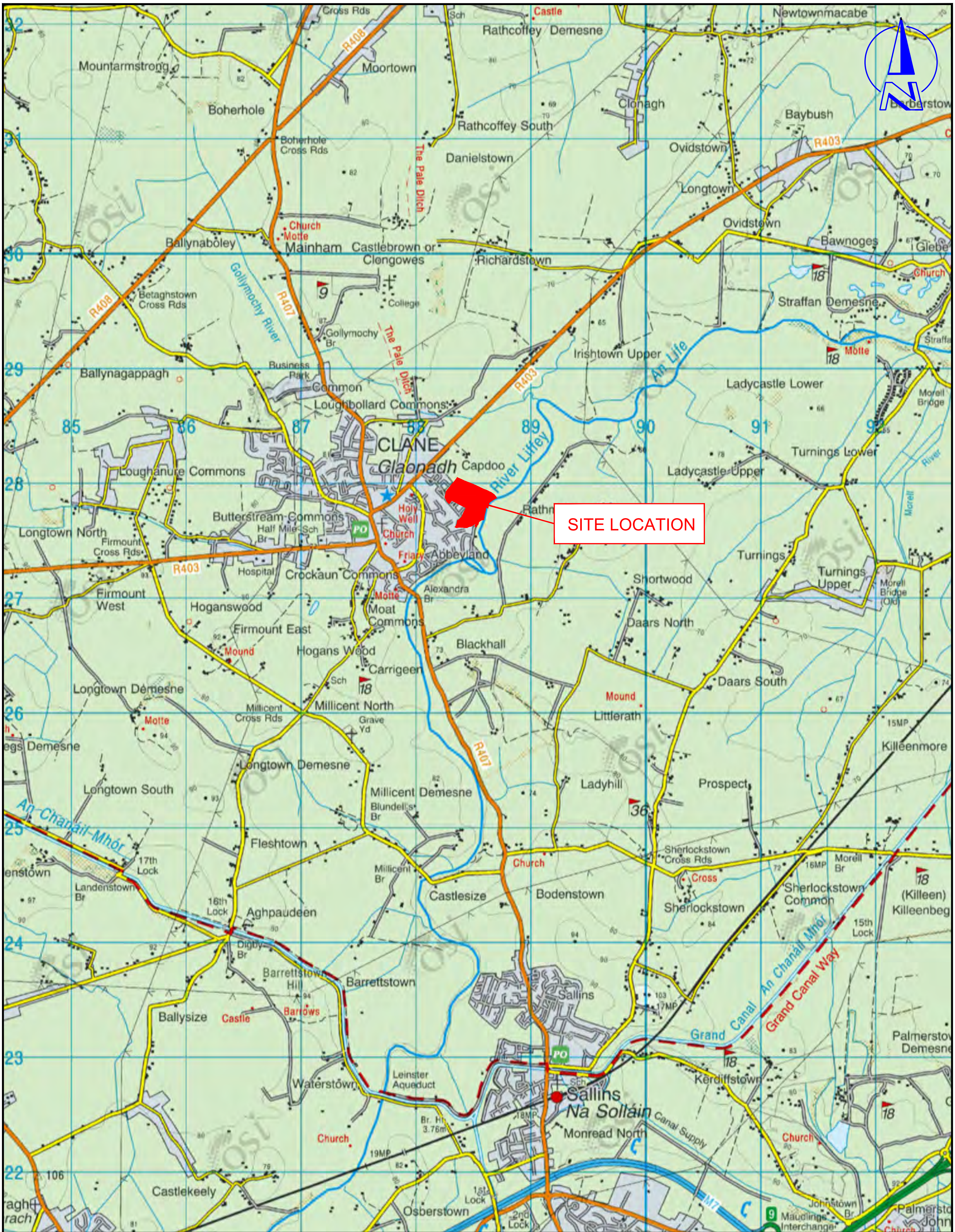
- *It is recommended that proposed finished ground levels (road levels, etc) should be constructed to a minimum level of 0.15m above the maximum predicted 0.1% AEP flood level upstream of the site – i.e. 65.18m + 0.15m =* ***65.33m OD****.*
- *It is recommended that proposed finished floor levels should be constructed to a minimum level of 0.30m above the maximum predicted 0.1% AEP flood level upstream of the site – i.e. 65.18m + 0.30m =* ***65.48m OD****.*

APPENDIX A

Drawing Number IE2181-001-A

Drawing Number IE2181-002-A

Drawing Number IE2181-003-A



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IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

Project Title:	FLOOD RISK ASSESSMENT
Project Address:	Capdoo & Abbeylands, Dublin Road, Clane Co. Kildare
Client:	WESTAR INVESTMENTS LTD.
Drg. Title:	SITE LOCATION MAP

Dwg.Scale:	Date:	Dwg.No:	Job No:	Revision:	Dwg.By:
NTS	29/11/20	IE2181-001	IE2181	A	LMc

LEGEND

- SITE BOUNDARY
- 100 YEAR FLOOD EXTENT (1% AEP) FLOOD ZONE 'A'
- 1000 YEAR FLOOD EXTENT (0.1% AEP) FLOOD ZONE 'B'
- FLOOD ZONE 'C'
- LAND OWNERSHIP

rev.	date	amendment	drn	ckd
B	14.12.20	PLANNING	LMc	PMS
A	29.11.20	PLANNING	LMc	PMS

PROPOSED DEVELOPMENT AT
CAPDOO & ABBEYLANDS, DUBLIN ROAD,
CLANE, CO. KILDARE,

SITE SPECIFIC FLOOD
RISK ASSESSMENT

1 IN 100 YEAR (1% AEP) &
1 IN 1000 YEAR (0.1% AEP)
FLUVIAL FLOOD EXTENTS

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

CARLOW OFFICE:
INNOVATION CENTRE
GREEN ROAD
CARLOW, R93 W248

NEWRY OFFICE:
1 RDC HOUSE
WIN BUSINESS PARK
NEWRY, BT35 6PH

file location:	N:\IE2181\DRAWINGS	scale:	1:2000 A3
drawing status:	PLANNING	datum:	MALIN
		drawn:	LMC
drawing no.	IE2181-002	checked:	NOM
rev	B	approved:	PMS
		date:	29.11.2020

LEGEND

SITE BOUNDARY

rev.	date	amendment	drn	ckd
A	29.11.20	PLANNING	LMc	PMS

PROPOSED DEVELOPMENT AT
CAPDOO&ABBEYLANDS, DUBLIN ROAD,
CLANE,
CO. KILDARE

SITE SPECIFIC FLOOD
RISK ASSESSMENT

PROPOSED & EXISTING
CROSS SECTIONS

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

INNOVATION CENTRE
GREEN ROAD
CARLOW

TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

file location:	N:\IE2181\DRAWINGS	scale:	AS SHOWN @ A3
drawing status:	PLANNING	datum:	MALIN
		drawn:	LMC
drawing no.	IE2181-003	checked:	NOM
rev	A	approved:	PMS
		date:	29.11.2020

APPENDIX B

Residual Pluvial Flood Assessment

Summary Hydraulic Simulation Calculations

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	10
Ratio R	0.200	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm at outfall S (pipe S1.008)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.001	4-8	1.603	8-12	0.834

Total Area Contributing (ha) = 2.439

Total Pipe Volume (m³) = 118.462

Time Area Diagram at outfall S (pipe S10.006)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.199	4-8	2.006	8-12	0.426

Total Area Contributing (ha) = 2.631

Total Pipe Volume (m³) = 205.266

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	47.891	0.479	100.0	0.182	4.00	0.0	0.600	o	300	Pipe/Conduit	
S2.000	44.572	0.371	120.0	0.136	4.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	27.099	0.165	164.2	0.061	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	36.349	0.481	75.6	0.129	4.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	45.814	0.306	149.7	0.152	4.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	46.218	0.206	224.4	0.123	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.002	67.267	0.117	574.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.000	37.726	0.400	94.3	0.118	4.00	0.0	0.600	o	225	Pipe/Conduit	
S5.001	38.653	0.155	249.4	0.042	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.002	70.035	0.575	121.8	0.118	0.00	0.0	0.600	o	300	Pipe/Conduit	
S6.000	33.520	0.230	145.7	0.108	4.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	4.51	64.904	0.182	0.0	0.0	2.5	1.57	111.1	27.1
S2.000	50.00	4.52	64.425	0.136	0.0	0.0	1.8	1.43	101.4	20.2
S1.001	50.00	4.89	64.053	0.378	0.0	0.0	5.1	1.22	86.5	56.3
S3.000	50.00	4.40	64.575	0.129	0.0	0.0	1.7	1.51	59.9	19.2
S4.000	50.00	4.60	64.400	0.152	0.0	0.0	2.1	1.28	90.7	22.6
S3.001	50.00	5.23	64.019	0.404	0.0	0.0	5.5	1.21	133.1	60.2
S1.002	50.00	6.73	63.813	0.782	0.0	0.0	10.6	0.75	82.7«	116.5
S5.000	50.00	4.47	65.325	0.118	0.0	0.0	1.6	1.35	53.5	17.6
S5.001	50.00	5.25	64.925	0.160	0.0	0.0	2.2	0.82	32.7	23.9
S5.002	50.00	6.07	64.695	0.278	0.0	0.0	3.8	1.42	100.6	41.5
S6.000	50.00	4.52	64.425	0.108	0.0	0.0	1.5	1.08	43.0	16.0

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.003	43.075	0.186	231.6	0.096	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.004	55.087	0.238	231.5	0.181	0.00	0.0	0.600	o	600	Pipe/Conduit	
S7.000	105.943	0.610	173.7	0.288	4.00	0.0	0.600	o	300	Pipe/Conduit	
S8.000	53.499	0.225	237.8	0.286	4.00	0.0	0.600	o	375	Pipe/Conduit	
S8.001	20.097	0.085	236.4	0.022	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.001	78.729	0.530	148.5	0.161	0.00	0.0	0.600	o	375	Pipe/Conduit	
S9.000	76.216	1.296	58.8	0.236	4.00	0.0	0.600	o	225	Pipe/Conduit	
S7.002	20.805	0.134	155.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.003	5.902	0.024	245.9	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.004	60.709	0.067	906.1	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S1.005	6.764	0.023	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.006	39.086	0.130	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.007	48.491	0.162	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	6.236	0.021	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S5.003	50.00	6.67	64.120	0.482	0.0	0.0	6.5	1.19	131.0	71.9
S5.004	50.00	7.25	63.934	0.664	0.0	0.0	9.0	1.60	451.4	98.9
S7.000	50.00	5.48	64.990	0.288	0.0	0.0	3.9	1.19	84.1	42.9
S8.000	50.00	4.76	64.670	0.286	0.0	0.0	3.9	1.17	129.3	42.6
S8.001	50.00	5.05	64.445	0.308	0.0	0.0	4.2	1.17	129.7	45.9
S7.001	50.00	6.37	64.360	0.757	0.0	0.0	10.2	1.48	164.0	112.7
S9.000	50.00	4.74	65.125	0.236	0.0	0.0	3.2	1.71	67.9	35.1
S7.002	50.00	6.58	63.830	0.993	0.0	0.0	13.4	1.63	259.1	147.9
S1.003	50.00	7.31	63.696	2.439	0.0	0.0	33.0	1.55	437.8	363.3
S1.004	50.00	8.41	63.672	2.439	0.0	0.0	33.0	0.92	407.1	363.3
S1.005	50.00	8.56	63.605	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.006	50.00	9.43	63.582	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.007	50.00	10.51	63.452	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.008	50.00	10.65	63.291	2.439	0.0	0.0	33.0	0.75	29.8«	363.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S10.000	47.647	0.210	226.9	0.355	4.00	0.0	0.600	o	300	Pipe/Conduit	
S10.001	76.508	0.340	225.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S11.000	50.741	0.230	220.6	0.095	4.00	0.0	0.600	o	225	Pipe/Conduit	
S12.000	55.287	0.240	230.4	0.183	4.00	0.0	0.600	o	225	Pipe/Conduit	
S11.001	26.083	0.120	217.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.000	35.184	0.160	219.9	0.052	4.00	0.0	0.600	o	225	Pipe/Conduit	
S13.001	28.457	0.120	237.1	0.098	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.002	10.027	0.040	250.7	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S13.003	11.539	0.060	192.3	0.011	0.00	0.0	0.600	o	300	Pipe/Conduit	
S13.004	51.717	0.230	224.9	0.054	0.00	0.0	0.600	o	300	Pipe/Conduit	
S14.000	21.348	0.070	305.0	0.049	4.00	0.0	0.600	o	225	Pipe/Conduit	
S13.005	70.828	0.310	228.5	0.264	0.00	0.0	0.600	o	375	Pipe/Conduit	
S13.006	8.146	0.040	203.7	0.017	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S10.000	50.00	4.76	64.060	0.355	0.0	0.0	4.8	1.04	73.5	52.8
S10.001	50.00	5.99	63.850	0.355	0.0	0.0	4.8	1.04	73.8	52.8
S11.000	50.00	4.97	64.200	0.095	0.0	0.0	1.3	0.88	34.8	14.1
S12.000	50.00	5.07	64.210	0.183	0.0	0.0	2.5	0.86	34.1	27.2
S11.001	50.00	5.57	63.970	0.278	0.0	0.0	3.8	0.88	35.1«	41.3
S13.000	50.00	4.67	64.810	0.052	0.0	0.0	0.7	0.88	34.9	7.7
S13.001	50.00	5.23	64.650	0.150	0.0	0.0	2.0	0.84	33.6	22.3
S13.002	50.00	5.40	64.530	0.182	0.0	0.0	2.5	0.99	69.9	27.1
S13.003	50.00	5.57	64.490	0.193	0.0	0.0	2.6	1.13	79.9	28.8
S13.004	50.00	6.39	64.430	0.248	0.0	0.0	3.4	1.04	73.8	36.9
S14.000	50.00	4.48	64.270	0.049	0.0	0.0	0.7	0.74	29.6	7.3
S13.005	50.00	7.38	64.200	0.561	0.0	0.0	7.6	1.19	131.9	83.5
S13.006	50.00	7.49	63.890	0.578	0.0	0.0	7.8	1.27	139.8	86.1

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S11.002	11.294	0.050	225.9	0.016	0.00	0.0	0.600	o	375	Pipe/Conduit	
S11.003	66.102	0.290	227.9	0.252	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.002	32.104	0.190	169.0	0.068	0.00	0.0	0.600	o	450	Pipe/Conduit	
S15.000	26.075	0.030	869.2	0.039	4.00	0.0	0.600	o	750	Pipe/Conduit	
S15.001	50.212	0.070	717.3	0.135	0.00	0.0	0.600	o	750	Pipe/Conduit	
S16.000	50.617	0.230	220.1	0.136	4.00	0.0	0.600	o	225	Pipe/Conduit	
S16.001	19.635	0.090	218.2	0.029	0.00	0.0	0.600	o	225	Pipe/Conduit	
S16.002	9.341	0.040	233.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.000	12.814	0.060	213.6	0.027	4.00	0.0	0.600	o	225	Pipe/Conduit	
S16.003	50.011	0.200	250.1	0.049	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.002	51.920	0.070	741.7	0.131	0.00	0.0	0.600	o	750	Pipe/Conduit	
S18.000	20.049	0.340	59.0	0.039	4.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S11.002	50.00	7.65	63.850	0.872	0.0	0.0	11.8	1.20	132.7	129.9
S11.003	50.00	8.47	63.800	1.124	0.0	0.0	15.2	1.34	213.5	167.5
S10.002	50.00	8.81	63.510	1.547	0.0	0.0	21.0	1.56	248.3	230.5
S15.000	50.00	4.46	63.670	0.039	0.0	0.0	0.5	0.94	415.7	5.8
S15.001	50.00	5.27	63.640	0.174	0.0	0.0	2.4	1.04	458.2	25.9
S16.000	50.00	4.96	64.640	0.136	0.0	0.0	1.8	0.88	34.9	20.2
S16.001	50.00	5.33	64.410	0.165	0.0	0.0	2.2	0.88	35.0	24.5
S16.002	50.00	5.52	64.320	0.165	0.0	0.0	2.2	0.85	33.8	24.5
S17.000	50.00	4.24	64.340	0.027	0.0	0.0	0.4	0.89	35.4	4.0
S16.003	50.00	6.36	64.280	0.240	0.0	0.0	3.2	0.99	70.0	35.7
S15.002	50.00	7.21	63.570	0.545	0.0	0.0	7.4	1.02	450.5	81.1
S18.000	50.00	4.20	64.200	0.039	0.0	0.0	0.5	1.71	67.8	5.8

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S15.003	65.202	0.090	724.5	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S19.000	26.689	0.120	222.4	0.043	4.00	0.0	0.600	o	225	Pipe/Conduit	
S20.000	41.030	0.103	398.3	0.058	4.00	0.0	0.600	o	300	Pipe/Conduit	
S19.001	79.656	0.370	215.3	0.209	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.004	30.318	0.080	379.0	0.125	0.00	0.0	0.600	o	750	Pipe/Conduit	
S15.005	4.016	0.010	401.6	0.066	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.003	20.653	0.031	666.2	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.004	16.333	0.027	604.9	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.005	49.089	0.082	598.6	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.006	21.382	0.036	598.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S15.003	50.00	8.26	63.500	0.584	0.0	0.0	7.9	1.03	455.9	86.9
S19.000	50.00	4.51	63.900	0.043	0.0	0.0	0.6	0.87	34.7	6.5
S20.000	50.00	4.87	63.882	0.058	0.0	0.0	0.8	0.78	55.3	8.6
S19.001	50.00	6.12	63.780	0.310	0.0	0.0	4.2	1.07	75.5	46.2
S15.004	50.00	8.61	63.410	1.019	0.0	0.0	13.8	1.43	632.4	151.7
S15.005	50.00	8.66	63.330	1.084	0.0	0.0	14.7	1.39	614.2	161.5
S10.003	50.00	9.13	63.320	2.631	0.0	0.0	35.6	1.08	475.6	391.9
S10.004	50.00	9.37	63.289	2.631	0.0	0.0	35.6	1.13	499.4	391.9
S10.005	50.00	10.09	63.262	2.631	0.0	0.0	35.6	1.14	502.1	391.9
S10.006	50.00	10.77	63.180	2.631	0.0	0.0	35.6	0.53	21.0«	391.9

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SS110	65.950	1.046	Open Manhole	1200	S1.000	64.904	300				
SS111	65.850	1.425	Open Manhole	1200	S2.000	64.425	300				
SS112	66.100	2.047	Open Manhole	1200	S1.001	64.053	300	S1.000	64.425	300	372
								S2.000	64.054	300	1
SS108	66.000	1.425	Open Manhole	1200	S3.000	64.575	225				
SS107	65.900	1.500	Open Manhole	1200	S4.000	64.400	300				
SS109	65.770	1.751	Open Manhole	1350	S3.001	64.019	375	S3.000	64.094	225	
								S4.000	64.094	300	
SS113	66.300	2.487	Open Manhole	1350	S1.002	63.813	375	S1.001	63.888	300	
								S3.001	63.813	375	
SS101	66.750	1.425	Open Manhole	1200	S5.000	65.325	225				
SS102	66.350	1.425	Open Manhole	1200	S5.001	64.925	225	S5.000	64.925	225	
SS103	66.100	1.405	Open Manhole	1200	S5.002	64.695	300	S5.001	64.770	225	
SS104	65.850	1.425	Open Manhole	1200	S6.000	64.425	225				
SS105	65.740	1.620	Open Manhole	1350	S5.003	64.120	375	S5.002	64.120	300	
								S6.000	64.195	225	
SS106	65.900	1.966	Open Manhole	1500	S5.004	63.934	600	S5.003	63.934	375	
SS116	66.600	1.610	Open Manhole	1200	S7.000	64.990	300				
SS114	66.150	1.480	Open Manhole	1350	S8.000	64.670	375				
SS115	66.600	2.155	Open Manhole	1350	S8.001	64.445	375	S8.000	64.445	375	
SS116	66.650	2.290	Open Manhole	1350	S7.001	64.360	375	S7.000	64.380	300	
								S8.001	64.360	375	
SS118	66.550	1.425	Open Manhole	1200	S9.000	65.125	225				
SS119	66.750	2.921	Open Manhole	1350	S7.002	63.830	450	S7.001	63.830	375	
								S9.000	63.829	225	
SS120	66.200	2.504	Open Manhole	1500	S1.003	63.696	600	S1.002	63.696	375	
								S5.004	63.696	600	
								S7.002	63.696	450	
SS121	66.200	2.528	Open Manhole	1800	S1.004	63.672	750	S1.003	63.672	600	
SS122	66.750	3.145	Open Manhole	1800	S1.005	63.605	225	S1.004	63.605	750	
SS123	66.800	3.218	Open Manhole	1200	S1.006	63.582	225	S1.005	63.582	225	
SS124	66.350	2.898	Open Manhole	1200	S1.007	63.452	225	S1.006	63.452	225	
SS125	66.100	2.810	Open Manhole	1200	S1.008	63.291	225	S1.007	63.290	225	
S	66.100	2.830	Open Manhole	0		OUTFALL		S1.008	63.270	225	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdro (mm)
SS214	67.100	3.040	Open Manhole	1200	S10.000	64.060	300				
SS215	67.500	3.650	Open Manhole	1200	S10.001	63.850	300	S10.000	63.850	300	
SS210	66.700	2.500	Open Manhole	1200	S11.000	64.200	225				
SS209	66.750	2.540	Open Manhole	1200	S12.000	64.210	225				
SS211	66.800	2.830	Open Manhole	1200	S11.001	63.970	225	S11.000	63.970	225	
								S12.000	63.970	225	
SS201	66.750	1.940	Open Manhole	1200	S13.000	64.810	225				
SS202	66.850	2.200	Open Manhole	1200	S13.001	64.650	225	S13.000	64.650	225	
SS203	66.900	2.370	Open Manhole	1200	S13.002	64.530	300	S13.001	64.530	225	
SS204	66.850	2.360	Open Manhole	1200	S13.003	64.490	300	S13.002	64.490	300	
SS205	66.800	2.370	Open Manhole	1200	S13.004	64.430	300	S13.003	64.430	300	
SS206	66.950	2.680	Open Manhole	1200	S14.000	64.270	225				
SS207	66.700	2.500	Open Manhole	1350	S13.005	64.200	375	S13.004	64.200	300	
								S14.000	64.200	225	
SS208	66.800	2.910	Open Manhole	1350	S13.006	63.890	375	S13.005	63.890	375	
SS212	66.900	3.050	Open Manhole	1350	S11.002	63.850	375	S11.001	63.850	225	
								S13.006	63.850	375	
SS213	67.000	3.200	Open Manhole	1350	S11.003	63.800	450	S11.002	63.800	375	
SS216	67.250	3.740	Open Manhole	1350	S10.002	63.510	450	S10.001	63.510	300	
								S11.003	63.510	450	
SS222	65.900	2.230	Open Manhole	1800	S15.000	63.670	750				
SS223	66.200	2.560	Open Manhole	1800	S15.001	63.640	750	S15.000	63.640	750	
SS217	66.000	1.360	Open Manhole	1200	S16.000	64.640	225				
SS218	66.200	1.790	Open Manhole	1200	S16.001	64.410	225	S16.000	64.410	225	
SS219	66.350	2.030	Open Manhole	1200	S16.002	64.320	225	S16.001	64.320	225	
SS220	66.100	1.760	Open Manhole	1200	S17.000	64.340	225				
SS221	66.150	1.870	Open Manhole	1200	S16.003	64.280	300	S16.002	64.280	225	
								S17.000	64.280	225	
SS224	66.100	2.530	Open Manhole	1800	S15.002	63.570	750	S15.001	63.570	750	
								S16.003	64.080	300	6(
SS225	66.000	1.800	Open Manhole	1200	S18.000	64.200	225				
SS220	65.850	2.350	Open Manhole	1800	S15.003	63.500	750	S15.002	63.500	750	
								S18.000	63.860	225	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SS229	67.000	3.100	Open Manhole	1200	S19.000	63.900	225				
SS228	66.500	2.618	Open Manhole	1200	S20.000	63.882	300				
SS230	66.500	2.721	Open Manhole	1200	S19.001	63.780	300	S19.000	63.780	225	
								S20.000	63.779	300	
SS227	66.450	3.040	Open Manhole	1800	S15.004	63.410	750	S15.003	63.410	750	
								S19.001	63.410	300	
SS231	66.450	3.120	Open Manhole	1800	S15.005	63.330	750	S15.004	63.330	750	
SS232	66.750	3.430	Open Manhole	1800	S10.003	63.320	750	S10.002	63.320	450	
								S15.005	63.320	750	
SS233	66.000	2.711	Open Manhole	1800	S10.004	63.289	750	S10.003	63.289	750	
SS234	65.500	2.238	Open Manhole	1800	S10.005	63.262	750	S10.004	63.262	750	
SS235	65.350	2.170	Open Manhole	1800	S10.006	63.180	225	S10.005	63.180	750	
S	64.700	1.556	Open Manhole	0		OUTFALL		S10.006	63.144	225	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	300	SS110	65.950	64.904	0.746	Open Manhole	1200
S2.000	o	300	SS111	65.850	64.425	1.125	Open Manhole	1200
S1.001	o	300	SS112	66.100	64.053	1.747	Open Manhole	1200
S3.000	o	225	SS108	66.000	64.575	1.200	Open Manhole	1200
S4.000	o	300	SS107	65.900	64.400	1.200	Open Manhole	1200
S3.001	o	375	SS109	65.770	64.019	1.376	Open Manhole	1350
S1.002	o	375	SS113	66.300	63.813	2.112	Open Manhole	1350
S5.000	o	225	SS101	66.750	65.325	1.200	Open Manhole	1200
S5.001	o	225	SS102	66.350	64.925	1.200	Open Manhole	1200
S5.002	o	300	SS103	66.100	64.695	1.105	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	47.891	100.0	SS112	66.100	64.425	1.375	Open Manhole	1200
S2.000	44.572	120.0	SS112	66.100	64.054	1.746	Open Manhole	1200
S1.001	27.099	164.2	SS113	66.300	63.888	2.112	Open Manhole	1350
S3.000	36.349	75.6	SS109	65.770	64.094	1.451	Open Manhole	1350
S4.000	45.814	149.7	SS109	65.770	64.094	1.376	Open Manhole	1350
S3.001	46.218	224.4	SS113	66.300	63.813	2.112	Open Manhole	1350
S1.002	67.267	574.9	SS120	66.200	63.696	2.129	Open Manhole	1500
S5.000	37.726	94.3	SS102	66.350	64.925	1.200	Open Manhole	1200
S5.001	38.653	249.4	SS103	66.100	64.770	1.105	Open Manhole	1200
S5.002	70.035	121.8	SS105	65.740	64.120	1.320	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S6.000	o	225	SS104	65.850	64.425	1.200	Open Manhole	1200
S5.003	o	375	SS105	65.740	64.120	1.245	Open Manhole	1350
S5.004	o	600	SS106	65.900	63.934	1.366	Open Manhole	1500
S7.000	o	300	SS116	66.600	64.990	1.310	Open Manhole	1200
S8.000	o	375	SS114	66.150	64.670	1.105	Open Manhole	1350
S8.001	o	375	SS115	66.600	64.445	1.780	Open Manhole	1350
S7.001	o	375	SS116	66.650	64.360	1.915	Open Manhole	1350
S9.000	o	225	SS118	66.550	65.125	1.200	Open Manhole	1200
S7.002	o	450	SS119	66.750	63.830	2.470	Open Manhole	1350
S1.003	o	600	SS120	66.200	63.696	1.904	Open Manhole	1500
S1.004	o	750	SS121	66.200	63.672	1.778	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S6.000	33.520	145.7	SS105	65.740	64.195	1.320	Open Manhole	1350
S5.003	43.075	231.6	SS106	65.900	63.934	1.591	Open Manhole	1500
S5.004	55.087	231.5	SS120	66.200	63.696	1.904	Open Manhole	1500
S7.000	105.943	173.7	SS116	66.650	64.380	1.970	Open Manhole	1350
S8.000	53.499	237.8	SS115	66.600	64.445	1.780	Open Manhole	1350
S8.001	20.097	236.4	SS116	66.650	64.360	1.915	Open Manhole	1350
S7.001	78.729	148.5	SS119	66.750	63.830	2.545	Open Manhole	1350
S9.000	76.216	58.8	SS119	66.750	63.829	2.696	Open Manhole	1350
S7.002	20.805	155.3	SS120	66.200	63.696	2.054	Open Manhole	1500
S1.003	5.902	245.9	SS121	66.200	63.672	1.928	Open Manhole	1800
S1.004	60.709	906.1	SS122	66.750	63.605	2.395	Open Manhole	1800

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.005	o	225	SS122	66.750	63.605	2.920	Open Manhole	1800
S1.006	o	225	SS123	66.800	63.582	2.993	Open Manhole	1200
S1.007	o	225	SS124	66.350	63.452	2.673	Open Manhole	1200
S1.008	o	225	SS125	66.100	63.291	2.584	Open Manhole	1200
S10.000	o	300	SS214	67.100	64.060	2.740	Open Manhole	1200
S10.001	o	300	SS215	67.500	63.850	3.350	Open Manhole	1200
S11.000	o	225	SS210	66.700	64.200	2.275	Open Manhole	1200
S12.000	o	225	SS209	66.750	64.210	2.315	Open Manhole	1200
S11.001	o	225	SS211	66.800	63.970	2.605	Open Manhole	1200
S13.000	o	225	SS201	66.750	64.810	1.715	Open Manhole	1200
S13.001	o	225	SS202	66.850	64.650	1.975	Open Manhole	1200
S13.002	o	300	SS203	66.900	64.530	2.070	Open Manhole	1200
S13.003	o	300	SS204	66.850	64.490	2.060	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.005	6.764	300.0	SS123	66.800	63.582	2.993	Open Manhole	1200
S1.006	39.086	300.0	SS124	66.350	63.452	2.673	Open Manhole	1200
S1.007	48.491	300.0	SS125	66.100	63.290	2.585	Open Manhole	1200
S1.008	6.236	300.0	S	66.100	63.270	2.605	Open Manhole	0
S10.000	47.647	226.9	SS215	67.500	63.850	3.350	Open Manhole	1200
S10.001	76.508	225.0	SS216	67.250	63.510	3.440	Open Manhole	1350
S11.000	50.741	220.6	SS211	66.800	63.970	2.605	Open Manhole	1200
S12.000	55.287	230.4	SS211	66.800	63.970	2.605	Open Manhole	1200
S11.001	26.083	217.4	SS212	66.900	63.850	2.825	Open Manhole	1350
S13.000	35.184	219.9	SS202	66.850	64.650	1.975	Open Manhole	1200
S13.001	28.457	237.1	SS203	66.900	64.530	2.145	Open Manhole	1200
S13.002	10.027	250.7	SS204	66.850	64.490	2.060	Open Manhole	1200
S13.003	11.539	192.3	SS205	66.800	64.430	2.070	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S13.004	o	300	SS205	66.800	64.430	2.070	Open Manhole	1200
S14.000	o	225	SS206	66.950	64.270	2.455	Open Manhole	1200
S13.005	o	375	SS207	66.700	64.200	2.125	Open Manhole	1350
S13.006	o	375	SS208	66.800	63.890	2.535	Open Manhole	1350
S11.002	o	375	SS212	66.900	63.850	2.675	Open Manhole	1350
S11.003	o	450	SS213	67.000	63.800	2.750	Open Manhole	1350
S10.002	o	450	SS216	67.250	63.510	3.290	Open Manhole	1350
S15.000	o	750	SS222	65.900	63.670	1.480	Open Manhole	1800
S15.001	o	750	SS223	66.200	63.640	1.810	Open Manhole	1800
S16.000	o	225	SS217	66.000	64.640	1.135	Open Manhole	1200
S16.001	o	225	SS218	66.200	64.410	1.565	Open Manhole	1200
S16.002	o	225	SS219	66.350	64.320	1.805	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S13.004	51.717	224.9	SS207	66.700	64.200	2.200	Open Manhole	1350
S14.000	21.348	305.0	SS207	66.700	64.200	2.275	Open Manhole	1350
S13.005	70.828	228.5	SS208	66.800	63.890	2.535	Open Manhole	1350
S13.006	8.146	203.7	SS212	66.900	63.850	2.675	Open Manhole	1350
S11.002	11.294	225.9	SS213	67.000	63.800	2.825	Open Manhole	1350
S11.003	66.102	227.9	SS216	67.250	63.510	3.290	Open Manhole	1350
S10.002	32.104	169.0	SS232	66.750	63.320	2.980	Open Manhole	1800
S15.000	26.075	869.2	SS223	66.200	63.640	1.810	Open Manhole	1800
S15.001	50.212	717.3	SS224	66.100	63.570	1.780	Open Manhole	1800
S16.000	50.617	220.1	SS218	66.200	64.410	1.565	Open Manhole	1200
S16.001	19.635	218.2	SS219	66.350	64.320	1.805	Open Manhole	1200
S16.002	9.341	233.5	SS221	66.150	64.280	1.645	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.000	o	225	SS220	66.100	64.340	1.535	Open Manhole	1200
S16.003	o	300	SS221	66.150	64.280	1.570	Open Manhole	1200
S15.002	o	750	SS224	66.100	63.570	1.780	Open Manhole	1800
S18.000	o	225	SS225	66.000	64.200	1.575	Open Manhole	1200
S15.003	o	750	SS220	65.850	63.500	1.600	Open Manhole	1800
S19.000	o	225	SS229	67.000	63.900	2.875	Open Manhole	1200
S20.000	o	300	SS228	66.500	63.882	2.318	Open Manhole	1200
S19.001	o	300	SS230	66.500	63.780	2.420	Open Manhole	1200
S15.004	o	750	SS227	66.450	63.410	2.290	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.000	12.814	213.6	SS221	66.150	64.280	1.645	Open Manhole	1200
S16.003	50.011	250.1	SS224	66.100	64.080	1.720	Open Manhole	1800
S15.002	51.920	741.7	SS220	65.850	63.500	1.600	Open Manhole	1800
S18.000	20.049	59.0	SS220	65.850	63.860	1.765	Open Manhole	1800
S15.003	65.202	724.5	SS227	66.450	63.410	2.290	Open Manhole	1800
S19.000	26.689	222.4	SS230	66.500	63.780	2.495	Open Manhole	1200
S20.000	41.030	398.3	SS230	66.500	63.779	2.421	Open Manhole	1200
S19.001	79.656	215.3	SS227	66.450	63.410	2.740	Open Manhole	1800
S15.004	30.318	379.0	SS231	66.450	63.330	2.370	Open Manhole	1800

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S15.005	o	750	SS231	66.450	63.330	2.370	Open Manhole	1800
S10.003	o	750	SS232	66.750	63.320	2.680	Open Manhole	1800
S10.004	o	750	SS233	66.000	63.289	1.961	Open Manhole	1800
S10.005	o	750	SS234	65.500	63.262	1.488	Open Manhole	1800
S10.006	o	225	SS235	65.350	63.180	1.945	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S15.005	4.016	401.6	SS232	66.750	63.320	2.680	Open Manhole	1800
S10.003	20.653	666.2	SS233	66.000	63.289	1.961	Open Manhole	1800
S10.004	16.333	604.9	SS234	65.500	63.262	1.488	Open Manhole	1800
S10.005	49.089	598.6	SS235	65.350	63.180	1.420	Open Manhole	1800
S10.006	21.382	598.6	S	64.700	63.144	1.331	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.182	0.182	0.182
2.000	User	-	100	0.136	0.136	0.136
1.001	User	-	100	0.061	0.061	0.061
3.000	User	-	100	0.129	0.129	0.129
4.000	User	-	100	0.152	0.152	0.152
3.001	User	-	100	0.123	0.123	0.123
1.002	-	-	100	0.000	0.000	0.000
5.000	User	-	100	0.118	0.118	0.118
5.001	User	-	100	0.042	0.042	0.042
5.002	User	-	100	0.118	0.118	0.118
6.000	User	-	100	0.108	0.108	0.108
5.003	User	-	100	0.096	0.096	0.096
5.004	User	-	100	0.181	0.181	0.181
7.000	User	-	100	0.288	0.288	0.288
8.000	User	-	100	0.286	0.286	0.286
8.001	User	-	100	0.022	0.022	0.022
7.001	User	-	100	0.161	0.161	0.161
9.000	User	-	100	0.236	0.236	0.236
7.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
10.000	User	-	100	0.355	0.355	0.355
10.001	-	-	100	0.000	0.000	0.000
11.000	User	-	100	0.095	0.095	0.095
12.000	User	-	100	0.183	0.183	0.183
11.001	-	-	100	0.000	0.000	0.000
13.000	User	-	100	0.052	0.052	0.052
13.001	User	-	100	0.098	0.098	0.098
13.002	User	-	100	0.032	0.032	0.032
13.003	User	-	100	0.011	0.011	0.011
13.004	User	-	100	0.054	0.054	0.054
14.000	User	-	100	0.049	0.049	0.049
13.005	User	-	100	0.264	0.264	0.264
13.006	User	-	100	0.017	0.017	0.017
11.002	User	-	100	0.016	0.016	0.016
11.003	User	-	100	0.252	0.252	0.252
10.002	User	-	100	0.068	0.068	0.068
15.000	User	-	100	0.039	0.039	0.039
15.001	User	-	100	0.135	0.135	0.135
16.000	User	-	100	0.136	0.136	0.136
16.001	User	-	100	0.029	0.029	0.029
16.002	-	-	100	0.000	0.000	0.000

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
17.000	User	-	100	0.027	0.027	0.027
16.003	User	-	100	0.049	0.049	0.049
15.002	User	-	100	0.131	0.131	0.131
18.000	User	-	100	0.039	0.039	0.039
15.003	-	-	100	0.000	0.000	0.000
19.000	User	-	100	0.043	0.043	0.043
20.000	User	-	100	0.058	0.058	0.058
19.001	User	-	100	0.209	0.209	0.209
15.004	User	-	100	0.125	0.125	0.125
15.005	User	-	100	0.066	0.066	0.066
10.003	-	-	100	0.000	0.000	0.000
10.004	-	-	100	0.000	0.000	0.000
10.005	-	-	100	0.000	0.000	0.000
10.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				5.070	5.070	5.070

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.008	S	66.100	63.270	0.000	0	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S10.006	S	64.700	63.144	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	10.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	20.000	Storm Duration (mins)	30
Ratio R	0.200		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: SS121, DS/PN: S1.004, Volume (m³): 7.6

Unit Reference	MD-SHE-0206-2430-1700-2430
Design Head (m)	1.700
Design Flow (l/s)	24.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	206
Invert Level (m)	63.672
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	24.3	Kick-Flo®	1.100	19.7
Flush-Flo™	0.506	24.3	Mean Flow over Head Range	-	21.0

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.1	1.200	20.6	3.000	31.9	7.000	48.0
0.200	19.8	1.400	22.1	3.500	34.3	7.500	49.6
0.300	23.2	1.600	23.6	4.000	36.6	8.000	51.2
0.400	24.1	1.800	25.0	4.500	38.7	8.500	52.7
0.500	24.3	2.000	26.2	5.000	40.8	9.000	54.2
0.600	24.2	2.200	27.5	5.500	42.7	9.500	55.6
0.800	23.4	2.400	28.6	6.000	44.5		
1.000	21.6	2.600	29.8	6.500	46.3		

Hydro-Brake® Optimum Manhole: SS234, DS/PN: S10.005, Volume (m³): 12.1

Unit Reference	MD-SHE-0290-5100-1600-5100
Design Head (m)	1.600
Design Flow (l/s)	51.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	290
Invert Level (m)	63.262
Minimum Outlet Pipe Diameter (mm)	375

Hydro-Brake® Optimum Manhole: SS234, DS/PN: S10.005, Volume (m³): 12.1

Suggested Manhole Diameter (mm) 2100

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	51.0	Kick-Flo®	1.119	42.9
Flush-Flo™	0.520	50.9	Mean Flow over Head Range	-	43.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.0	1.200	44.4	3.000	69.1	7.000	104.3
0.200	29.8	1.400	47.8	3.500	74.5	7.500	107.9
0.300	48.4	1.600	51.0	4.000	79.5	8.000	111.4
0.400	50.3	1.800	54.0	4.500	84.1	8.500	114.7
0.500	50.9	2.000	56.8	5.000	88.6	9.000	118.0
0.600	50.8	2.200	59.5	5.500	92.8	9.500	121.1
0.800	49.5	2.400	62.0	6.000	96.8		
1.000	46.8	2.600	64.5	6.500	100.6		

Storage Structures for Storm

Cellular Storage Manhole: SS121, DS/PN: S1.004

Invert Level (m) 63.672 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.60
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	1133.0	0.0	0.400	1133.0	0.0
0.100	1133.0	0.0	0.500	1133.0	0.0
0.200	1133.0	0.0	0.700	1133.0	0.0
0.300	1133.0	0.0	0.885	1133.0	0.0

Cellular Storage Manhole: SS234, DS/PN: S10.005

Invert Level (m) 63.262 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.60
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	871.0	0.0	0.600	871.0	0.0
0.100	871.0	0.0	0.700	871.0	0.0
0.200	871.0	0.0	0.717	871.0	0.0
0.300	871.0	0.0	1.000	871.0	0.0
0.400	871.0	0.0	1.200	871.0	0.0
0.500	871.0	0.0			

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1
Climate Change (%) 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	1	+10%					65.006
S2.000	SS111	15 Winter	1	+10%					64.518
S1.001	SS112	30 Winter	1	+10%	1/15 Winter				64.367
S3.000	SS108	15 Winter	1	+10%					64.664
S4.000	SS107	15 Winter	1	+10%					64.504
S3.001	SS109	30 Winter	1	+10%					64.352
S1.002	SS113	30 Winter	1	+10%	1/15 Summer				64.322
S5.000	SS101	15 Winter	1	+10%					65.415
S5.001	SS102	15 Winter	1	+10%					65.068
S5.002	SS103	15 Winter	1	+10%					64.819
S6.000	SS104	15 Winter	1	+10%					64.522
S5.003	SS105	720 Winter	1	+10%					64.316
S5.004	SS106	720 Winter	1	+10%					64.312
S7.000	SS116	15 Winter	1	+10%					65.144
S8.000	SS114	15 Winter	1	+10%					64.823
S8.001	SS115	15 Winter	1	+10%					64.653

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	-0.198	0.000	0.26		26.7	OK	
S2.000	SS111	-0.207	0.000	0.21		20.0	OK	
S1.001	SS112	0.014	0.000	0.54		42.0	SURCHARGED	
S3.000	SS108	-0.136	0.000	0.34		19.0	OK	
S4.000	SS107	-0.196	0.000	0.26		22.1	OK	
S3.001	SS109	-0.042	0.000	0.34		42.0	OK	
S1.002	SS113	0.134	0.000	0.89		69.7	SURCHARGED	
S5.000	SS101	-0.135	0.000	0.34		17.4	OK	
S5.001	SS102	-0.082	0.000	0.71		22.1	OK	
S5.002	SS103	-0.176	0.000	0.36		34.8	OK	
S6.000	SS104	-0.128	0.000	0.39		15.9	OK	
S5.003	SS105	-0.179	0.000	0.10		11.7	OK	
S5.004	SS106	-0.222	0.000	0.04		15.5	OK	
S7.000	SS116	-0.146	0.000	0.48		39.6	OK	
S8.000	SS114	-0.222	0.000	0.34		41.2	OK	
S8.001	SS115	-0.167	0.000	0.38		41.5	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	1	+10%					64.579
S9.000	SS118	15 Winter	1	+10%					65.242
S7.002	SS119	720 Winter	1	+10%	1/480 Winter				64.314
S1.003	SS120	480 Winter	1	+10%	1/480 Winter				64.319
S1.004	SS121	480 Winter	1	+10%					64.330
S1.005	SS122	480 Winter	1	+10%	1/180 Winter				63.884
S1.006	SS123	480 Winter	1	+10%					63.793
S1.007	SS124	480 Winter	1	+10%					63.651
S1.008	SS125	600 Summer	1	+10%					63.516
S10.000	SS214	15 Winter	1	+10%					64.260
S10.001	SS215	15 Winter	1	+10%					64.040
S11.000	SS210	15 Winter	1	+10%					64.310
S12.000	SS209	15 Winter	1	+10%					64.391
S11.001	SS211	15 Winter	1	+10%	1/15 Summer				64.268
S13.000	SS201	15 Winter	1	+10%					64.883
S13.001	SS202	15 Winter	1	+10%					64.776
S13.002	SS203	15 Winter	1	+10%					64.670
S13.003	SS204	15 Winter	1	+10%					64.626
S13.004	SS205	15 Winter	1	+10%					64.565
S14.000	SS206	15 Winter	1	+10%					64.383
S13.005	SS207	15 Winter	1	+10%					64.387
S13.006	SS208	15 Winter	1	+10%					64.212
S11.002	SS212	15 Winter	1	+10%					64.170
S11.003	SS213	30 Winter	1	+10%					64.061
S10.002	SS216	30 Winter	1	+10%	1/30 Winter				63.962
S15.000	SS222	30 Winter	1	+10%					63.891
S15.001	SS223	30 Winter	1	+10%					63.879
S16.000	SS217	15 Winter	1	+10%					64.767
S16.001	SS218	15 Winter	1	+10%					64.554
S16.002	SS219	15 Winter	1	+10%					64.475
S17.000	SS220	15 Winter	1	+10%					64.424
S16.003	SS221	15 Winter	1	+10%					64.423
S15.002	SS224	30 Winter	1	+10%					63.872
S18.000	SS225	15 Winter	1	+10%					64.241
S15.003	SS220	30 Winter	1	+10%					63.857
S19.000	SS229	15 Winter	1	+10%					63.972
S20.000	SS228	15 Winter	1	+10%					63.975
S19.001	SS230	15 Winter	1	+10%					63.935
S15.004	SS227	30 Winter	1	+10%					63.865
S15.005	SS231	360 Winter	1	+10%					63.888
S10.003	SS232	360 Winter	1	+10%					63.889
S10.004	SS233	360 Winter	1	+10%					63.879
S10.005	SS234	360 Winter	1	+10%					63.884
S10.006	SS235	600 Winter	1	+10%	1/30 Summer				63.554

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	-0.156	0.000	0.61		95.0	OK	
S9.000	SS118	-0.108	0.000	0.52		34.2	OK	
S7.002	SS119	0.034	0.000	0.11		23.4	SURCHARGED	
S1.003	SS120	0.023	0.000	0.31		70.9	SURCHARGED	
S1.004	SS121	-0.092	0.000	0.07		23.9	OK	
S1.005	SS122	0.054	0.000	1.03		23.9	SURCHARGED	
S1.006	SS123	-0.014	0.000	0.84		23.9	OK	
S1.007	SS124	-0.026	0.000	0.84		23.9	OK	
S1.008	SS125	0.000	0.000	1.05		24.0	OK	
S10.000	SS214	-0.100	0.000	0.74		51.3	OK	
S10.001	SS215	-0.110	0.000	0.69		49.0	OK	
S11.000	SS210	-0.115	0.000	0.40		13.3	OK	
S12.000	SS209	-0.044	0.000	0.78		25.5	OK	
S11.001	SS211	0.073	0.000	0.91		29.5	SURCHARGED	
S13.000	SS201	-0.152	0.000	0.23		7.6	OK	
S13.001	SS202	-0.099	0.000	0.60		18.7	OK	
S13.002	SS203	-0.160	0.000	0.40		22.0	OK	
S13.003	SS204	-0.164	0.000	0.38		23.5	OK	
S13.004	SS205	-0.165	0.000	0.41		28.9	OK	
S14.000	SS206	-0.112	0.000	0.26		7.0	OK	
S13.005	SS207	-0.188	0.000	0.48		60.0	OK	
S13.006	SS208	-0.053	0.000	0.61		60.0	OK	
S11.002	SS212	-0.055	0.000	0.87		87.5	OK	
S11.003	SS213	-0.189	0.000	0.54		107.2	OK	
S10.002	SS216	0.002	0.000	0.61		131.0	SURCHARGED	
S15.000	SS222	-0.529	0.000	0.02		4.3	OK	
S15.001	SS223	-0.511	0.000	0.03		13.5	OK	
S16.000	SS217	-0.098	0.000	0.58		19.4	OK	
S16.001	SS218	-0.081	0.000	0.69		22.0	OK	
S16.002	SS219	-0.070	0.000	0.79		22.1	OK	
S17.000	SS220	-0.141	0.000	0.13		3.9	OK	
S16.003	SS221	-0.157	0.000	0.46		30.3	OK	
S15.002	SS224	-0.448	0.000	0.12		45.4	OK	
S18.000	SS225	-0.184	0.000	0.09		5.7	OK	
S15.003	SS220	-0.393	0.000	0.10		38.7	OK	
S19.000	SS229	-0.153	0.000	0.20		6.4	OK	
S20.000	SS228	-0.207	0.000	0.16		8.1	OK	
S19.001	SS230	-0.145	0.000	0.50		36.6	OK	
S15.004	SS227	-0.295	0.000	0.13		65.9	OK	
S15.005	SS231	-0.192	0.000	0.09		33.4	OK	
S10.003	SS232	-0.181	0.000	0.32		86.5	OK	
S10.004	SS233	-0.160	0.000	0.35		85.4	OK	
S10.005	SS234	-0.128	0.000	0.10		43.4	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.149	0.000	2.69		44.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2
Climate Change (%) 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	2	+10%					65.017
S2.000	SS111	15 Winter	2	+10%					64.528
S1.001	SS112	30 Winter	2	+10%	2/15 Summer				64.490
S3.000	SS108	15 Winter	2	+10%					64.674
S4.000	SS107	30 Winter	2	+10%					64.530
S3.001	SS109	30 Winter	2	+10%	2/15 Summer				64.477
S1.002	SS113	720 Winter	2	+10%	2/15 Summer				64.460
S5.000	SS101	15 Winter	2	+10%					65.426
S5.001	SS102	15 Winter	2	+10%					65.091
S5.002	SS103	15 Winter	2	+10%					64.834
S6.000	SS104	15 Winter	2	+10%					64.534
S5.003	SS105	720 Winter	2	+10%					64.458
S5.004	SS106	720 Winter	2	+10%					64.454
S7.000	SS116	15 Winter	2	+10%					65.164
S8.000	SS114	15 Winter	2	+10%					64.841
S8.001	SS115	15 Winter	2	+10%					64.674

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	-0.187	0.000	0.31		32.3	OK	
S2.000	SS111	-0.197	0.000	0.25		24.1	OK	
S1.001	SS112	0.137	0.000	0.58		45.3	SURCHARGED	
S3.000	SS108	-0.126	0.000	0.40		22.9	OK	
S4.000	SS107	-0.170	0.000	0.26		22.2	OK	
S3.001	SS109	0.083	0.000	0.39		48.1	SURCHARGED	
S1.002	SS113	0.272	0.000	0.26		20.1	SURCHARGED	
S5.000	SS101	-0.124	0.000	0.41		21.0	OK	
S5.001	SS102	-0.059	0.000	0.85		26.5	OK	
S5.002	SS103	-0.161	0.000	0.43		41.8	OK	
S6.000	SS104	-0.116	0.000	0.47		19.1	OK	
S5.003	SS105	-0.037	0.000	0.11		13.4	OK	
S5.004	SS106	-0.080	0.000	0.04		17.5	OK	
S7.000	SS116	-0.126	0.000	0.58		47.7	OK	
S8.000	SS114	-0.204	0.000	0.41		49.8	OK	
S8.001	SS115	-0.146	0.000	0.46		50.4	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	2	+10%					64.613
S9.000	SS118	15 Winter	2	+10%					65.257
S7.002	SS119	720 Winter	2	+10%	2/15 Summer				64.456
S1.003	SS120	480 Winter	2	+10%	2/180 Winter				64.453
S1.004	SS121	480 Winter	2	+10%	2/480 Winter				64.460
S1.005	SS122	480 Winter	2	+10%	2/120 Summer				63.886
S1.006	SS123	480 Winter	2	+10%					63.796
S1.007	SS124	480 Winter	2	+10%					63.652
S1.008	SS125	600 Summer	2	+10%					63.516
S10.000	SS214	15 Winter	2	+10%					64.309
S10.001	SS215	30 Winter	2	+10%					64.103
S11.000	SS210	15 Winter	2	+10%					64.382
S12.000	SS209	15 Winter	2	+10%	2/15 Summer				64.473
S11.001	SS211	15 Winter	2	+10%	2/15 Summer				64.348
S13.000	SS201	15 Winter	2	+10%					64.891
S13.001	SS202	15 Winter	2	+10%					64.793
S13.002	SS203	15 Winter	2	+10%					64.680
S13.003	SS204	15 Winter	2	+10%					64.636
S13.004	SS205	15 Winter	2	+10%					64.581
S14.000	SS206	15 Winter	2	+10%					64.412
S13.005	SS207	15 Winter	2	+10%					64.417
S13.006	SS208	30 Winter	2	+10%	2/15 Winter				64.317
S11.002	SS212	30 Winter	2	+10%	2/30 Winter				64.240
S11.003	SS213	30 Winter	2	+10%					64.143
S10.002	SS216	30 Winter	2	+10%	2/15 Winter				64.021
S15.000	SS222	600 Winter	2	+10%					63.935
S15.001	SS223	30 Winter	2	+10%					63.948
S16.000	SS217	15 Winter	2	+10%					64.784
S16.001	SS218	15 Winter	2	+10%					64.598
S16.002	SS219	15 Winter	2	+10%					64.497
S17.000	SS220	15 Winter	2	+10%					64.429
S16.003	SS221	15 Winter	2	+10%					64.434
S15.002	SS224	30 Winter	2	+10%					63.954
S18.000	SS225	15 Winter	2	+10%					64.246
S15.003	SS220	600 Winter	2	+10%					63.933
S19.000	SS229	15 Winter	2	+10%					63.986
S20.000	SS228	15 Winter	2	+10%					63.993
S19.001	SS230	30 Winter	2	+10%					63.989
S15.004	SS227	360 Winter	2	+10%					63.943
S15.005	SS231	360 Winter	2	+10%					63.966
S10.003	SS232	360 Winter	2	+10%					63.979
S10.004	SS233	360 Winter	2	+10%					63.975
S10.005	SS234	360 Winter	2	+10%					63.975
S10.006	SS235	600 Winter	2	+10%	2/15 Winter				63.592

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	-0.122	0.000	0.73		113.6	OK	
S9.000	SS118	-0.093	0.000	0.62		41.2	OK	
S7.002	SS119	0.176	0.000	0.13		26.8	SURCHARGED	
S1.003	SS120	0.157	0.000	0.35		80.5	SURCHARGED	
S1.004	SS121	0.038	0.000	0.07		24.0	SURCHARGED	
S1.005	SS122	0.056	0.000	1.03		24.0	SURCHARGED	
S1.006	SS123	-0.011	0.000	0.85		24.0	OK	
S1.007	SS124	-0.025	0.000	0.84		24.0	OK	
S1.008	SS125	0.000	0.000	1.06		24.2	OK	
S10.000	SS214	-0.051	0.000	0.88		61.1	OK	
S10.001	SS215	-0.047	0.000	0.69		48.7	OK	
S11.000	SS210	-0.043	0.000	0.48		15.9	OK	
S12.000	SS209	0.038	0.000	0.91		29.9	SURCHARGED	
S11.001	SS211	0.153	0.000	1.07		34.8	SURCHARGED	
S13.000	SS201	-0.144	0.000	0.28		9.1	OK	
S13.001	SS202	-0.082	0.000	0.72		22.6	OK	
S13.002	SS203	-0.150	0.000	0.49		26.6	OK	
S13.003	SS204	-0.154	0.000	0.46		28.3	OK	
S13.004	SS205	-0.149	0.000	0.50		34.8	OK	
S14.000	SS206	-0.083	0.000	0.31		8.3	OK	
S13.005	SS207	-0.158	0.000	0.57		70.9	OK	
S13.006	SS208	0.052	0.000	0.66		64.9	SURCHARGED	
S11.002	SS212	0.015	0.000	0.97		97.5	SURCHARGED	
S11.003	SS213	-0.107	0.000	0.62		123.6	OK	
S10.002	SS216	0.061	0.000	0.74		158.5	SURCHARGED	
S15.000	SS222	-0.485	0.000	0.00		1.1	OK	
S15.001	SS223	-0.442	0.000	0.05		18.3	OK	
S16.000	SS217	-0.081	0.000	0.69		23.3	OK	
S16.001	SS218	-0.037	0.000	0.77		24.5	OK	
S16.002	SS219	-0.048	0.000	0.89		24.7	OK	
S17.000	SS220	-0.136	0.000	0.15		4.6	OK	
S16.003	SS221	-0.146	0.000	0.52		34.0	OK	
S15.002	SS224	-0.366	0.000	0.14		54.3	OK	
S18.000	SS225	-0.179	0.000	0.11		6.9	OK	
S15.003	SS220	-0.317	0.000	0.04		14.4	OK	
S19.000	SS229	-0.139	0.000	0.23		7.5	OK	
S20.000	SS228	-0.189	0.000	0.19		9.7	OK	
S19.001	SS230	-0.091	0.000	0.54		39.5	OK	
S15.004	SS227	-0.217	0.000	0.07		34.0	OK	
S15.005	SS231	-0.114	0.000	0.10		35.8	OK	
S10.003	SS232	-0.091	0.000	0.36		96.4	OK	
S10.004	SS233	-0.064	0.000	0.39		94.7	OK	
S10.005	SS234	-0.037	0.000	0.11		48.3	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.187	0.000	2.94		48.9	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 30
Climate Change (%) 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	30	+10%	30/15 Winter				65.305
S2.000	SS111	15 Winter	30	+10%	30/15 Summer				65.278
S1.001	SS112	960 Winter	30	+10%	30/15 Summer				65.191
S3.000	SS108	15 Winter	30	+10%	30/15 Summer				65.292
S4.000	SS107	30 Winter	30	+10%	30/15 Summer				65.232
S3.001	SS109	960 Winter	30	+10%	30/15 Summer				65.190
S1.002	SS113	960 Winter	30	+10%	30/15 Summer				65.187
S5.000	SS101	15 Winter	30	+10%	30/15 Winter				65.552
S5.001	SS102	15 Winter	30	+10%	30/15 Summer				65.355
S5.002	SS103	960 Winter	30	+10%	30/15 Winter				65.190
S6.000	SS104	960 Winter	30	+10%	30/15 Summer				65.188
S5.003	SS105	960 Winter	30	+10%	30/15 Summer				65.185
S5.004	SS106	960 Winter	30	+10%	30/15 Winter				65.181
S7.000	SS116	15 Winter	30	+10%	30/15 Summer				65.566
S8.000	SS114	15 Winter	30	+10%	30/15 Summer				65.346
S8.001	SS115	15 Winter	30	+10%	30/15 Summer				65.267

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	0.101	0.000	0.55		57.6	SURCHARGED	
S2.000	SS111	0.553	0.000	0.36		33.8	SURCHARGED	
S1.001	SS112	0.838	0.000	0.17		12.9	SURCHARGED	
S3.000	SS108	0.492	0.000	0.64		36.2	SURCHARGED	
S4.000	SS107	0.532	0.000	0.39		33.3	SURCHARGED	
S3.001	SS109	0.796	0.000	0.11		13.7	SURCHARGED	
S1.002	SS113	0.999	0.000	0.34		26.4	SURCHARGED	
S5.000	SS101	0.002	0.000	0.71		36.0	SURCHARGED	
S5.001	SS102	0.205	0.000	1.48		45.9	SURCHARGED	
S5.002	SS103	0.195	0.000	0.11		10.3	SURCHARGED	
S6.000	SS104	0.538	0.000	0.10		3.8	SURCHARGED	
S5.003	SS105	0.690	0.000	0.14		16.6	SURCHARGED	
S5.004	SS106	0.647	0.000	0.06		22.8	SURCHARGED	
S7.000	SS116	0.276	0.000	0.96		78.2	SURCHARGED	
S8.000	SS114	0.301	0.000	0.72		86.5	SURCHARGED	
S8.001	SS115	0.447	0.000	0.60		65.5	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	30	+10%	30/15 Summer				65.239
S9.000	SS118	15 Winter	30	+10%	30/15 Summer				65.725
S7.002	SS119	960 Winter	30	+10%	30/15 Summer				65.183
S1.003	SS120	960 Winter	30	+10%	30/15 Summer				65.179
S1.004	SS121	960 Winter	30	+10%	30/60 Winter				65.177
S1.005	SS122	240 Summer	30	+10%	30/30 Summer				63.886
S1.006	SS123	60 Winter	30	+10%					63.797
S1.007	SS124	240 Summer	30	+10%					63.652
S1.008	SS125	720 Summer	30	+10%					63.516
S10.000	SS214	30 Summer	30	+10%	30/15 Summer				65.148
S10.001	SS215	30 Winter	30	+10%	30/15 Summer				64.871
S11.000	SS210	30 Winter	30	+10%	30/15 Summer				65.398
S12.000	SS209	30 Winter	30	+10%	30/15 Summer				65.595
S11.001	SS211	30 Winter	30	+10%	30/15 Summer				65.296
S13.000	SS201	30 Winter	30	+10%	30/15 Summer				65.563
S13.001	SS202	30 Winter	30	+10%	30/15 Summer				65.521
S13.002	SS203	30 Winter	30	+10%	30/15 Summer				65.423
S13.003	SS204	30 Winter	30	+10%	30/15 Summer				65.393
S13.004	SS205	30 Winter	30	+10%	30/15 Summer				65.362
S14.000	SS206	30 Winter	30	+10%	30/15 Summer				65.285
S13.005	SS207	30 Winter	30	+10%	30/15 Summer				65.266
S13.006	SS208	30 Winter	30	+10%	30/15 Summer				65.061
S11.002	SS212	30 Winter	30	+10%	30/15 Summer				64.960
S11.003	SS213	30 Winter	30	+10%	30/15 Summer				64.771
S10.002	SS216	360 Winter	30	+10%	30/15 Summer				64.550
S15.000	SS222	600 Winter	30	+10%	30/240 Winter				64.520
S15.001	SS223	600 Winter	30	+10%	30/180 Winter				64.520
S16.000	SS217	15 Winter	30	+10%	30/15 Summer				65.129
S16.001	SS218	15 Winter	30	+10%	30/15 Summer				64.866
S16.002	SS219	15 Winter	30	+10%	30/15 Summer				64.671
S17.000	SS220	600 Winter	30	+10%					64.528
S16.003	SS221	600 Winter	30	+10%					64.527
S15.002	SS224	600 Winter	30	+10%	30/180 Winter				64.520
S18.000	SS225	360 Winter	30	+10%	30/240 Winter				64.520
S15.003	SS220	360 Winter	30	+10%	30/120 Winter				64.521
S19.000	SS229	600 Winter	30	+10%	30/15 Summer				64.530
S20.000	SS228	360 Winter	30	+10%	30/15 Summer				64.535
S19.001	SS230	360 Winter	30	+10%	30/15 Summer				64.536
S15.004	SS227	360 Winter	30	+10%	30/60 Winter				64.536
S15.005	SS231	360 Winter	30	+10%	30/15 Winter				64.537
S10.003	SS232	360 Winter	30	+10%	30/15 Winter				64.551
S10.004	SS233	360 Winter	30	+10%	30/60 Summer				64.560
S10.005	SS234	360 Winter	30	+10%	30/60 Summer				64.562
S10.006	SS235	360 Summer	30	+10%	30/15 Summer				63.614

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	0.504	0.000	1.01		156.7	SURCHARGED	
S9.000	SS118	0.375	0.000	0.94		62.2	SURCHARGED	
S7.002	SS119	0.903	0.000	0.17		34.2	SURCHARGED	
S1.003	SS120	0.883	0.000	0.36		82.6	SURCHARGED	
S1.004	SS121	0.755	0.000	0.07		24.3	SURCHARGED	
S1.005	SS122	0.056	0.000	1.03		24.0	SURCHARGED	
S1.006	SS123	-0.010	0.000	0.83		23.6	OK	
S1.007	SS124	-0.025	0.000	0.84		24.0	OK	
S1.008	SS125	0.000	0.000	1.06		24.3	OK	
S10.000	SS214	0.788	0.000	1.36		94.0	SURCHARGED	
S10.001	SS215	0.721	0.000	1.10		78.0	SURCHARGED	
S11.000	SS210	0.973	0.000	0.54		18.0	SURCHARGED	
S12.000	SS209	1.160	0.000	1.14		37.5	SURCHARGED	
S11.001	SS211	1.101	0.000	1.67		54.1	SURCHARGED	
S13.000	SS201	0.528	0.000	0.37		12.3	SURCHARGED	
S13.001	SS202	0.646	0.000	0.99		30.8	SURCHARGED	
S13.002	SS203	0.593	0.000	0.60		33.0	SURCHARGED	
S13.003	SS204	0.603	0.000	0.57		34.8	SURCHARGED	
S13.004	SS205	0.632	0.000	0.64		44.3	SURCHARGED	
S14.000	SS206	0.790	0.000	0.39		10.4	SURCHARGED	
S13.005	SS207	0.691	0.000	0.79		98.3	SURCHARGED	
S13.006	SS208	0.796	0.000	1.04		101.6	SURCHARGED	
S11.002	SS212	0.735	0.000	1.58		159.0	SURCHARGED	
S11.003	SS213	0.521	0.000	1.02		201.9	SURCHARGED	
S10.002	SS216	0.590	0.000	0.45		96.6	SURCHARGED	
S15.000	SS222	0.100	0.000	0.01		1.6	SURCHARGED	
S15.001	SS223	0.130	0.000	0.02		6.2	SURCHARGED	
S16.000	SS217	0.264	0.000	1.14		38.2	SURCHARGED	
S16.001	SS218	0.231	0.000	1.38		43.7	SURCHARGED	
S16.002	SS219	0.126	0.000	1.57		43.7	SURCHARGED	
S17.000	SS220	-0.037	0.000	0.04		1.3	OK	
S16.003	SS221	-0.053	0.000	0.18		11.8	OK	
S15.002	SS224	0.200	0.000	0.05		20.5	SURCHARGED	
S18.000	SS225	0.095	0.000	0.04		2.6	SURCHARGED	
S15.003	SS220	0.271	0.000	0.08		32.1	SURCHARGED	
S19.000	SS229	0.405	0.000	0.06		2.0	SURCHARGED	
S20.000	SS228	0.353	0.000	0.07		3.8	SURCHARGED	
S19.001	SS230	0.456	0.000	0.27		19.6	SURCHARGED	
S15.004	SS227	0.376	0.000	0.12		57.0	SURCHARGED	
S15.005	SS231	0.457	0.000	0.17		61.6	SURCHARGED	
S10.003	SS232	0.481	0.000	0.59		157.9	SURCHARGED	
S10.004	SS233	0.521	0.000	0.63		154.4	SURCHARGED	
S10.005	SS234	0.550	0.000	0.12		50.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.209	0.000	3.06		50.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 100
Climate Change (%) 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	100	+10%	100/15 Summer				65.845
S2.000	SS111	15 Winter	100	+10%	100/15 Summer				65.819
S1.001	SS112	30 Winter	100	+10%	100/15 Summer				65.893
S3.000	SS108	15 Winter	100	+10%	100/15 Summer				65.830
S4.000	SS107	15 Winter	100	+10%	100/15 Summer				65.728
S3.001	SS109	15 Winter	100	+10%	100/15 Summer				65.675
S1.002	SS113	960 Winter	100	+10%	100/15 Summer				65.646
S5.000	SS101	15 Winter	100	+10%	100/15 Summer				65.988
S5.001	SS102	15 Winter	100	+10%	100/15 Summer				65.771
S5.002	SS103	960 Winter	100	+10%	100/15 Summer				65.649
S6.000	SS104	960 Winter	100	+10%	100/15 Summer				65.647
S5.003	SS105	960 Winter	100	+10%	100/15 Summer				65.644
S5.004	SS106	960 Winter	100	+10%	100/15 Summer				65.640
S7.000	SS116	15 Winter	100	+10%	100/15 Summer				66.379
S8.000	SS114	15 Winter	100	+10%	100/15 Summer				65.971
S8.001	SS115	15 Winter	100	+10%	100/15 Summer				65.876

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	0.641	0.000	0.65		68.0	SURCHARGED	
S2.000	SS111	1.094	0.000	0.41		39.2	SURCHARGED	
S1.001	SS112	1.540	0.000	1.16		90.3	SURCHARGED	
S3.000	SS108	1.030	0.000	0.67		38.0	SURCHARGED	
S4.000	SS107	1.028	0.000	0.51		43.0	SURCHARGED	
S3.001	SS109	1.281	0.000	0.89		108.6	SURCHARGED	
S1.002	SS113	1.458	0.000	0.42		32.4	SURCHARGED	
S5.000	SS101	0.438	0.000	0.83		41.9	SURCHARGED	
S5.001	SS102	0.621	0.000	1.63		50.6	SURCHARGED	
S5.002	SS103	0.654	0.000	0.13		12.4	SURCHARGED	
S6.000	SS104	0.997	0.000	0.11		4.5	SURCHARGED	
S5.003	SS105	1.149	0.000	0.17		20.0	SURCHARGED	
S5.004	SS106	1.106	0.000	0.07		27.6	SURCHARGED	
S7.000	SS116	1.089	0.000	1.05		86.0	SURCHARGED	
S8.000	SS114	0.926	0.000	0.82		98.7	SURCHARGED	
S8.001	SS115	1.056	0.000	0.76		82.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	100	+10%	100/15 Summer				65.807
S9.000	SS118	15 Winter	100	+10%	100/15 Summer				66.401
S7.002	SS119	960 Winter	100	+10%	100/15 Summer				65.642
S1.003	SS120	960 Winter	100	+10%	100/15 Summer				65.638
S1.004	SS121	960 Winter	100	+10%	100/30 Winter				65.636
S1.005	SS122	60 Summer	100	+10%	100/15 Summer				63.891
S1.006	SS123	480 Winter	100	+10%					63.796
S1.007	SS124	60 Summer	100	+10%					63.657
S1.008	SS125	2160 Winter	100	+10%					63.516
S10.000	SS214	15 Winter	100	+10%	100/15 Summer				66.057
S10.001	SS215	15 Winter	100	+10%	100/15 Summer				65.518
S11.000	SS210	30 Winter	100	+10%	100/15 Summer				66.214
S12.000	SS209	30 Winter	100	+10%	100/15 Summer				66.551
S11.001	SS211	30 Winter	100	+10%	100/15 Summer				66.085
S13.000	SS201	30 Winter	100	+10%	100/15 Summer				66.440
S13.001	SS202	30 Winter	100	+10%	100/15 Summer				66.388
S13.002	SS203	30 Winter	100	+10%	100/15 Summer				66.240
S13.003	SS204	30 Winter	100	+10%	100/15 Summer				66.194
S13.004	SS205	30 Winter	100	+10%	100/15 Summer				66.138
S14.000	SS206	30 Winter	100	+10%	100/15 Summer				66.023
S13.005	SS207	30 Winter	100	+10%	100/15 Summer				65.996
S13.006	SS208	30 Winter	100	+10%	100/15 Summer				65.696
S11.002	SS212	30 Winter	100	+10%	100/15 Summer				65.555
S11.003	SS213	30 Winter	100	+10%	100/15 Summer				65.287
S10.002	SS216	480 Winter	100	+10%	100/15 Summer				65.079
S15.000	SS222	600 Winter	100	+10%	100/120 Summer				65.051
S15.001	SS223	600 Winter	100	+10%	100/60 Winter				65.051
S16.000	SS217	15 Winter	100	+10%	100/15 Summer				65.532
S16.001	SS218	15 Winter	100	+10%	100/15 Summer				65.105
S16.002	SS219	600 Winter	100	+10%	100/15 Summer				65.062
S17.000	SS220	600 Winter	100	+10%	100/15 Summer				65.059
S16.003	SS221	600 Winter	100	+10%	100/15 Summer				65.058
S15.002	SS224	600 Winter	100	+10%	100/30 Winter				65.051
S18.000	SS225	480 Winter	100	+10%	100/60 Winter				65.056
S15.003	SS220	480 Winter	100	+10%	100/15 Winter				65.054
S19.000	SS229	600 Winter	100	+10%	100/15 Summer				65.061
S20.000	SS228	480 Winter	100	+10%	100/15 Summer				65.065
S19.001	SS230	480 Winter	100	+10%	100/15 Summer				65.070
S15.004	SS227	480 Winter	100	+10%	100/15 Winter				65.067
S15.005	SS231	480 Winter	100	+10%	100/15 Summer				65.072
S10.003	SS232	480 Winter	100	+10%	100/15 Summer				65.072
S10.004	SS233	480 Winter	100	+10%	100/15 Summer				65.071
S10.005	SS234	480 Winter	100	+10%	100/30 Summer				65.075
S10.006	SS235	60 Summer	100	+10%	100/15 Summer				63.614

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	1.072	0.000	1.28		199.1	SURCHARGED	
S9.000	SS118	1.051	0.000	1.09		72.3	SURCHARGED	
S7.002	SS119	1.362	0.000	0.19		39.8	SURCHARGED	
S1.003	SS120	1.342	0.000	0.43		99.5	SURCHARGED	
S1.004	SS121	1.214	0.000	0.07		24.9	SURCHARGED	
S1.005	SS122	0.061	0.000	1.01		23.5	SURCHARGED	
S1.006	SS123	-0.011	0.000	0.85		24.0	OK	
S1.007	SS124	-0.020	0.000	0.86		24.5	OK	
S1.008	SS125	0.000	0.000	1.07		24.4	OK	
S10.000	SS214	1.697	0.000	1.71		118.3	SURCHARGED	
S10.001	SS215	1.368	0.000	1.54		108.9	SURCHARGED	
S11.000	SS210	1.789	0.000	0.68		22.6	SURCHARGED	
S12.000	SS209	2.116	0.000	1.45		47.7	SURCHARGED	
S11.001	SS211	1.890	0.000	2.12		68.8	SURCHARGED	
S13.000	SS201	1.405	0.000	0.40		13.0	SURCHARGED	
S13.001	SS202	1.513	0.000	1.06		33.2	SURCHARGED	
S13.002	SS203	1.410	0.000	0.74		40.4	SURCHARGED	
S13.003	SS204	1.404	0.000	0.73		44.7	SURCHARGED	
S13.004	SS205	1.408	0.000	0.80		55.8	SURCHARGED	
S14.000	SS206	1.528	0.000	0.42		11.3	SURCHARGED	
S13.005	SS207	1.421	0.000	1.00		124.2	SURCHARGED	
S13.006	SS208	1.431	0.000	1.30		127.7	SURCHARGED	
S11.002	SS212	1.330	0.000	2.00		200.4	SURCHARGED	
S11.003	SS213	1.037	0.000	1.29		255.8	SURCHARGED	
S10.002	SS216	1.119	0.000	0.45		97.8	SURCHARGED	
S15.000	SS222	0.631	0.000	0.01		2.0	SURCHARGED	
S15.001	SS223	0.661	0.000	0.02		8.3	SURCHARGED	
S16.000	SS217	0.667	0.000	1.36		45.6	SURCHARGED	
S16.001	SS218	0.470	0.000	1.72		54.3	SURCHARGED	
S16.002	SS219	0.517	0.000	0.36		10.0	SURCHARGED	
S17.000	SS220	0.494	0.000	0.05		1.6	SURCHARGED	
S16.003	SS221	0.478	0.000	0.22		14.4	SURCHARGED	
S15.002	SS224	0.731	0.000	0.07		25.7	SURCHARGED	
S18.000	SS225	0.631	0.000	0.04		2.7	SURCHARGED	
S15.003	SS220	0.804	0.000	0.08		31.6	SURCHARGED	
S19.000	SS229	0.936	0.000	0.08		2.4	SURCHARGED	
S20.000	SS228	0.883	0.000	0.07		3.8	SURCHARGED	
S19.001	SS230	0.990	0.000	0.28		20.5	SURCHARGED	
S15.004	SS227	0.907	0.000	0.12		56.8	SURCHARGED	
S15.005	SS231	0.992	0.000	0.17		59.8	SURCHARGED	
S10.003	SS232	1.002	0.000	0.57		153.2	SURCHARGED	
S10.004	SS233	1.032	0.000	0.61		151.1	SURCHARGED	
S10.005	SS234	1.063	0.000	0.12		50.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.209	0.000	3.06		50.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 10, 10, 10, 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	100	+10%	30/15 Winter				65.845
S2.000	SS111	15 Winter	100	+10%	30/15 Summer				65.819
S1.001	SS112	30 Winter	100	+10%	1/15 Winter				65.893
S3.000	SS108	15 Winter	100	+10%	30/15 Summer				65.830
S4.000	SS107	15 Winter	100	+10%	30/15 Summer				65.728
S3.001	SS109	15 Winter	100	+10%	2/15 Summer				65.675
S1.002	SS113	960 Winter	100	+10%	1/15 Summer				65.646
S5.000	SS101	15 Winter	100	+10%	30/15 Winter				65.988
S5.001	SS102	15 Winter	100	+10%	30/15 Summer				65.771
S5.002	SS103	960 Winter	100	+10%	30/15 Winter				65.649
S6.000	SS104	960 Winter	100	+10%	30/15 Summer				65.647
S5.003	SS105	960 Winter	100	+10%	30/15 Summer				65.644
S5.004	SS106	960 Winter	100	+10%	30/15 Winter				65.640
S7.000	SS116	15 Winter	100	+10%	30/15 Summer				66.379
S8.000	SS114	15 Winter	100	+10%	30/15 Summer				65.971
S8.001	SS115	15 Winter	100	+10%	30/15 Summer				65.876

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	0.641	0.000	0.65		68.0	SURCHARGED	
S2.000	SS111	1.094	0.000	0.41		39.2	SURCHARGED	
S1.001	SS112	1.540	0.000	1.16		90.3	SURCHARGED	
S3.000	SS108	1.030	0.000	0.67		38.0	SURCHARGED	
S4.000	SS107	1.028	0.000	0.51		43.0	SURCHARGED	
S3.001	SS109	1.281	0.000	0.89		108.6	SURCHARGED	
S1.002	SS113	1.458	0.000	0.42		32.4	SURCHARGED	
S5.000	SS101	0.438	0.000	0.83		41.9	SURCHARGED	
S5.001	SS102	0.621	0.000	1.63		50.6	SURCHARGED	
S5.002	SS103	0.654	0.000	0.13		12.4	SURCHARGED	
S6.000	SS104	0.997	0.000	0.11		4.5	SURCHARGED	
S5.003	SS105	1.149	0.000	0.17		20.0	SURCHARGED	
S5.004	SS106	1.106	0.000	0.07		27.6	SURCHARGED	
S7.000	SS116	1.089	0.000	1.05		86.0	SURCHARGED	
S8.000	SS114	0.926	0.000	0.82		98.7	SURCHARGED	
S8.001	SS115	1.056	0.000	0.76		82.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	100	+10%	30/15 Summer				65.807
S9.000	SS118	15 Winter	100	+10%	30/15 Summer				66.401
S7.002	SS119	960 Winter	100	+10%	1/480 Winter				65.642
S1.003	SS120	960 Winter	100	+10%	1/480 Winter				65.638
S1.004	SS121	960 Winter	100	+10%	2/480 Winter				65.636
S1.005	SS122	60 Summer	100	+10%	1/180 Winter				63.891
S1.006	SS123	60 Winter	30	+10%					63.797
S1.007	SS124	60 Summer	100	+10%					63.657
S1.008	SS125	2160 Winter	100	+10%					63.516
S10.000	SS214	15 Winter	100	+10%	30/15 Summer				66.057
S10.001	SS215	15 Winter	100	+10%	30/15 Summer				65.518
S11.000	SS210	30 Winter	100	+10%	30/15 Summer				66.214
S12.000	SS209	30 Winter	100	+10%	2/15 Summer				66.551
S11.001	SS211	30 Winter	100	+10%	1/15 Summer				66.085
S13.000	SS201	30 Winter	100	+10%	30/15 Summer				66.440
S13.001	SS202	30 Winter	100	+10%	30/15 Summer				66.388
S13.002	SS203	30 Winter	100	+10%	30/15 Summer				66.240
S13.003	SS204	30 Winter	100	+10%	30/15 Summer				66.194
S13.004	SS205	30 Winter	100	+10%	30/15 Summer				66.138
S14.000	SS206	30 Winter	100	+10%	30/15 Summer				66.023
S13.005	SS207	30 Winter	100	+10%	30/15 Summer				65.996
S13.006	SS208	30 Winter	100	+10%	2/15 Winter				65.696
S11.002	SS212	30 Winter	100	+10%	2/30 Winter				65.555
S11.003	SS213	30 Winter	100	+10%	30/15 Summer				65.287
S10.002	SS216	480 Winter	100	+10%	1/30 Winter				65.079
S15.000	SS222	600 Winter	100	+10%	30/240 Winter				65.051
S15.001	SS223	600 Winter	100	+10%	30/180 Winter				65.051
S16.000	SS217	15 Winter	100	+10%	30/15 Summer				65.532
S16.001	SS218	15 Winter	100	+10%	30/15 Summer				65.105
S16.002	SS219	600 Winter	100	+10%	30/15 Summer				65.062
S17.000	SS220	600 Winter	100	+10%	100/15 Summer				65.059
S16.003	SS221	600 Winter	100	+10%	100/15 Summer				65.058
S15.002	SS224	600 Winter	100	+10%	30/180 Winter				65.051
S18.000	SS225	480 Winter	100	+10%	30/240 Winter				65.056
S15.003	SS220	480 Winter	100	+10%	30/120 Winter				65.054
S19.000	SS229	600 Winter	100	+10%	30/15 Summer				65.061
S20.000	SS228	480 Winter	100	+10%	30/15 Summer				65.065
S19.001	SS230	480 Winter	100	+10%	30/15 Summer				65.070
S15.004	SS227	480 Winter	100	+10%	30/60 Winter				65.067
S15.005	SS231	480 Winter	100	+10%	30/15 Winter				65.072
S10.003	SS232	480 Winter	100	+10%	30/15 Winter				65.072
S10.004	SS233	480 Winter	100	+10%	30/60 Summer				65.071
S10.005	SS234	480 Winter	100	+10%	30/60 Summer				65.075
S10.006	SS235	360 Summer	30	+10%	1/30 Summer				63.614

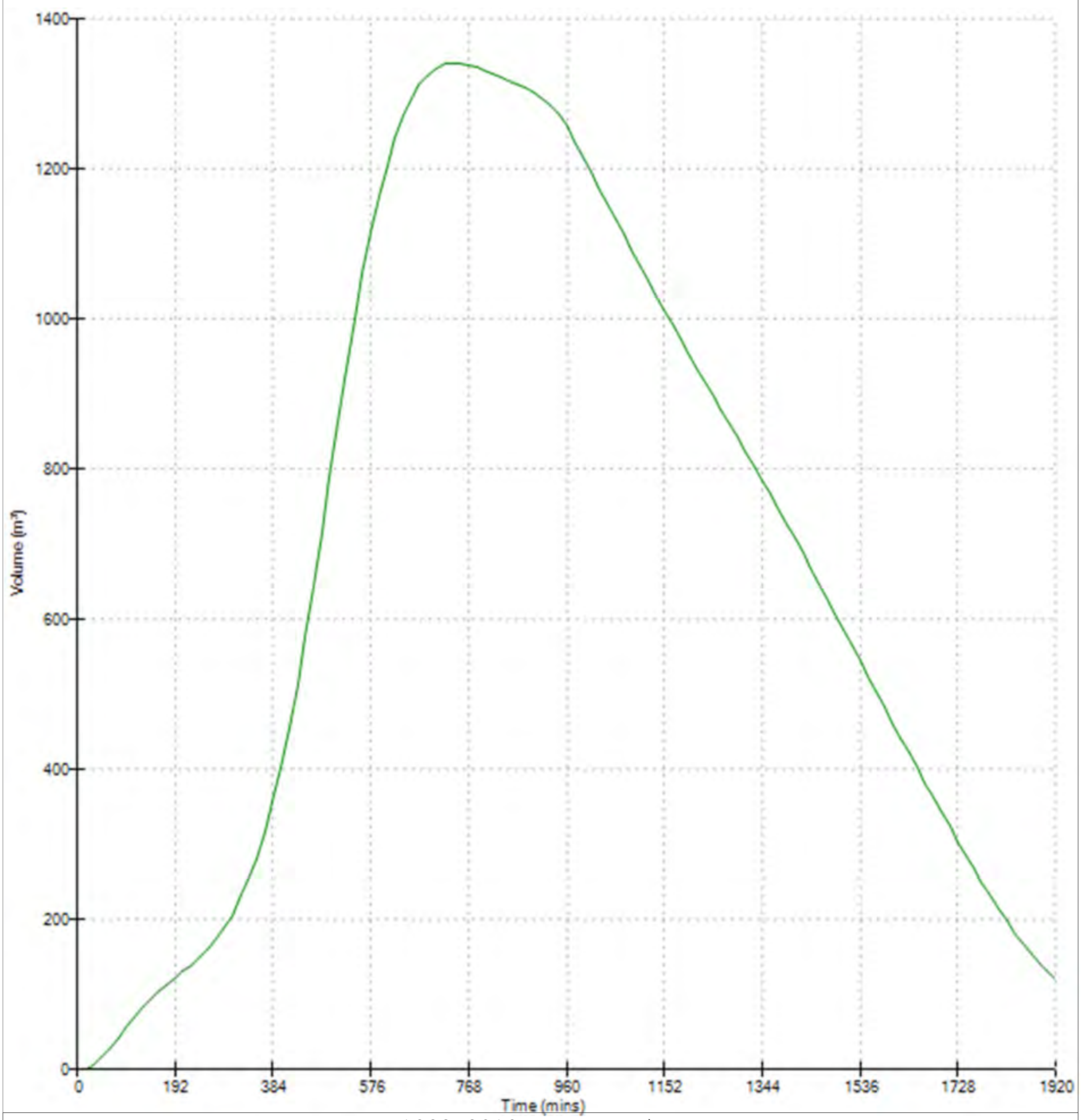
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	1.072	0.000	1.28		199.1	SURCHARGED	
S9.000	SS118	1.051	0.000	1.09		72.3	SURCHARGED	
S7.002	SS119	1.362	0.000	0.19		39.8	SURCHARGED	
S1.003	SS120	1.342	0.000	0.43		99.5	SURCHARGED	
S1.004	SS121	1.214	0.000	0.07		24.9	SURCHARGED	
S1.005	SS122	0.061	0.000	1.01		23.5	SURCHARGED	
S1.006	SS123	-0.010	0.000	0.83		23.6	OK	
S1.007	SS124	-0.020	0.000	0.86		24.5	OK	
S1.008	SS125	0.000	0.000	1.07		24.4	OK	
S10.000	SS214	1.697	0.000	1.71		118.3	SURCHARGED	
S10.001	SS215	1.368	0.000	1.54		108.9	SURCHARGED	
S11.000	SS210	1.789	0.000	0.68		22.6	SURCHARGED	
S12.000	SS209	2.116	0.000	1.45		47.7	SURCHARGED	
S11.001	SS211	1.890	0.000	2.12		68.8	SURCHARGED	
S13.000	SS201	1.405	0.000	0.40		13.0	SURCHARGED	
S13.001	SS202	1.513	0.000	1.06		33.2	SURCHARGED	
S13.002	SS203	1.410	0.000	0.74		40.4	SURCHARGED	
S13.003	SS204	1.404	0.000	0.73		44.7	SURCHARGED	
S13.004	SS205	1.408	0.000	0.80		55.8	SURCHARGED	
S14.000	SS206	1.528	0.000	0.42		11.3	SURCHARGED	
S13.005	SS207	1.421	0.000	1.00		124.2	SURCHARGED	
S13.006	SS208	1.431	0.000	1.30		127.7	SURCHARGED	
S11.002	SS212	1.330	0.000	2.00		200.4	SURCHARGED	
S11.003	SS213	1.037	0.000	1.29		255.8	SURCHARGED	
S10.002	SS216	1.119	0.000	0.45		97.8	SURCHARGED	
S15.000	SS222	0.631	0.000	0.01		2.0	SURCHARGED	
S15.001	SS223	0.661	0.000	0.02		8.3	SURCHARGED	
S16.000	SS217	0.667	0.000	1.36		45.6	SURCHARGED	
S16.001	SS218	0.470	0.000	1.72		54.3	SURCHARGED	
S16.002	SS219	0.517	0.000	0.36		10.0	SURCHARGED	
S17.000	SS220	0.494	0.000	0.05		1.6	SURCHARGED	
S16.003	SS221	0.478	0.000	0.22		14.4	SURCHARGED	
S15.002	SS224	0.731	0.000	0.07		25.7	SURCHARGED	
S18.000	SS225	0.631	0.000	0.04		2.7	SURCHARGED	
S15.003	SS220	0.804	0.000	0.08		31.6	SURCHARGED	
S19.000	SS229	0.936	0.000	0.08		2.4	SURCHARGED	
S20.000	SS228	0.883	0.000	0.07		3.8	SURCHARGED	
S19.001	SS230	0.990	0.000	0.28		20.5	SURCHARGED	
S15.004	SS227	0.907	0.000	0.12		56.8	SURCHARGED	
S15.005	SS231	0.992	0.000	0.17		59.8	SURCHARGED	
S10.003	SS232	1.002	0.000	0.57		153.2	SURCHARGED	
S10.004	SS233	1.032	0.000	0.61		151.1	SURCHARGED	
S10.005	SS234	1.063	0.000	0.12		50.8	SURCHARGED	

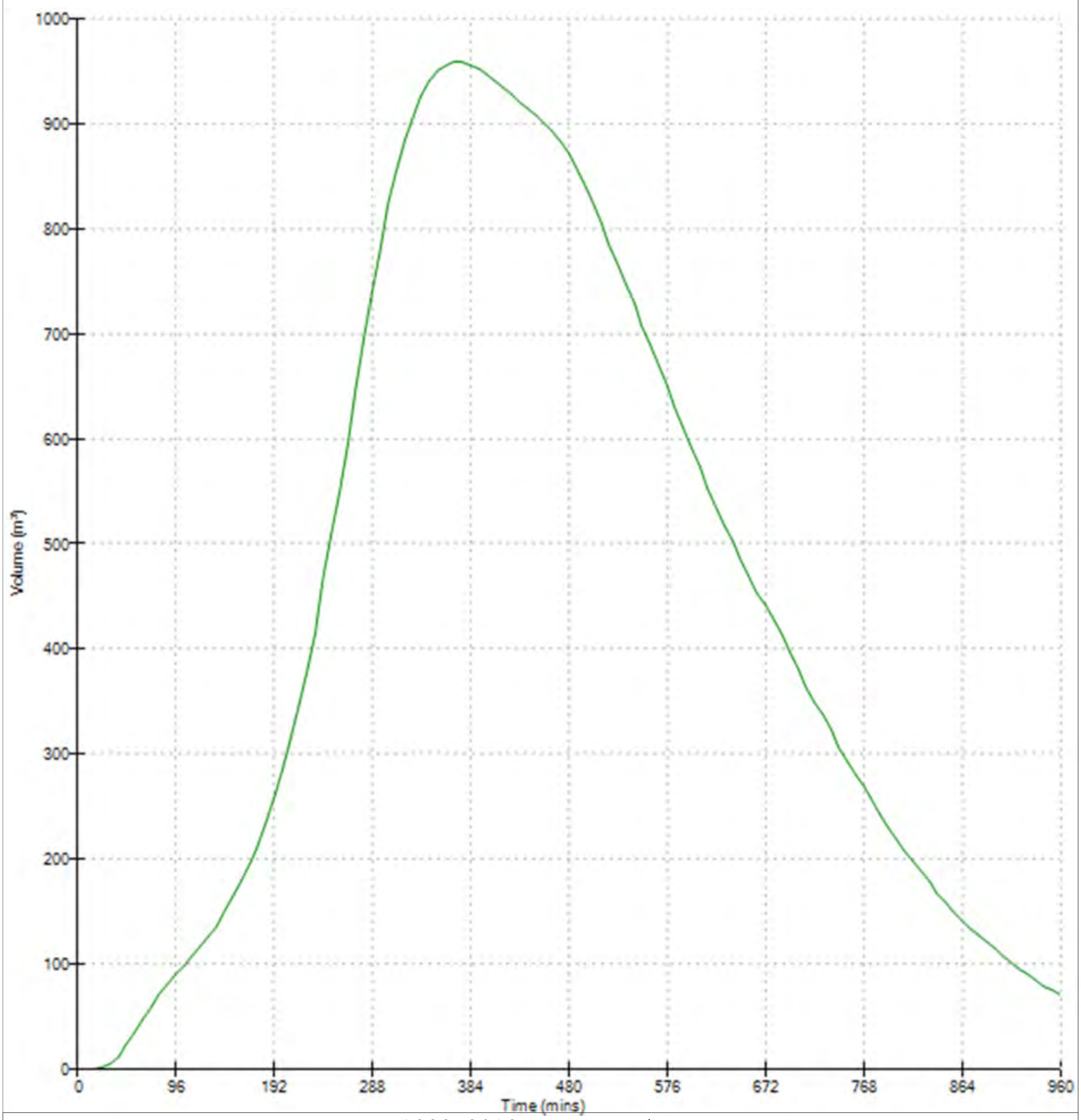
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.209	0.000	3.06		50.8	SURCHARGED	

Graphs for Pipe S1.004 US/MH SS121 (Storm)
960 minute 100 year Winter I+0%
Status: SURCHARGED



Graphs for Pipe S10.005 US/MH SS234 (Storm)
480 minute 100 year Winter I+0%
Status: SURCHARGED



Appendix 6.1 Infiltration Test Report

IGSL Limited

Westar Group

Dublin Road, Clane

Infiltration Test Report

Project No. 21680

April 2019

Report

IGSL

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Document Verification

Project: Dublin Road, Clane

Project No. 21680

Revision	Date	Title		
Rev 0	15/04/2019	Report		
	Copies	Document Format	Prepared By	Reviewed By
	1	Digital	Brian Green Chartered Engineer	David Green Chartered Engineer
	To	Westar Group		
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Revision	**Date**	**Title**		
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	To			

Report on Infiltration Testing
At
Housing Development
Dublin Road, Clane
On behalf of
Westar Group

Report No. 21680

Contents

Appendices

Identity Code BG

Report on Infiltration Testing
At
Housing Development
Dublin Road, Clane
On behalf of
Westar Group

Report No. 21680 Date April 2019

1.0 Introduction

The proposed new housing development at Dublin Road, Clane will include a system for the storage and dispersion of storm water. Infiltration tests were, therefore, carried out to ascertain the suitability of the sub-soils for permeable pavement purposes.

2.0 Sub-soil conditions

The test pits revealed brown sandy clay with occasional gravel to the excavated depth of 0.65 metres. No groundwater was encountered during the course of excavation operations

3.0 Infiltration Testing

The infiltration tests were performed in accordance with BRE Digest 365 'Soakaway Design'.

To obtain a measure of the infiltration rate of the sub-soils, water was poured into each of the three test pits, and records taken of the fall in water level against time. This procedure was repeated twice more to ensure saturation of the sub-soils.

The infiltration rate is the volume of water dispersed per unit exposed area per unit of time, and is generally expressed as metres/minute or metres/second. Designs are based on the slowest infiltration rate, which is generally calculated from the final cycle.

The results for the final two stages of testing, following the saturation periods, are enclosed in appendix1.

4.0 Principles of Permeable Pavement

Permeable paving systems are designed to provide temporary storage of water in a reservoir of crushed stone underlying the paved area. In an attenuation system where the sub-soils are relatively impermeable the base and sides of the reservoir are lined with an impermeable membrane and the stored water is discharged through an outflow pipe to a suitable surface water system. Where the sub-soils can provide infiltration a geotextile replaces the impermeable liner. As an added precaution an overflow pipe can be installed to avoid flooding of the paved area in extreme storm conditions.

5.0 Results

The infiltration rates indicated by the field tests are shown in Table 1.

Location	Infiltration Rate (f-value)	
	* (First Cycle) (m/min)	* (Second Cycle) (m/min)
SA01	0.0003	0.0001
SA02	0.00007	0
SA03	0.00006	0
SA04	0.0002	0.00008
SA05	0.0023	0.002
SA06	0	
SA07	0	

* First and second measured cycles were preceded by saturation stages

Table 1

The results indicate that the soils in the vicinity of SA02, SA03, SA06 and SA07 are relatively impermeable.

Appendix 1 Infiltration Test Results

Soakaway Design f -value from field tests IGSL

Contract: Capdoo, Clane, Co. Kildare Contract No. 21680
Test No. SA01 (First Cycle)
Engineer Westar Group
Date: 05.04.2019

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Dry
0.20	0.65	Firm brown/light brown sandy CLAY with rare gravel, locally very sandy	

Field Data

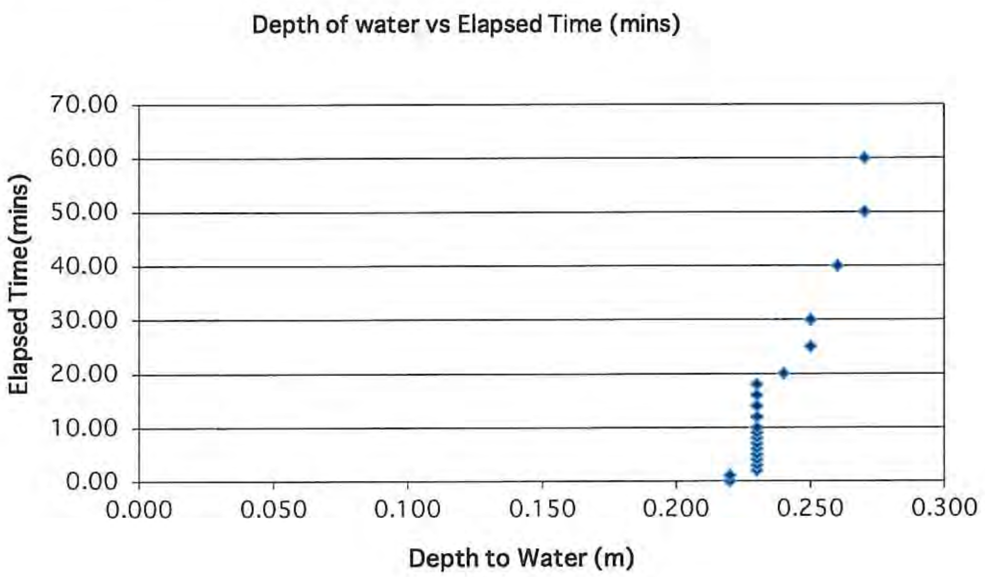
Depth to Water (m)	Elapsed Time (min)
0.220	0.00
0.220	1.00
0.230	2.00
0.230	3.00
0.230	4.00
0.230	5.00
0.230	6.00
0.230	7.00
0.230	8.00
0.230	9.00
0.230	10.00
0.230	12.00
0.230	14.00
0.230	16.00
0.230	18.00
0.240	20.00
0.250	25.00
0.250	30.00
0.260	40.00
0.270	50.00
0.270	60.00

Field Test

Depth of Pit (D)	0.65	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.20	m
Initial depth to Water =	0.22	m
Final depth to water =	0.270	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.65	m
Base area=	0.72	m2
*Av. side area of permeable stratum over test perio	1.458	m2
Total Exposed area =	2.178	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0003 m/min or 4.59137E-06 m/sec



Soakaway Design f -value from field tests IGSL

Contract:	Capdoo, Clane, Co. Kildare	Contract No. 21680
Test No.	SA01 (Second Cycle)	
Engineer	Westar Group	
Date:	05.04.2019	

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Dry
0.20	0.65	Firm brown/light brown sandy CLAY with rare gravel, locally very sandy	

Field Data

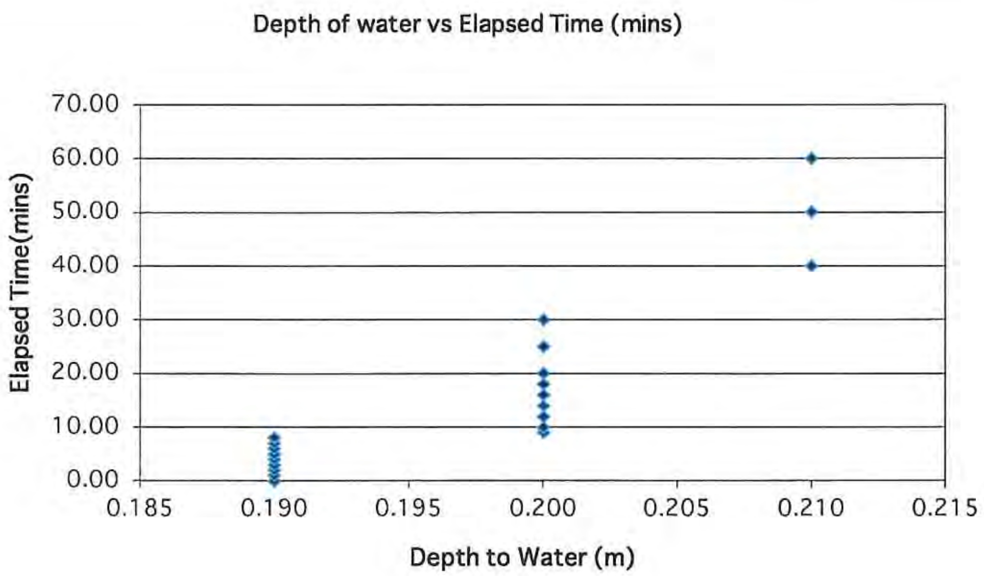
Depth to Water (m)	Elapsed Time (min)
0.190	0.00
0.190	1.00
0.190	2.00
0.190	3.00
0.190	4.00
0.190	5.00
0.190	6.00
0.190	7.00
0.190	8.00
0.200	9.00
0.200	10.00
0.200	12.00
0.200	14.00
0.200	16.00
0.200	18.00
0.200	20.00
0.200	25.00
0.200	30.00
0.210	40.00
0.210	50.00
0.210	60.00

Field Test

Depth of Pit (D)	0.65	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.20	m
Initial depth to Water =	0.19	m
Final depth to water =	0.210	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.65	m
Base area=	0.72	m2
*Av. side area of permeable stratum over test perio	1.62	m2
Total Exposed area =	2.34	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0001 m/min or 1.7094E-06 m/sec



Soakaway Design f -value from field tests IGSL

Contract:	Capdoo, Clane, Co. Kildare	Contract No.	21680
Test No.	SA02 (First Cycle)		
Engineer	Westar Group		
Date:	05.04.2019		

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Dry
0.20	0.60	Firm brown/light brown sandy CLAY with rare gravel	

Field Data

Depth to Water (m)	Elapsed Time (min)
0.300	0.00
0.300	1.00
0.310	2.00
0.310	3.00
0.310	4.00
0.310	5.00
0.310	6.00
0.310	7.00
0.310	8.00
0.310	9.00
0.310	10.00
0.310	12.00
0.310	14.00
0.310	16.00
0.310	18.00
0.310	20.00
0.310	25.00
0.310	30.00
0.310	40.00
0.310	50.00
0.310	60.00

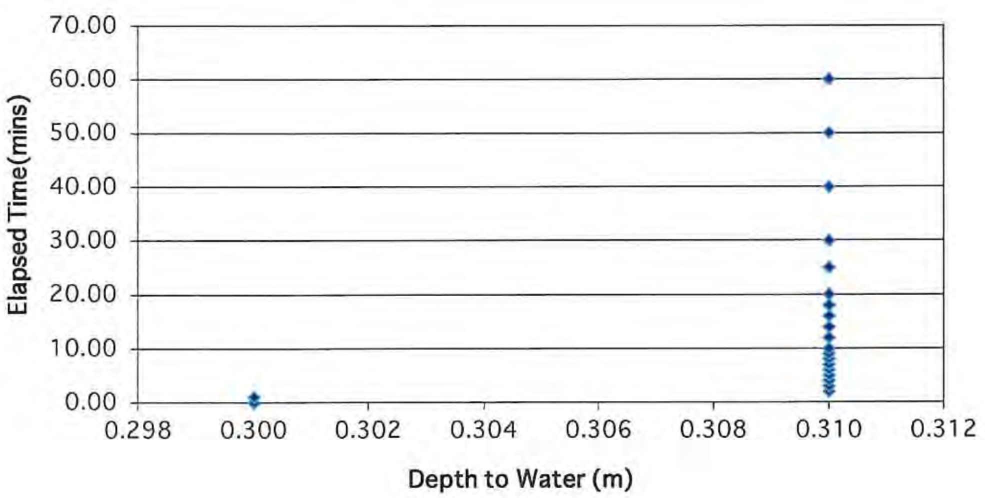
Field Test

Depth of Pit (D)	0.60	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.00	m
Initial depth to Water =	0.30	m
Final depth to water =	0.310	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.60	m
Base area=	0.8	m2
*Av. side area of permeable stratum over test perio	1.062	m2
Total Exposed area =	1.862	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 7E-05 m/min or 1.19346E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests IGSL

Contract: Capdoo, Clane, Co. Kildare   Contract No. 21680
Test No. SA02 (Second Cycle)
Engineer Westar Group
Date: 05.04.2019

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Dry
0.20	0.60	Firm brown/light brown sandy CLAY with rare gravel	

Field Data

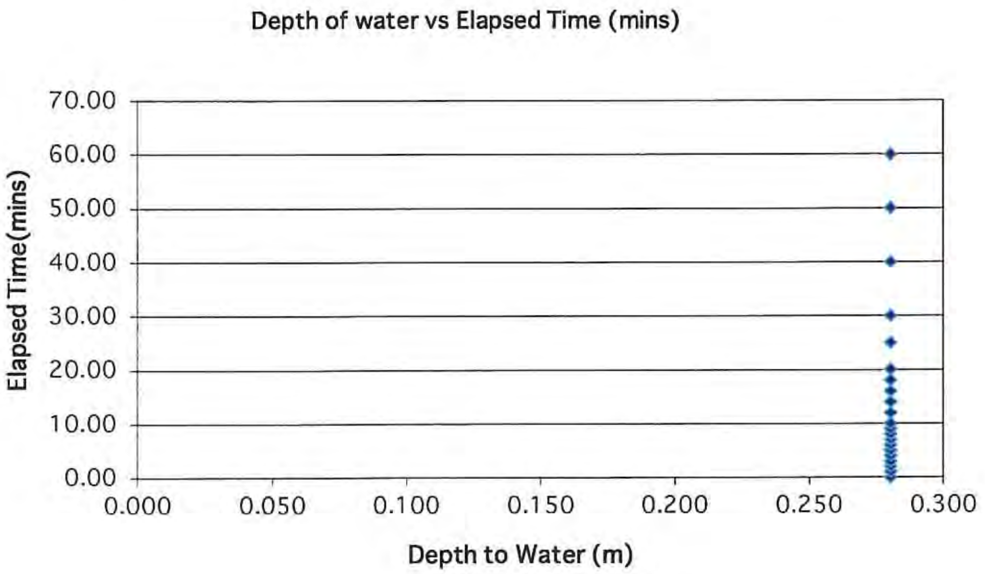
Depth to Water (m)	Elapsed Time (min)
0.280	0.00
0.280	1.00
0.280	2.00
0.280	3.00
0.280	4.00
0.280	5.00
0.280	6.00
0.280	7.00
0.280	8.00
0.280	9.00
0.280	10.00
0.280	12.00
0.280	14.00
0.280	16.00
0.280	18.00
0.280	20.00
0.280	25.00
0.280	30.00
0.280	40.00
0.280	50.00
0.280	60.00

Field Test

Depth of Pit (D)	0.60	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.00	m
Initial depth to Water =	0.28	m
Final depth to water =	0.280	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.60	m
Base area=	0.8	m2
*Av. side area of permeable stratum over test perio	1.152	m2
Total Exposed area =	1.952	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Soakaway Design f -value from field tests IGSL

Contract:	Capdoo, Clane, Co. Kildare	Contract No.	21680
Test No.	SA03 (First Cycle)		
Engineer	Westar Group		
Date:	04.04.2019		

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	
0.20	0.65	Firm brown/brownish grey very sandy SILT with occasional gravel, gravel	Dry
		content increases with depth	

Field Data

Depth to Water (m)	Elapsed Time (min)
0.280	0.00
0.280	1.00
0.280	2.00
0.280	3.00
0.280	4.00
0.280	5.00
0.280	6.00
0.280	7.00
0.280	8.00
0.280	9.00
0.280	10.00
0.280	12.00
0.280	14.00
0.280	16.00
0.280	18.00
0.280	20.00
0.280	25.00
0.280	30.00
0.280	40.00
0.290	50.00
0.290	60.00

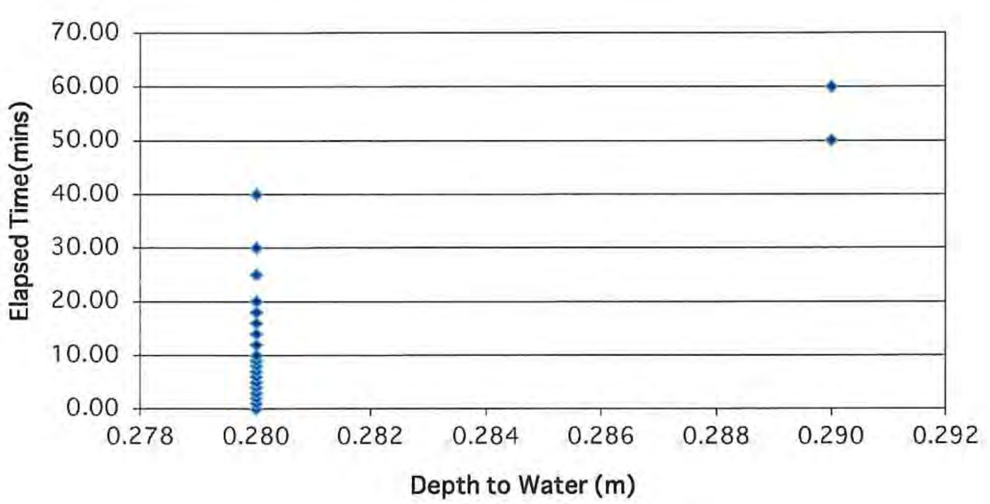
Field Test

Depth of Pit (D)	0.65	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.00	m
Initial depth to Water =	0.28	m
Final depth to water =	0.290	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.65	m
Base area=	0.8	m2
*Av. side area of permeable stratum over test perio	1.314	m2
Total Exposed area =	2.114	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 6E-05 m/min or 1.05119E-06 m/sec

Depth of water vs Elapsed Time (mins)



Soakaway Design f -value from field tests IGSL

Contract:	Capdoo, Clane, Co. Kildare	Contract No.	21680
Test No.	SA03 (Second Cycle)		
Engineer	Westar Group		
Date:	04.04.2019		

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Dry
0.20	0.65	Firm brown/brownish grey very sandy SILT with occasional gravel, gravel content increases with depth	

Field Data

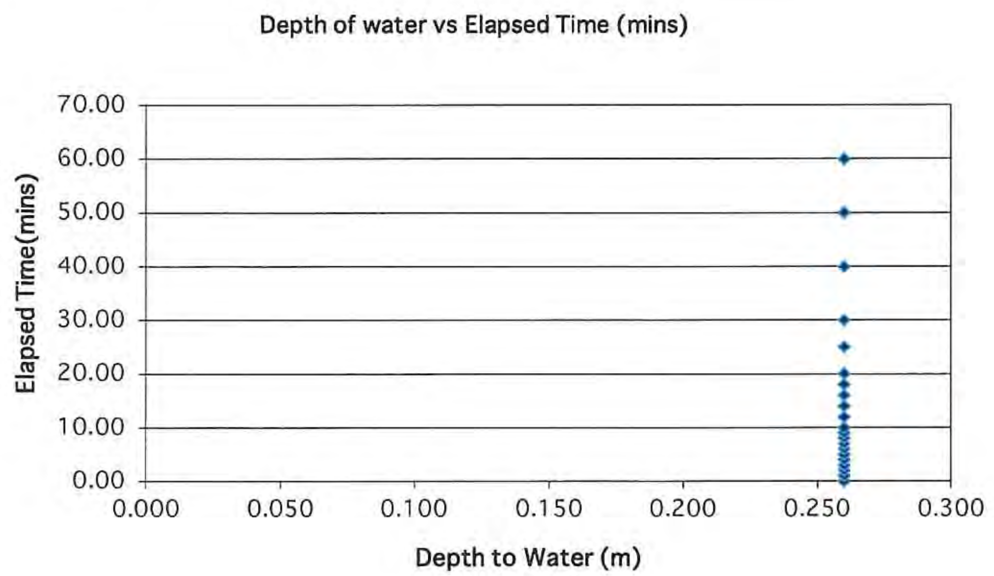
Depth to Water (m)	Elapsed Time (min)
0.260	0.00
0.260	1.00
0.260	2.00
0.260	3.00
0.260	4.00
0.260	5.00
0.260	6.00
0.260	7.00
0.260	8.00
0.260	9.00
0.260	10.00
0.260	12.00
0.260	14.00
0.260	16.00
0.260	18.00
0.260	20.00
0.260	25.00
0.260	30.00
0.260	40.00
0.260	50.00
0.260	60.00

Field Test

Depth of Pit (D)	0.65	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.00	m
Initial depth to Water =	0.26	m
Final depth to water =	0.260	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.65	m
Base area=	0.8	m2
*Av. side area of permeable stratum over test perio	1.404	m2
Total Exposed area =	2.204	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Capdoo, Clane, Co. Kildare — Contract No. 21680
Test No. SA04 (First Cycle)
Engineer Westar Group
Date: 04.04.2019

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Dry
0.20	0.65	Firm brown slightly sandy SILT with rare gravel	

Field Data

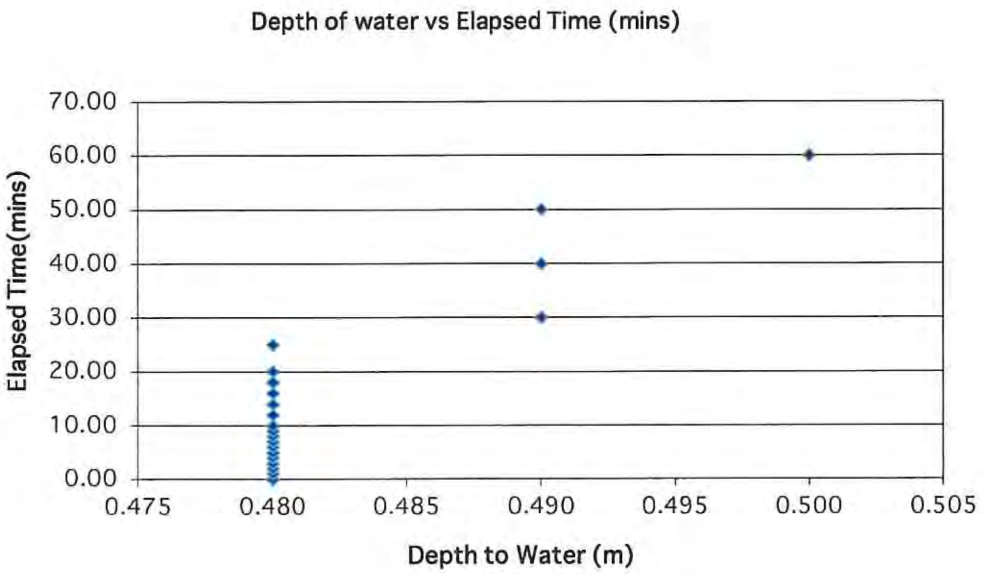
Depth to Water (m)	Elapsed Time (min)
0.480	0.00
0.480	1.00
0.480	2.00
0.480	3.00
0.480	4.00
0.480	5.00
0.480	6.00
0.480	7.00
0.480	8.00
0.480	9.00
0.480	10.00
0.480	12.00
0.480	14.00
0.480	16.00
0.480	18.00
0.480	20.00
0.480	25.00
0.490	30.00
0.490	40.00
0.490	50.00
0.500	60.00

Field Test

Depth of Pit (D)	0.65	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.40	m
Initial depth to Water =	0.48	m
Final depth to water =	0.500	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.65	m
Base area=	1.12	m2
*Av. side area of permeable stratum over test perio	0.704	m2
Total Exposed area =	1.824	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0002 m/min or 3.41131E-06 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Capdoo, Clane, Co. Kildare Contract No. 21680
Test No. SA04 (Second Cycle)
Engineer Westar Group
Date: 04.04.2019

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Dry
0.20	0.65	Firm brown slightly sandy SILT with rare gravel	

Field Data

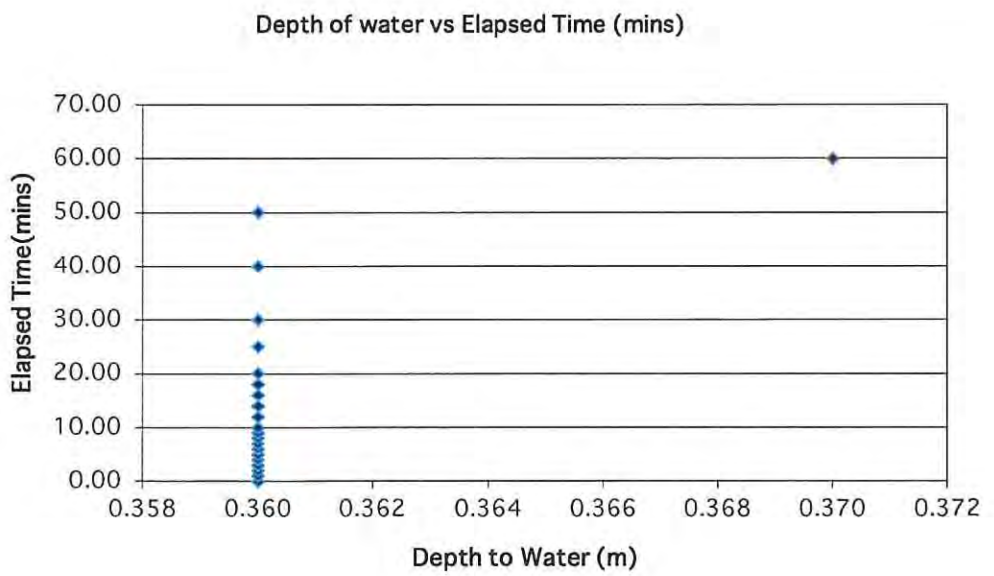
Depth to Water (m)	Elapsed Time (min)
0.360	0.00
0.360	1.00
0.360	2.00
0.360	3.00
0.360	4.00
0.360	5.00
0.360	6.00
0.360	7.00
0.360	8.00
0.360	9.00
0.360	10.00
0.360	12.00
0.360	14.00
0.360	16.00
0.360	18.00
0.360	20.00
0.360	25.00
0.360	30.00
0.360	40.00
0.360	50.00
0.370	60.00

Field Test

Depth of Pit (D)	0.65	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.40	m
Initial depth to Water =	0.36	m
Final depth to water =	0.370	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.65	m
Base area=	1.12	m2
*Av. side area of permeable stratum over test perio	1.254	m2
Total Exposed area =	2.374	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 8E-05 m/min or 1.31049E-06 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Capdoo, Clane, Co. Kildare Contract No. 21680
Test No. SA05 (First Cycle)
Engineer Westar Group
Date: 04.04.2019

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Medium dense grey very silty GRAVELwith brick fragments	Dry
0.20	0.70	Firm brownish grey/grey sandy very gravelly SILT with rare cobbles up to 1(	

Field Data

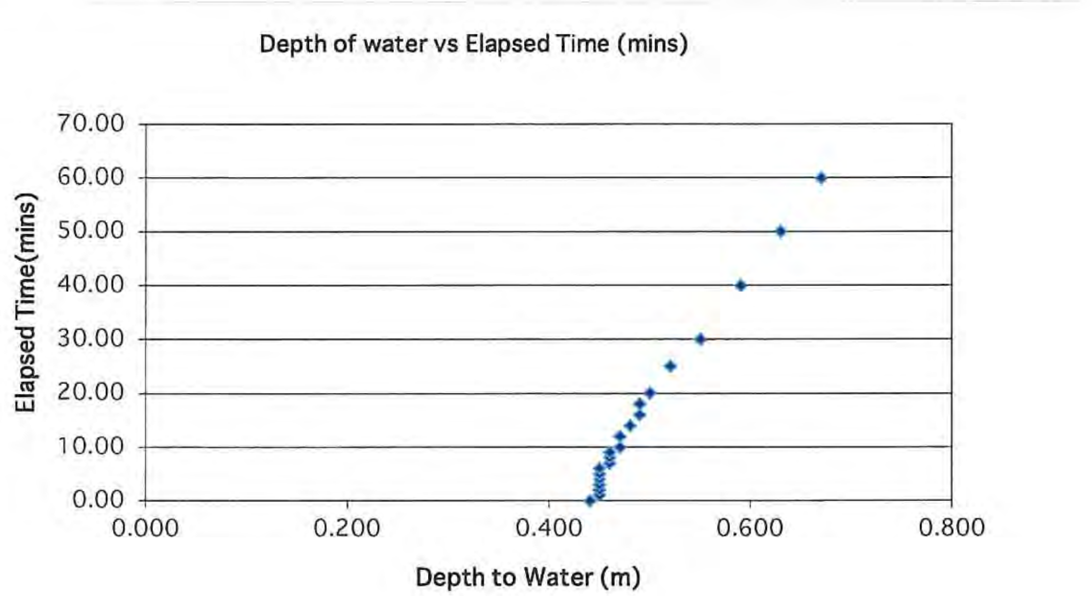
Depth to Water (m)	Elapsed Time (min)
0.440	0.00
0.450	1.00
0.450	2.00
0.450	3.00
0.450	4.00
0.450	5.00
0.450	6.00
0.460	7.00
0.460	8.00
0.460	9.00
0.470	10.00
0.470	12.00
0.480	14.00
0.490	16.00
0.490	18.00
0.500	20.00
0.520	25.00
0.550	30.00
0.590	40.00
0.630	50.00
0.670	60.00

Field Test

Depth of Pit (D)	0.70	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.00	m
Initial depth to Water =	0.44	m
Final depth to water =	0.670	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.70	m
Base area=	0.8	m2
*Av. side area of permeable stratum over test perio	0.522	m2
Total Exposed area =	1.322	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.0023 m/min or 3.8662E-05 m/sec



Soakaway Design f -value from field tests IGSL

Contract:	Capdoo, Clane, Co. Kildare	Contract No.	21680
Test No.	SA05 (Second Cycle)		
Engineer	Westar Group		
Date:	04.04.2019		

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Medium dense grey very silty GRAVELwith brick fragments	Dry
0.20	0.70	Firm brownish grey/grey sandy very gravelly SILT with rare cobbles up to 1(	

Field Data

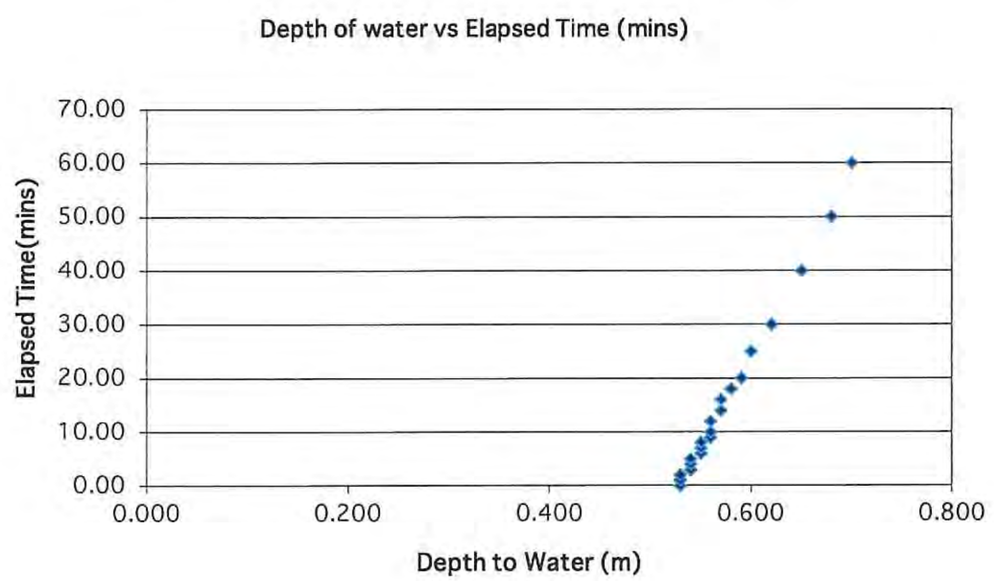
Depth to Water (m)	Elapsed Time (min)
0.530	0.00
0.530	1.00
0.530	2.00
0.540	3.00
0.540	4.00
0.540	5.00
0.550	6.00
0.550	7.00
0.550	8.00
0.560	9.00
0.560	10.00
0.560	12.00
0.570	14.00
0.570	16.00
0.580	18.00
0.590	20.00
0.600	25.00
0.620	30.00
0.650	40.00
0.680	50.00
0.700	60.00

Field Test

Depth of Pit (D)	0.70	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.00	m
Initial depth to Water =	0.53	m
Final depth to water =	0.700	m
Elapsed time (mins)=	60.00	
Top of permeable soil	0.20	m
Base of permeable soil	0.70	m
Base area=	0.8	m2
*Av. side area of permeable stratum over test perio	0.306	m2
Total Exposed area =	1.106	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.002 m/min or 3.41571E-05 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Capdoo, Clane, Co. Kildare Contract No. 21680
Test No. SA06 (First Cycle)
Engineer Westar Group
Date: 04.04.2019

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Seepage at 1.8m
0.20	0.70	Stiff brown/brownish grey sandy CLAY with rare to occasional gravel	
0.70	1.30	Firm brownsh grey very sandy CLAY with occasional gravel	
1.30	2.00	Firm light brownish grey clayey SAND with rare gravel	

Field Data

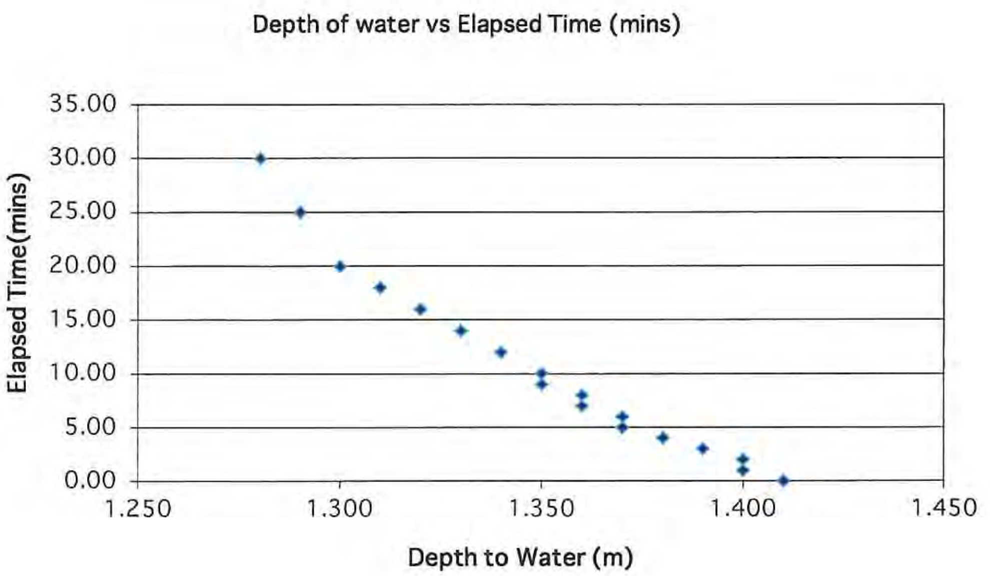
Depth to Water (m)	Elapsed Time (min)
1.410	0.00
1.400	1.00
1.400	2.00
1.390	3.00
1.380	4.00
1.370	5.00
1.370	6.00
1.360	7.00
1.360	8.00
1.350	9.00
1.350	10.00
1.340	12.00
1.330	14.00
1.320	16.00
1.310	18.00
1.300	20.00
1.290	25.00
1.280	30.00

Field Test

Depth of Pit (D)	2.00	m
Width of Pit (B)	0.80	m
Length of Pit (L)	1.50	m
Initial depth to Water =	1.41	m
Final depth to water =	1.280	m
Elapsed time (mins)=	30.00	
Top of permeable soil	0.20	m
Base of permeable soil	2.00	m
Base area=	1.2	m2
*Av. side area of permeable stratum over test perio	3.013	m2
Total Exposed area =	4.213	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Soakaway Design f -value from field tests IGSL

Contract: Capdoo, Clane, Co. Kildare Contract No. 21680
Test No. SA07 (First Cycle)
Engineer Westar Group
Date: 05.04.2019

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	Firm brown TOPSOIL	Seepage at 1.75m
0.20	0.90	Firm brown/light brown sandy CLAY with rare gravel	
0.90	2.10	Firm grey/brownish grey very sandy CLAY with occasional gravel, contains very clayey sand pockets	

Field Data

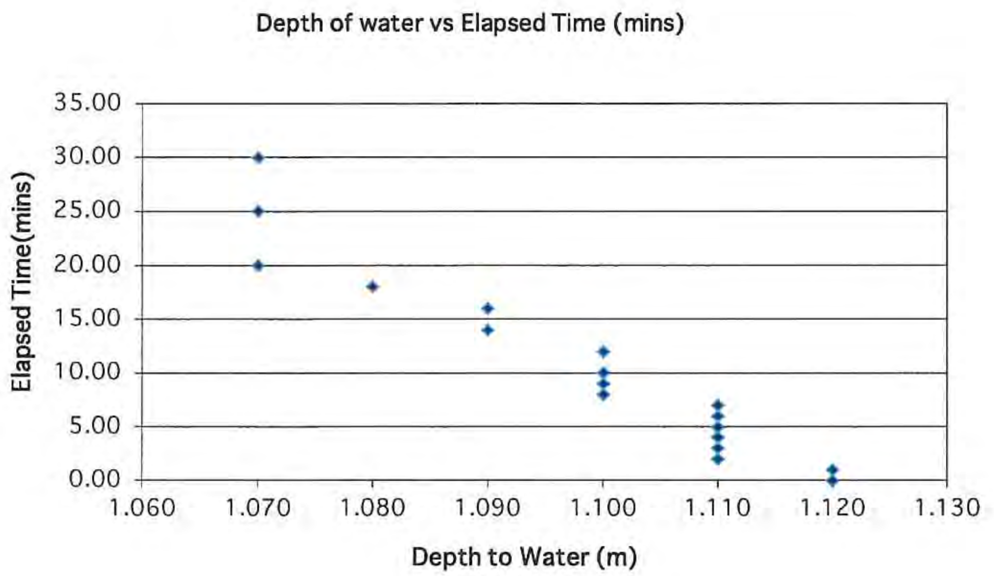
Depth to Water (m)	Elapsed Time (min)
1.120	0.00
1.120	1.00
1.110	2.00
1.110	3.00
1.110	4.00
1.110	5.00
1.110	6.00
1.110	7.00
1.100	8.00
1.100	9.00
1.100	10.00
1.100	12.00
1.090	14.00
1.090	16.00
1.080	18.00
1.070	20.00
1.070	25.00
1.070	30.00

Field Test

Depth of Pit (D)	2.10	m
Width of Pit (B)	0.60	m
Length of Pit (L)	1.40	m
Initial depth to Water =	1.12	m
Final depth to water =	1.070	m
Elapsed time (mins)=	30.00	
Top of permeable soil	0.20	m
Base of permeable soil	2.10	m
Base area=	0.84	m2
*Av. side area of permeable stratum over test perio	4.02	m2
Total Exposed area =	4.86	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0 m/min or 0 m/sec



Appendix 2 Photographs

SA01 1 of 4

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SA01 4 of 4

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SA02 4 of 4

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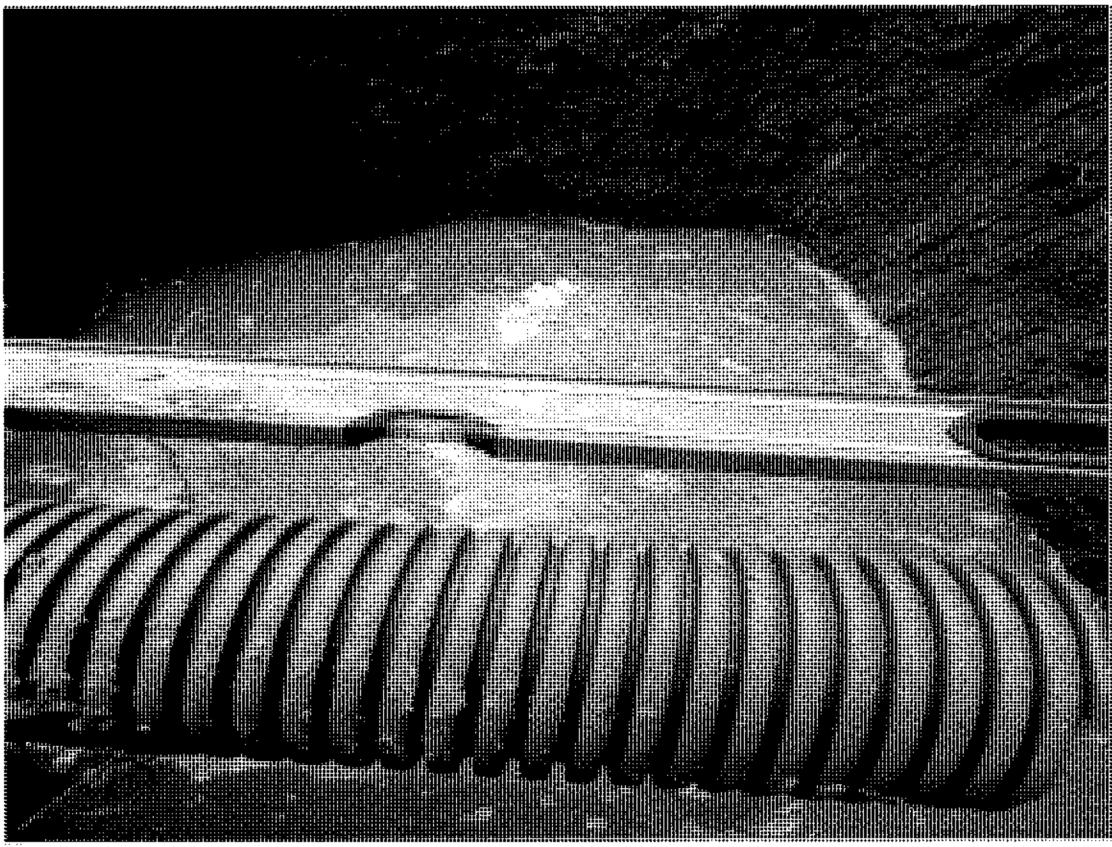
SA03 3 of 4

SA03 4 of 4



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SA05 1 of 3

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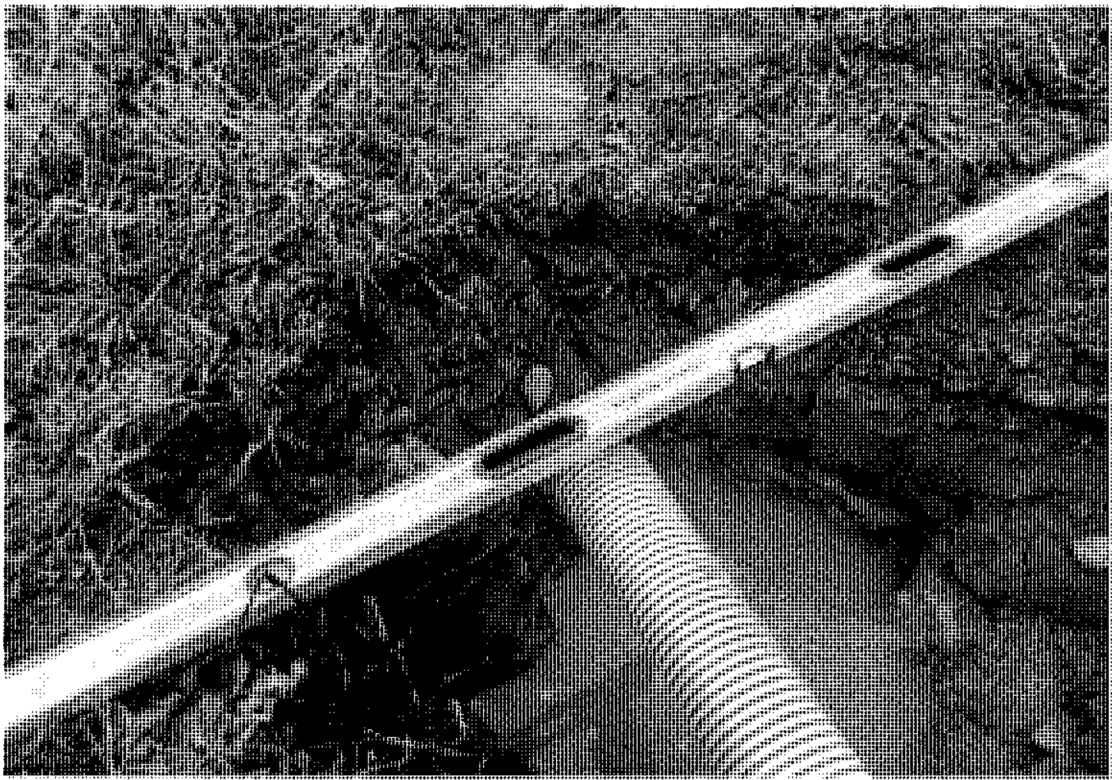

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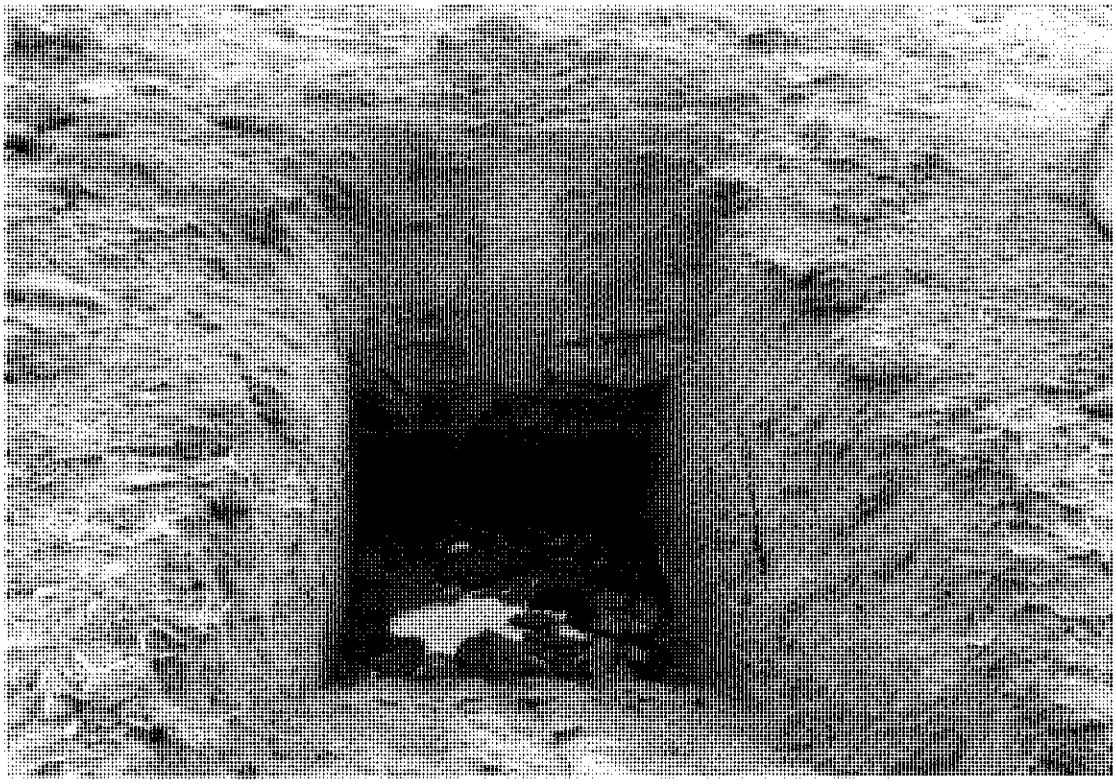
SA06 3 of 4

SA06 4 of 4

SA07 1 of 5



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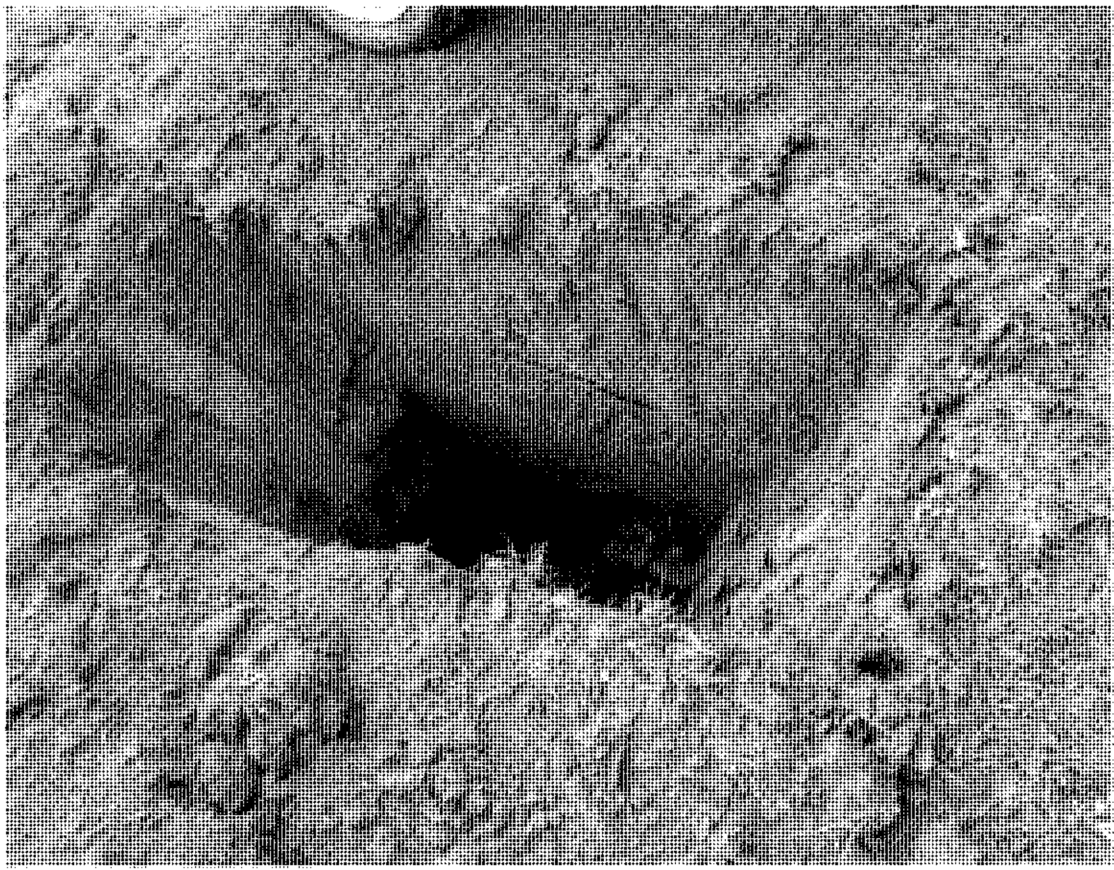

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SA07 5 of 5

Appendix 3 Site Plan


Search Google Maps
See travel times, traffic and nearby places
Autoline Car Sales
Lidl
R403
Maxol Behan's
Capdoo Park
Capdoo Ave
Tesco Metro
Kinesicare
Clane Motor Factors
Clane Tennis Club
Central Park
Abbey Park View
Central Park Ave
Abbeylands
SA1
SA2
SA3
SA4
SA5
SA6
SA7
3D
Map
Google
Imagery ©2019 Google, Map data ©2019 Google
Ireland
Terms
Send feedback
100 m

1 Proposed Site Plan - Housing Types
1 : 1000

FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING. DO NOT SCALE.

ALL CONTRACTORS MUST VISIT THE SITE AND BE RESPONSIBLE FOR CHECKING ALL SETTING OUT DIMENSIONS AND NOTIFYING THE ARCHITECT OF ANY DISCREPANCIES PRIOR TO ANY MANUFACTURE OR CONSTRUCTION WORK.

NOTES:

"THE TREE FILE LTD. HAS BEEN ENGAGED AS ARBORICULTURAL CONSULTANT FOR THE DESIGN AND CONSTRUCTION PHASES OF THE PROJECT"

HOUSING TYPES KEY

- 4 Bed Semi-detached (3 Storey)
- 4 Bed Semi-detached (2 Storey)
- 3 Bed Semi-detached Type A (2 Storey) / 3 Bed detached (2 Storey)
- 3 Bed Semi-detached Type B (2 Storey)
- 3 Bed Semi-detached Type B (2 Storey)
- 2 Bed Terrace (2 Storey)
- 3 Bed Terrace (3 Storey)
- 2 Bed Terrace (2 Storey)
- 3 Bed Terrace (2 Storey)
- 2 Bed Maisonette (2 Storey)
- 2 Bed Maisonette (2 Storey)
- 1 Bed Maisonette (2 Storey)
- 1 Bed Maisonette (2 Storey)
- Apartment Block A&B (4 Storey)
- Apartment Block C & Duplexes Type B (4 Storey)
- Apartment Block D (4 Storey)
- Apartment Block F & Creche (4 Storey)
- Duplexes Type A (3 Storey)

" For More Information refer to housing Quality Assesment"

Rev	Date	Description	Issued By
P01	08/12/2020	Issue for Planning	VM

Project Stage: Planning

Client: Westar Investments Ltd.

Project: Residential SHD Development @ Clane

Drawing Title: Proposed Site Plan - Housing Types

Drawn	Checked	Paper Size	Scale	Date
VM	JM	A1	As indicated @A1	08/12/2020

Project No.	Drawing No.	Classification	Revision
PE20057	0002		P01

File Name: PE20057-CWO-ZZ-ZZ-DR-A-0002

Status: S1 - Suitable For Coordination

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www.cwoarchitects.ie

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Appendix 7.1 Site Specific Flood Risk Assessment prepared by IE Consulting

Westar Group

Specialising in High Grade Developments

WESTAR INVESTMENTS LTD

PROPOSED DEVELOPMENT AT CAPDOO & ABBEYLANDS,

DUBLIN ROAD, CLANE, CO. KILDARE

SITE SPECIFIC FLOOD RISK ASSESSMENT

IE CONSULTING

WATER-ENVIRONMENTAL-CIVIL

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

WESTAR INVESTMENTS LTD

PROPOSED DEVELOPMENT AT CAPDOO & ABBEYLANDS,

DUBLIN ROAD, CLANE, CO. KILDARE

SITE SPECIFIC FLOOD RISK ASSESSMENT

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Client :-
Westar Investments Ltd
Dublin Road,
Clane
Co Kildare

Document No:	IE2181-4805
Issue No:	01-ISSUE
Project No:	IE2181
Date:	30th November 2020
Revision:	2.0
Prepared By:	L McMillan BEng(Hons) MIEI
Checked By:	P McShane BEng(Hons) MIEI

Table of Contents

1 Introduction

IE Consulting was requested by Westar Investments Ltd to undertake a Site Specific Flood Risk Assessment (SSFRA) for an area of lands at Capdoo, Clane, Co Kildare.

This project consists of an application for a Strategic Housing Development by Westar Investments Limited (the applicant) for a new residential development on lands measuring approximately 10.36 hectares at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. The application is for a development that includes 333 dwellings consisting of: 121 no. 2, 3 & 4 bedroom housing units, 144 no. 1, 2 & 3 bedroom apartments, 68 no. 1, 2 & 3 bedroom duplex & maisonette type units, a crèche and a public park adjacent to the River Liffey with 3 no. vehicular/pedestrian accesses and site, landscaping and associated infrastructural works. The subject site is situated on the eastern side of Regional Road R403 in the eastern environs of Clane Town, c. 650m from the Town Centre'

The purpose of this SSFRA is to assess the potential flood risk to the proposed development site and to assess the impact that development of the site may or may not have on the hydrological regime of the area.

Quoted ground levels or estimated flood levels relate to ordnance datum Malin unless stated otherwise.

This flood risk assessment study has been undertaken in consideration of the following guidance document:-

'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009.

2 Proposed Site Description

2.1 General

The proposed development site is located approximately 660m east of Clane town centre, Co Kildare.

The site is bounded to the north and north-west by agricultural lands, to the east by the River Liffey, to the south-east by a drainage channel and to south by an existing residential development. The total area of the proposed development site is approximately 10.36 hectares.

The location of the proposed development site is illustrated on *Figure 1* below and shown on *Drawing Number IE2181-001-A in Appendix A*.

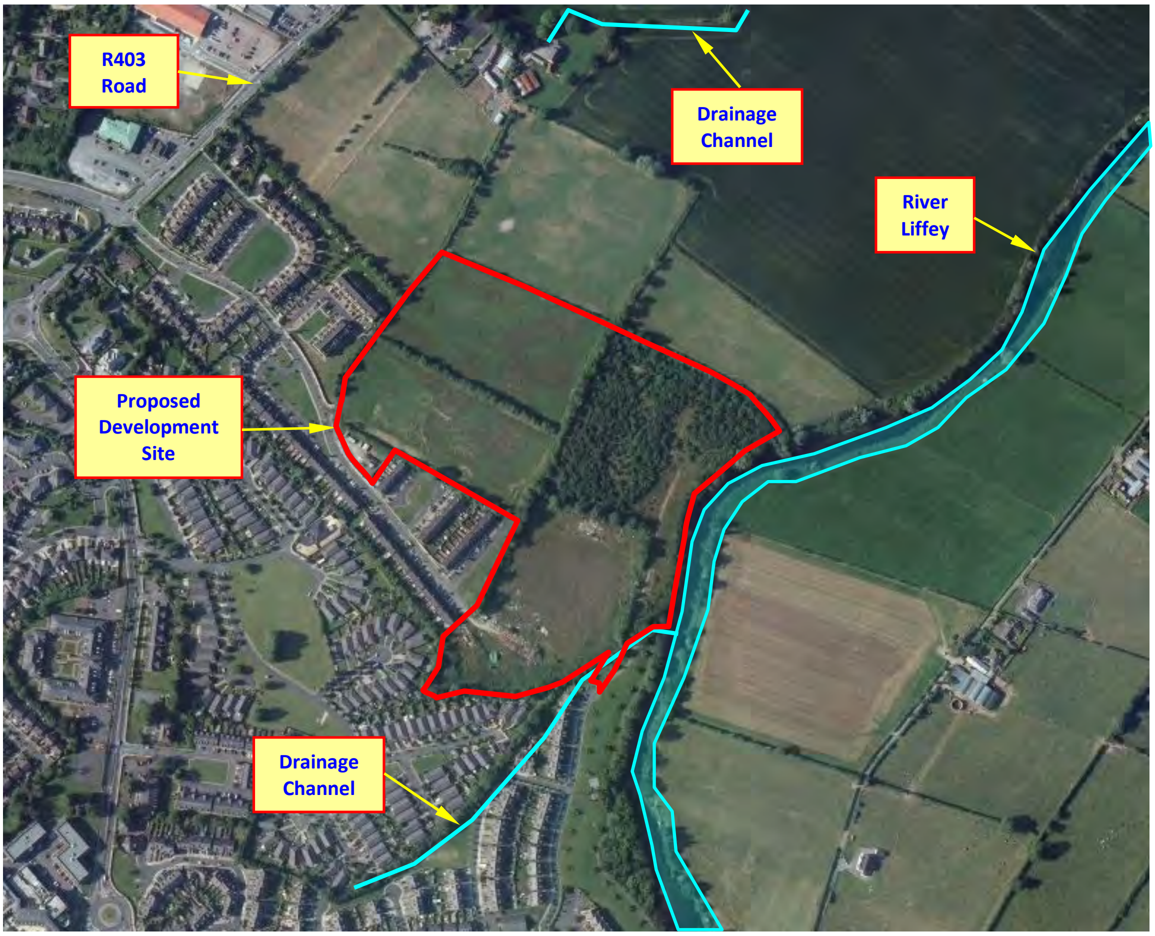


Figure 1 - Site Location

2.2 Existing Topography Levels at Site

The north-west part of the proposed site slopes moderately from a high point at the centre of the site towards the north, north-west and north-east site boundaries at an average gradient of approximately 1.23% (1 in 81). The southern half of the proposed site slopes moderately from a high point at the centre of the site towards the south, south-west and south-east site boundaries at an average gradient of approximately 0.81% (1 in 123). The north-east part of the proposed site slopes moderately from a high point at the centre of the site towards the north and east site boundaries at average gradients of approximately 0.77% (1 in 129) and 4.54% (1 in 22) respectively.

Existing ground elevations within the site boundary range from approximately 67.56 mOD (Malin) at the centre of the site to 63.408mOD (Malin) at the eastern boundary of the site.

2.3 Local Hydrology, Landuse & Existing Drainage

The most significant hydrological feature in the vicinity of the proposed development site is the River Liffey located adjacent to the eastern site boundary. The River Liffey is a controlled watercourse along the reach upstream and downstream of Clane. Discharge volumes in the River Liffey along this reach are controlled and monitored by the ESB and are dependent on inflows to Pollaphuca and Golden Falls dams. These dams have a significant beneficial effect in attenuating flood flows in the River Liffey.

At the location of the proposed development site the River Liffey generally flows in a south to north direction. Utilising the OPW Flood Studies Update (FSU) Portal software, the catchment area of the River Liffey was delineated. As illustrated in *Figure 2* below, the total catchment area of the River Liffey was found to be approximately **647.32 km^2** to a point downstream of the site. Assessment of the River Liffey upstream catchment area indicates that the catchment is predominantly rural in nature with urban development accounting for approximately 3.03% of the total catchment area.

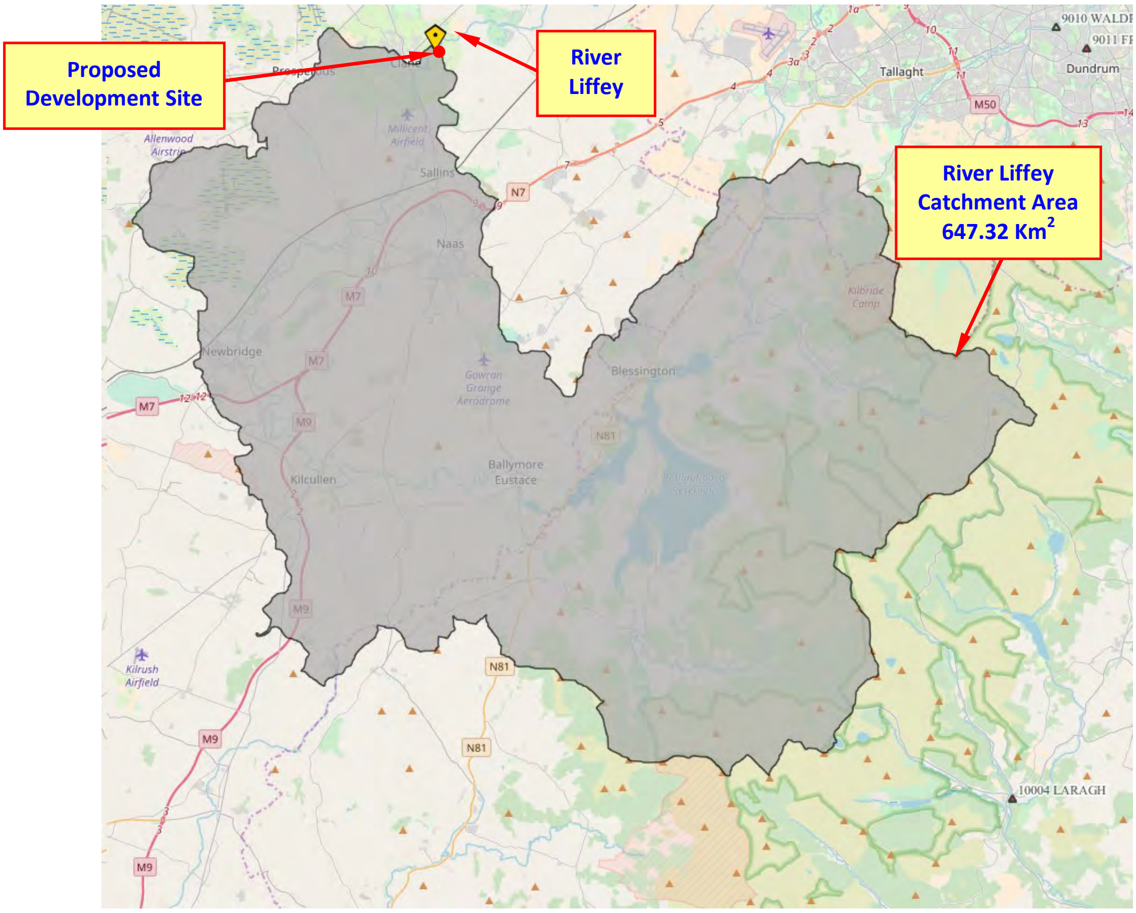


Figure 2 – River Liffey Upstream Catchment Area

3 Initial Flood Risk Assessment

The flood risk assessment for the proposed development site is undertaken in three principle stages, these being *'Step 1 – Screening', 'Step 2 – Scoping'* and *'Step 3 – Assessing'*.

3.1 Possible Flooding Mechanisms

Table 1 below summarises the possible flooding mechanisms in consideration of the proposed development site:-

Source/Pathway	Significant?	Comment/Reason
Tidal/Coastal	No	The site is not located in a coastal or tidally influenced region
Fluvial	Yes	The River Liffey is located adjacent to the eastern site boundary
Pluvial (urban drainage)	No	There is no significant urban drainage infrastructure in the vicinity of the site
Pluvial (overland flow)	No	There site is not surrounded by significantly elevated lands and does not provide an important discharge location to runoff from surrounding lands
Blockage	No	There are no significant hydraulic structures in the vicinity of the site
Groundwater	No	There are no significant springs or groundwater discharges recorded in the immediate vicinity of the site

Table 1

The primary potential flood risk to the proposed development site can be attributed to an extreme fluvial flood event in the River Liffey located adjacent to the eastern site boundary.

In accordance with 'The Planning System and Flood Risk Management – Guidelines for Planning Authorities - DOEHLG 2009' the potential flood risk to the proposed development site is analysed in the subsequent 'Screening Assessment' and ''Scoping Assessment'' section of this study report.

4 Screening Assessment

The purpose of the screening assessment is to establish the level of flooding risk that may or may not exist for a particular site and to collate and assess existing current or historical information and data which may indicate the level or extent of any flood risk.

If there is a potential flood risk issue then the flood risk assessment procedure should move to *'Step 2 – Scoping Assessment'* or if no potential flood risk is identified from the screening stage then the overall flood risk assessment can end at *'Step 1'*.

The following information and data was collated as part of the flood risk screening assessment for the proposed development site:-

4.1 OPW/EPA/Local Authority Hydrometric Data

Existing sources of OPW, EPA and local authority hydrometric data were investigated. As illustrated in *Figure 3* below, this assessment has determined that there are three hydrometric gauging stations located on the River Liffey in the general regional area of the proposed development site.

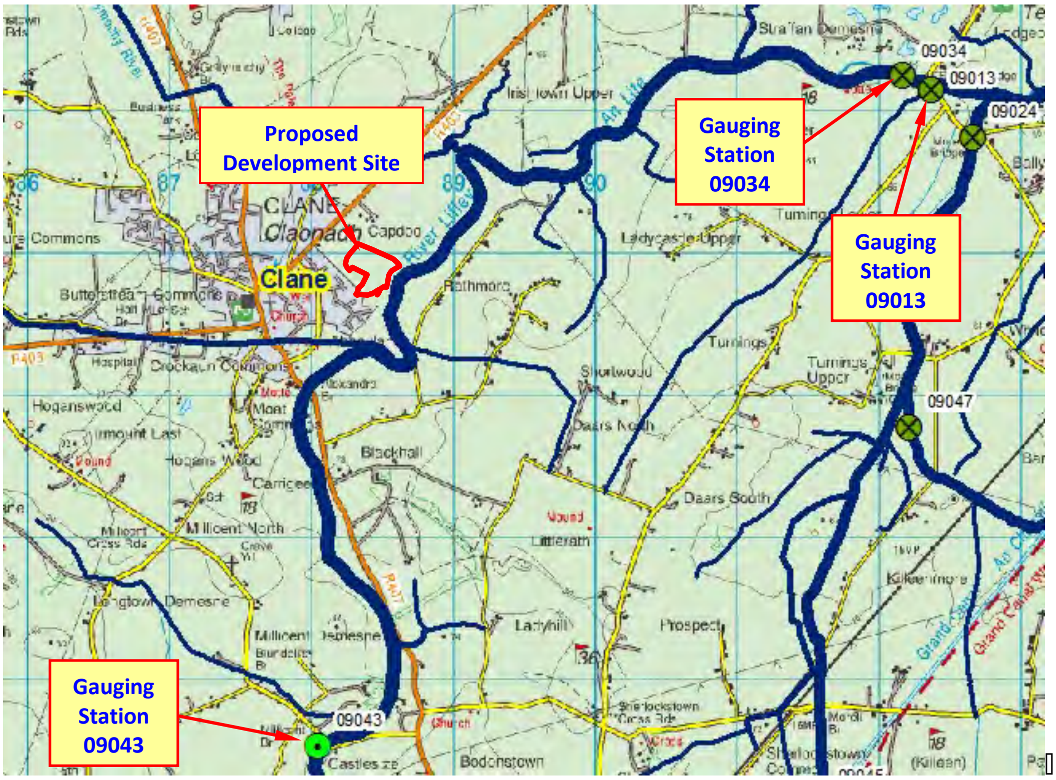


Figure 3 – Hydrometric Gauging Stations

Gauging Station 09043 (Millicent Bridge) is entered in the Register of Hydrometric Stations of Ireland as an inactive staff gauge station with flow measurements recorded for hydrometric years 2000 to 2003. Gauging Station 09034 (Straffan Upstream) is entered into the Register of Hydrometric Stations in Ireland as a data logger station. Gauging Station 09013 (Straffan Downstream) is entered in the Register of Hydrometric Stations of Ireland as an active recorder station.

4.2 OPW PFRA Indicative Flood Mapping

Preliminary Flood Risk Assessment (PFRA) Mapping for Ireland was produced by the OPW in 2011. OPW PFRA flood map number 2019/MAP/236/A illustrates indicative flood zones within this area of County Kildare.

Figure 4 below illustrates an extract from the above predictive flood map in the vicinity of the proposed development site.

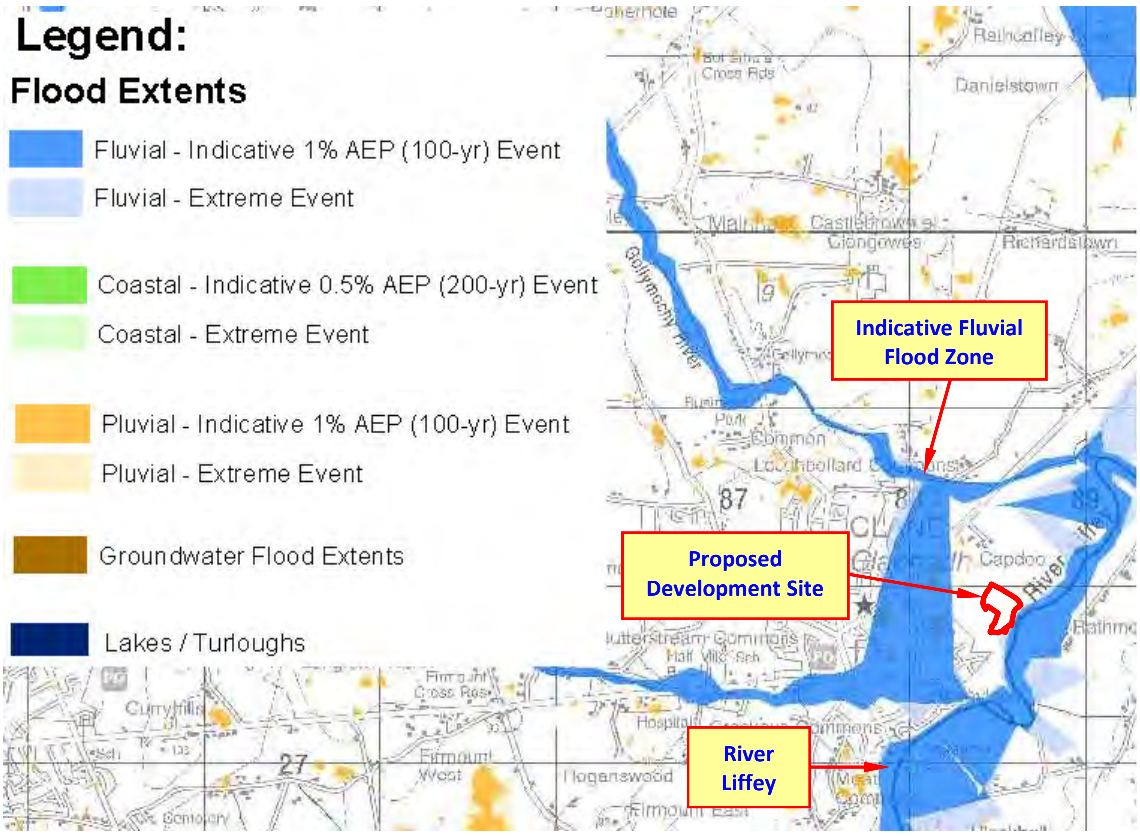


Figure 4 – PFRA Mapping

The PFRA flood mapping indicates an indicative fluvial flood zones adjacent to the east site boundary.

No pluvial or groundwater flood zones are mapped within the boundary of the proposed development site.

Figure 5 below illustrates the PFRA predictive flood zones from *Figure 4* overlaid onto higher resolution background mapping.

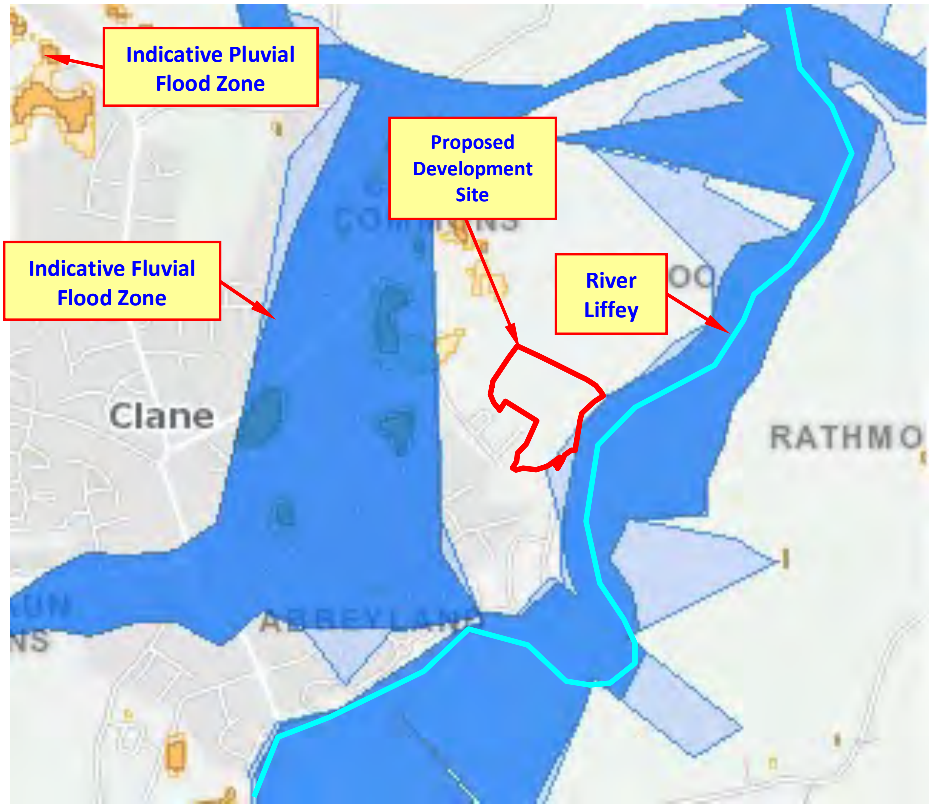


Figure 5 – PFRA Indicative Fluvial Flood Mapping

It should be noted that the predicted extent of flooding illustrated on these maps was developed using a low resolution digital terrain model (DTM) and illustrated flood extents are intended to be indicative only. The flood extents mapped on the PFRA maps are not intended to be used on a site specific basis.

4.3 OPW Flood Maps Website

The OPW Flood Maps Website (www.floodmaps.ie) was consulted in relation to available historical or anecdotal information on any flooding incidences or occurrences in the vicinity of the proposed development site. *Figure 6* below illustrates mapping from the Flood Maps website in the vicinity of the site.

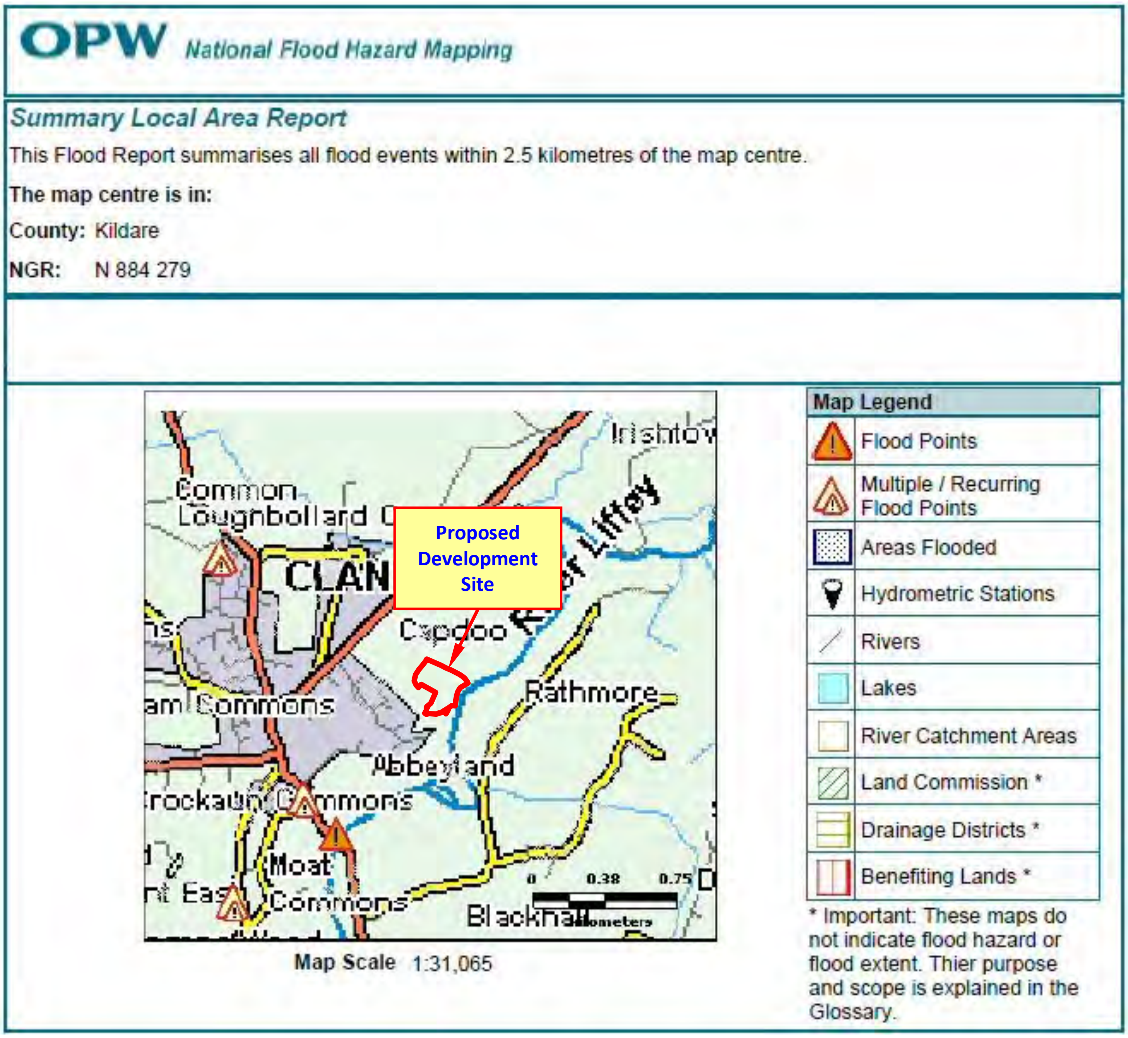


Figure 6 – OPW Flood Maps

Figure 6 above indicates no historic instances of flooding recorded within or adjacent to the proposed development site. A number of historical or anecdotal instances of flooding which have occurred in Clane are indicated, most notably at Loughbollard, in the vicinity of Alexander Bridge, Millicent Road and Commons.

The OPW Flood Maps website also contains a number of ESB maps that illustrate recorded flood levels during the flood of 1954. This has been documented as a significant flood event in the middle catchment of the River Liffey. *Figure 6A* below illustrates an extract of recorded flood levels at Alexandra Bridge, Clane, which is approximately 1360m upstream of the proposed development site.

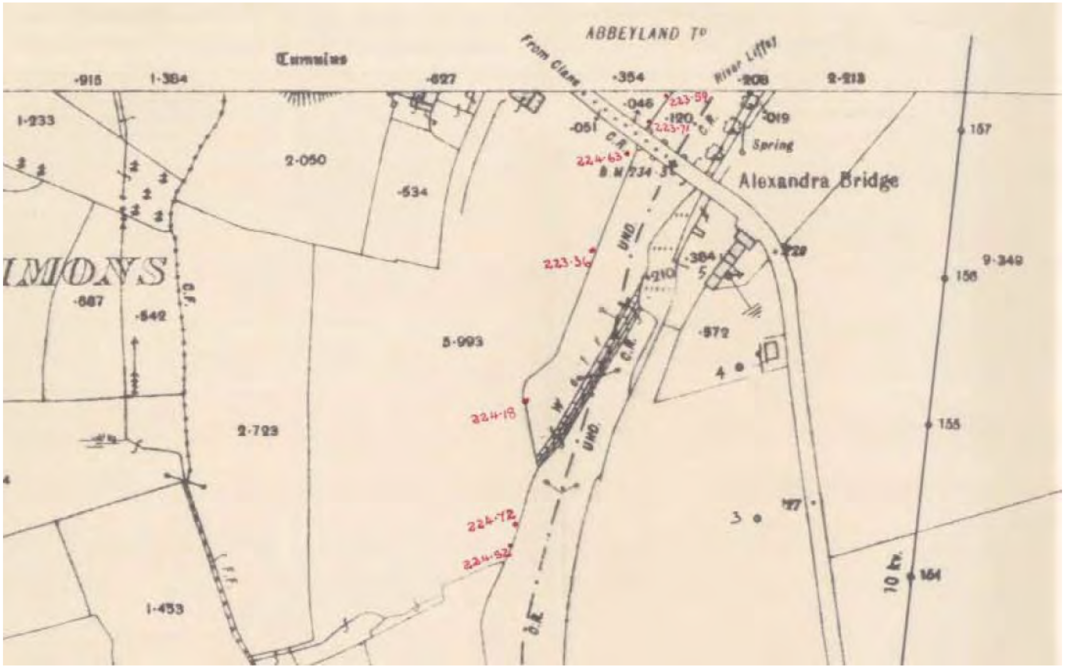


Figure 6A

The levels illustrated in *Figure 6A* above are in feet and reduced to Poolbeg datum. Converting to metres and reducing to Malin datum the recorded flood levels range from 65.49m (OD) to 65.38m (OD) in the vicinity of Alexandra Bridge. The flood event of 1954 has an estimated return period of 1 in 75 years.

Non of the historic flood events listed above are indicated as having impacted the area of the proposed development site.

4.4 Ordnance Survey Historic Mapping

Available historic mapping for the area was consulted, as this can provide evidence of historical flooding incidences or occurrences. The maps that were consulted were the historical 6-inch maps (pre-1900), and the historic 25-inch map series.

Figures 7 and *8* below show the historic mapping for the area of the proposed development site.

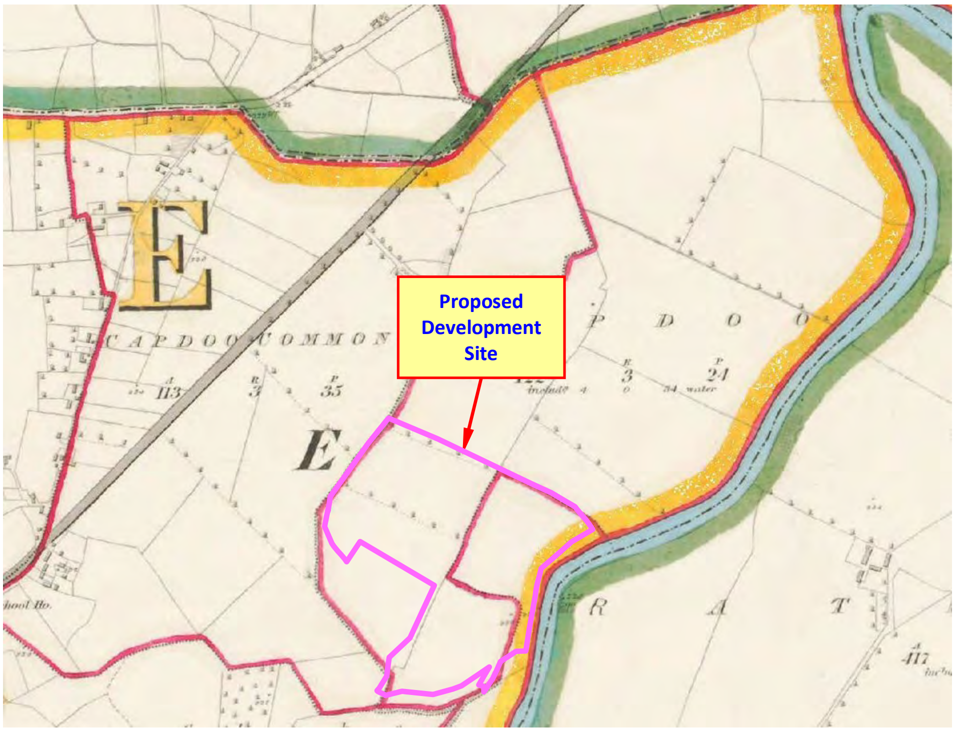


Figure 7 – Historic 6-Inch Mapping

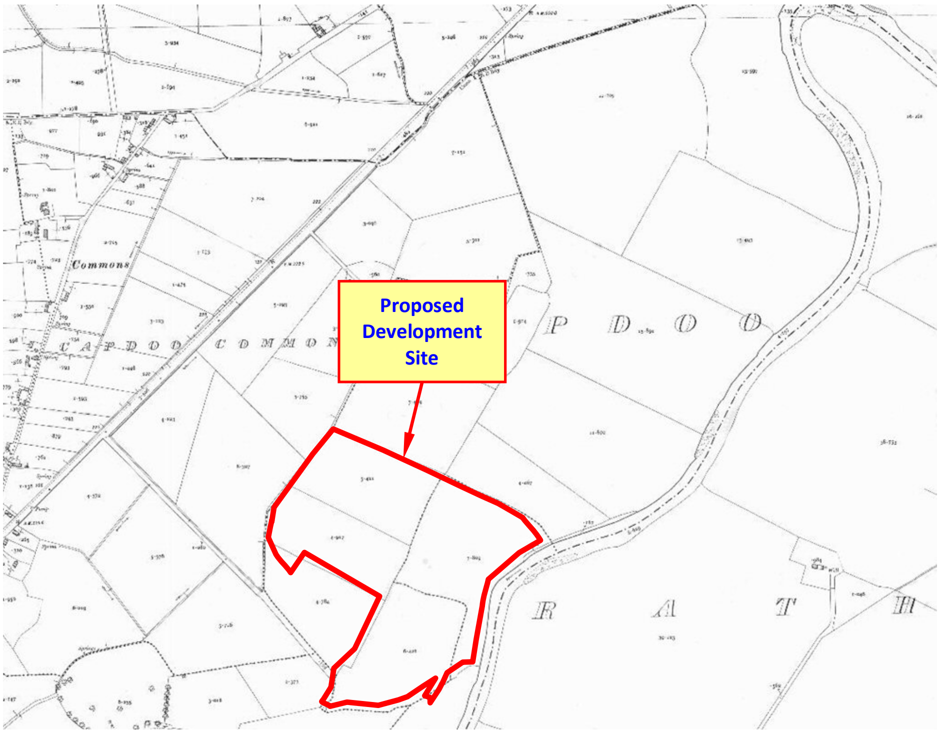


Figure 8 – Historic 25-Inch Mapping

The historic 6 inch and 25 inch mapping does not indicate any historical or anecdotal instances of flooding within or adjacent to the boundary of the proposed development site.

4.5 Geological Survey of Ireland Mapping

The alluvial deposit maps of the Geological Survey of Ireland (GSI) were consulted to assess the extent of any alluvial deposits in the vicinity of the proposed development site. Alluvium deposits can be indicative of areas that have flooded in the recent geological past.

Figure 9 below illustrates the sub-soils mapping for the general area of the proposed development site.

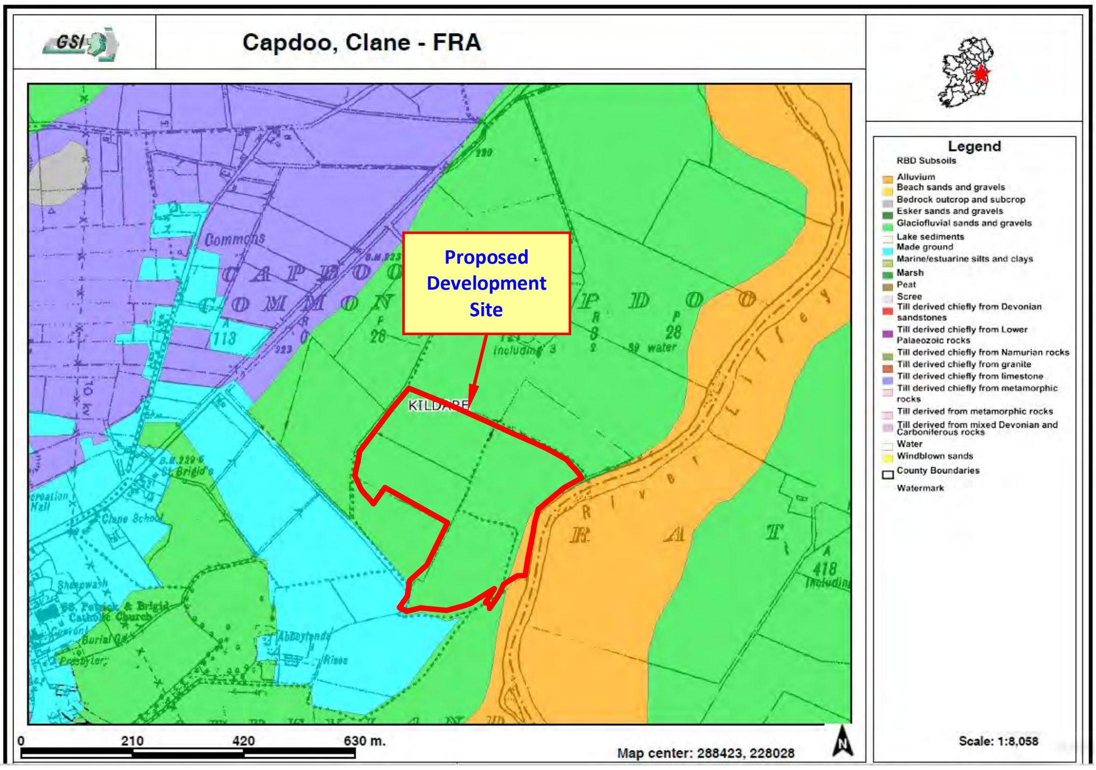


Figure 9 – GSI Subsoil Mapping

Figure 9 above indicates that the sub-soil conditions at the proposed development site consist mostly of Glaciofluvial sands and gravel. A small area of Alluvium deposits is mapped adjacent to the eastern boundary of the site.

4.6 Eastern CFRAM Study

The Eastern Region Catchment Flood Risk & Management Study (CFRAMS) has been undertaken by the OPW and the Final version of the flood maps were issued in June 2016. Flood risk extent and depth maps for further assessment areas within Co Kildare have also been produced. OPW CFRAMS predictive flood map number *E09LA_EXFCD_F1_10* illustrates predictive extreme fluvial flood extent zones associated with the River Liffey in the vicinity of the proposed development site.

Figure 10 below (extracted from CFRAMS flood map *E09CAM_EXFCD_F1_24*), illustrates the predicted extreme 10% AEP (1 in 10 year), 1% AEP (1 in 100 year) or 0.1% AEP (1 in 1000 year) fluvial flood extents in the vicinity of the proposed development site.

Node Label	Water Level (OD) 10% AEP	Flow (m^3/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m^3/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m^3/s) 0.1% AEP
09LIFF04162	64.43	N/A	64.88	N/A	65.18	N/A
09LIFF04152	64.34	95.67	64.76	128.02	65.06	161.63
09LIFF04112	64.10	N/A	64.53	N/A	64.83	N/A

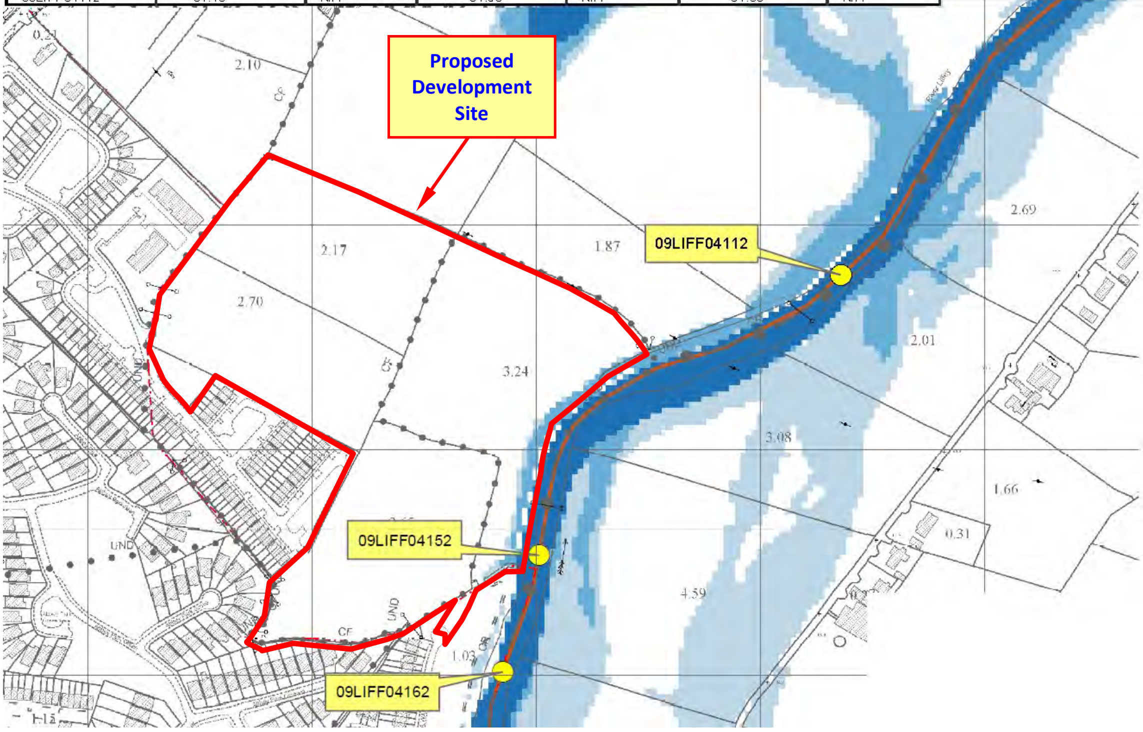


Figure 10 – Eastern CFRAMS Fluvial Flood Maps

Figure 10 above indicates that a limited area adjacent to the eastern boundary of the proposed development site falls within a predictive 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood zone.

The CFRAMS flood map also provides information on predictive water levels & flows for the 10% AEP, 1% AEP and 0.1% AEP fluvial flood events at various node points along the River Liffey.

The node points closest to the proposed development site are referenced as node point *09LIFF04162* located upstream of the proposed site, node point *09LIFF04152* located adjacent to the proposed site and *node point 09LIFF04112* located beyond the downstream boundary of the proposed site. Details of the predicted extreme fluvial flood levels & flood volumes for the CFRAMS node points in the general vicinity of the proposed development site are listed in *Table 2* below, which has been extracted from CFRAMS flood map reference *E09CAM_EXFCD_F1_24.*

Node Label	Water Level (mOD) 10% AEP	Flow (m3/s) 10% AEP	Water Level (mOD) 1% AEP	Flow (m3/s) 1% AEP	Water Level (mOD) 0.1% AEP	Flow (m3/s) 0.1% AEP
09LIFF04162	64.43	-	64.88	-	65.18	-
09LIFF04152	64.34	95.67	64.76	128.02	65.06	161.63
09LIFF04112	64.10	-	64.53	-	64.83	-

Table 2 –CFRAMS Fluvial Map - Predicted Flood Volumes & Levels

Predictive fluvial flood depth maps have also been produced as part of the Eastern CFRAM Study.

Figure 11 and *Figure 12* below, duplicated from the Eastern CFRAM Study, illustrate the predictive flood depths for the area of the proposed development for the 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood events respectively.

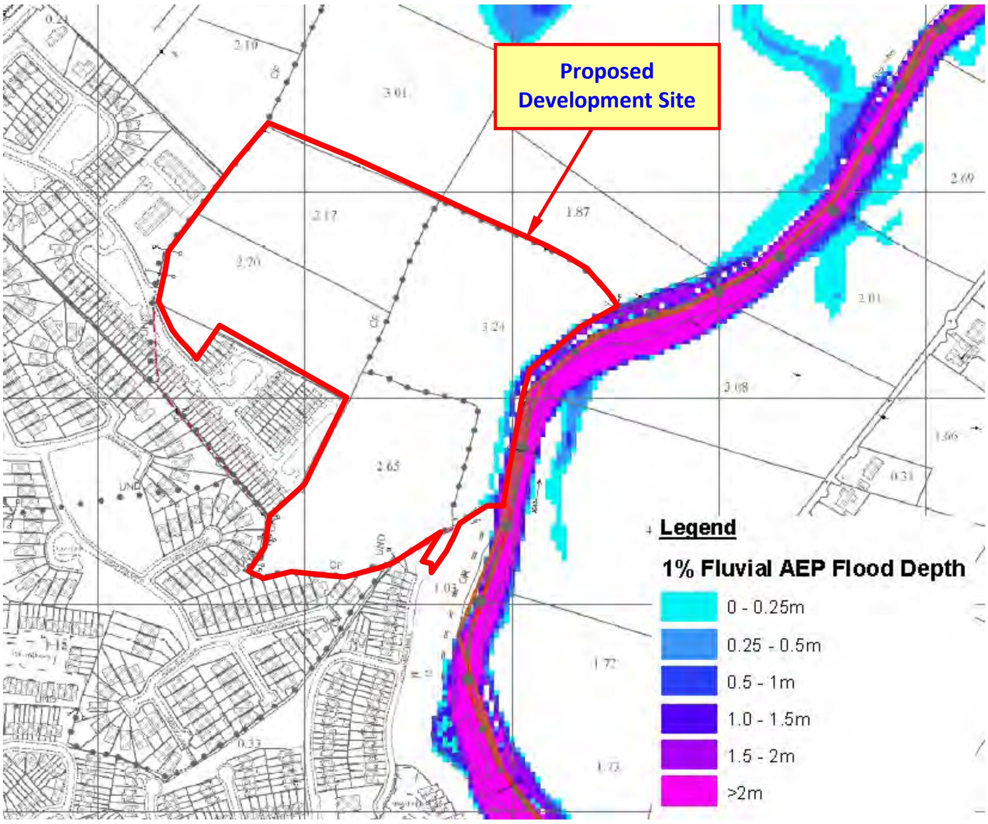


Figure 11 – Eastern CFRAMS 1% AEP Fluvial Flood Depth Map

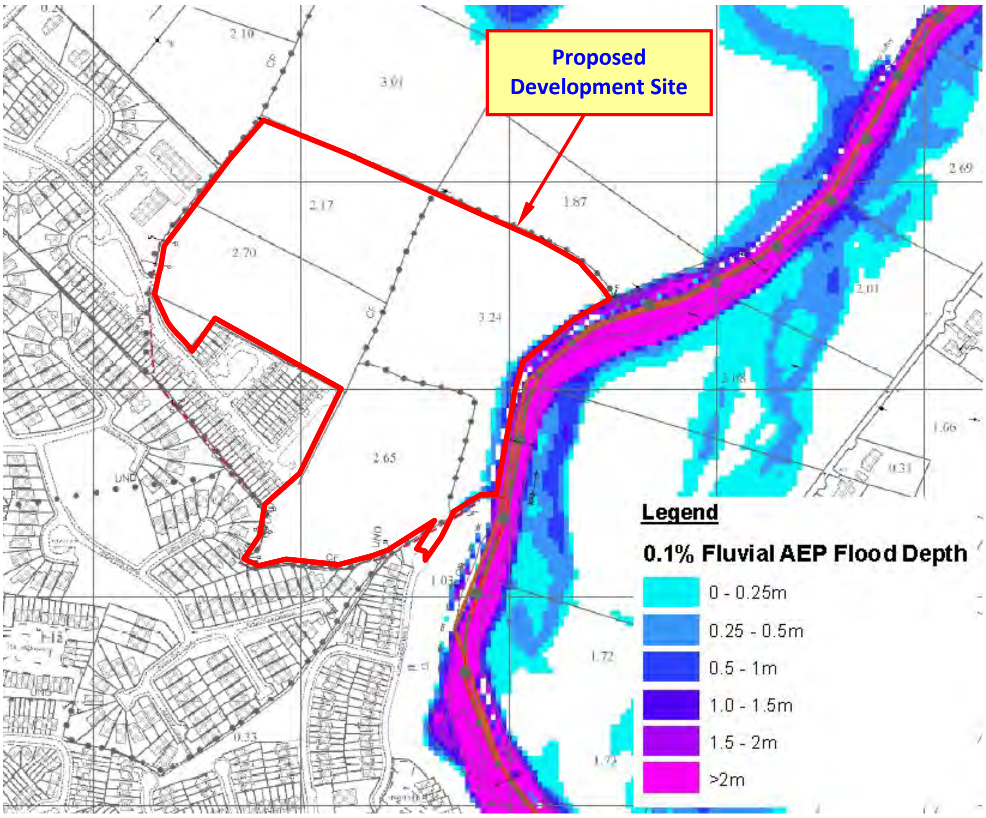


Figure 12 – Eastern CFRAMS 0.1% AEP Fluvial Flood Depth Map

Figure 11 and *Figure 12* above indicate predicted 1% AEP and 0.1% AEP fluvial flood depths of 0.25m-1.0m within a limited area adjacent to the eastern boundary of the proposed development site.

The Eastern CFRAM flood maps are predictive flood maps, in that they provide predicted flood extent and depth information for a 'design' flood event that has an estimated probability of occurrence (e.g., the 1% AEP event), rather than information for floods that have occurred in the past.

4.7 Kildare County Development Plan

Reference to Map 9.1 (Drawing Number 200/16/1000) of the Kildare County Development Plan 2017-2023 indicates a limited area of Strategic fluvial 'Flood Zone A' and 'Flood Zone B' adjacent to the eastern site boundary. An extract from the above map is illustrated in *Figure 13* below:-

Figure 13 – Kildare County Development Plan Map

Figure 13 above indicates that the proposed development site would not be significantly impacted by a 1% AEP (1 in 100 year) or 0.1% AEP (1 in 1000 year) fluvial flood event.

5 Scoping Assessment

The purpose of the scoping stage is to identify possible flood risks and to implement the necessary level of detail and assessment to assess these possible risks, and to ensure these can be adequately addressed in the flood risk assessment. The scoping exercise should also identify that sufficient quantitative information is already available to complete a flood risk assessment appropriate to the scale and nature of the development proposed.

The above screening assessment indicates that a limited area of proposed development site adjacent to the eastern boundary may be at risk from fluvial flooding but that the area of the site is not at significant risk from pluvial or groundwater flooding.

In consideration of the information collated as part of the screening exercise, and the availability of other information and data specific to the area of the proposed development site, it is considered that sufficient quantitative information to complete an appropriate flood risk assessment for the proposed development site cannot be derived from the information collated as part of the screening exercise alone.

While the current flood extent maps for the area produced as part of the Eastern CFRAM study are based on the results of detailed hydraulic modelling undertaken along the River Liffey and do provide a reasonably accurate delineation of flood zones and prediction of flood depths in the general vicinity of the proposed development site, this mapping is based on a localised digital terrain model (DTM) of the general Clane area and can be subject to local DTM errors or variations. It is therefore necessary to undertake a more accurate site specific delineation of the predictive 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) fluvial flood extents at the location of the proposed development site.

The potential flood risk to the proposed development site is assessed in the subsequent 'Assessing Flood Risk' stage of this study report.

6 Assessment of Flood Risk

Flood risk from a particular watercourse is normally assessed for a 1 in 100 year (1% AEP) and 1 in 1000 year (0.1% AEP) flood event, in accordance with the Kildare County Council development plan and with the DOEHLG guidelines *'The Planning System and Flood Risk Management Guidelines'*.

The following sections present an analysis and assessment of the estimated 1 in 100 year (1% AEP) and 1 in 1000 year (0.1% AEP) extreme flood events in the River Liffey adjacent to the proposed development site.

6.1 Estimation of Extreme Flood Levels in the River Liffey

Extreme flood levels at the location of the proposed development site have been derived as part of the Eastern CFRAM Study. The most relevant node points in respect of the proposed development site are Node Point *09LIFF04162, 09LIFF04152* and *09LIFF04112* that are located just upstream, adjacent to the east site boundary and 185m downstream of the site respectively. Predicted 1% AEP (1 in 100 year) and 0.1% AEP (1 in 1000 year) flood levels at these node points are applicable for the purpose of assessing fluvial flood risk to the proposed development site.

Table 2 above lists the predicted extreme flood levels for these node points.

6.2 Climate Change

In general, it is a requirement of Kildare County Council that the required Design Flow to be used for flood extent delineation is the 1 in 100 year flood flow event plus 20% in order to allow for climate change'.

'The Planning System and Flood Risk Management – Guidelines for Planning Authorities' DOEHLG 2009 Technical Appendix A, Section 1.6 recommends that, where mathematical models are not available climate change flood extents can be assessed by using the Flood Zone B outline as a surrogate for Flood Zone A with allowance for the possible impacts of climate change. Therefore, in accordance with the above guidelines, the predicted 0.1% AEP (1 in 1000 year) flood levels listed in *Table 2* above are considered to be representative of the mid-range future climate change scenario 1% AEP (1 in 100 year) plus climate change food levels.

6.3 Topographical Survey & Contour Mapping

In order to assist in the assessment of any potential flood inundation in the general location of the proposed development site, topographical survey information was used to develop a detailed Digital Terrain Model (DTM) of the existing site area. Development of a DTM allows the predicted extreme flood levels listed in *Table 2* above to be analysed in more detail at the specific location of the proposed development site.

The DTM and contour mapping was developed utilising digital survey information of the proposed development site and the Autodesk Civil 3D 2019 software package. The DTM and contour mapping developed for the proposed development site is illustrated in *Figure 14* and *Figure 15* below.

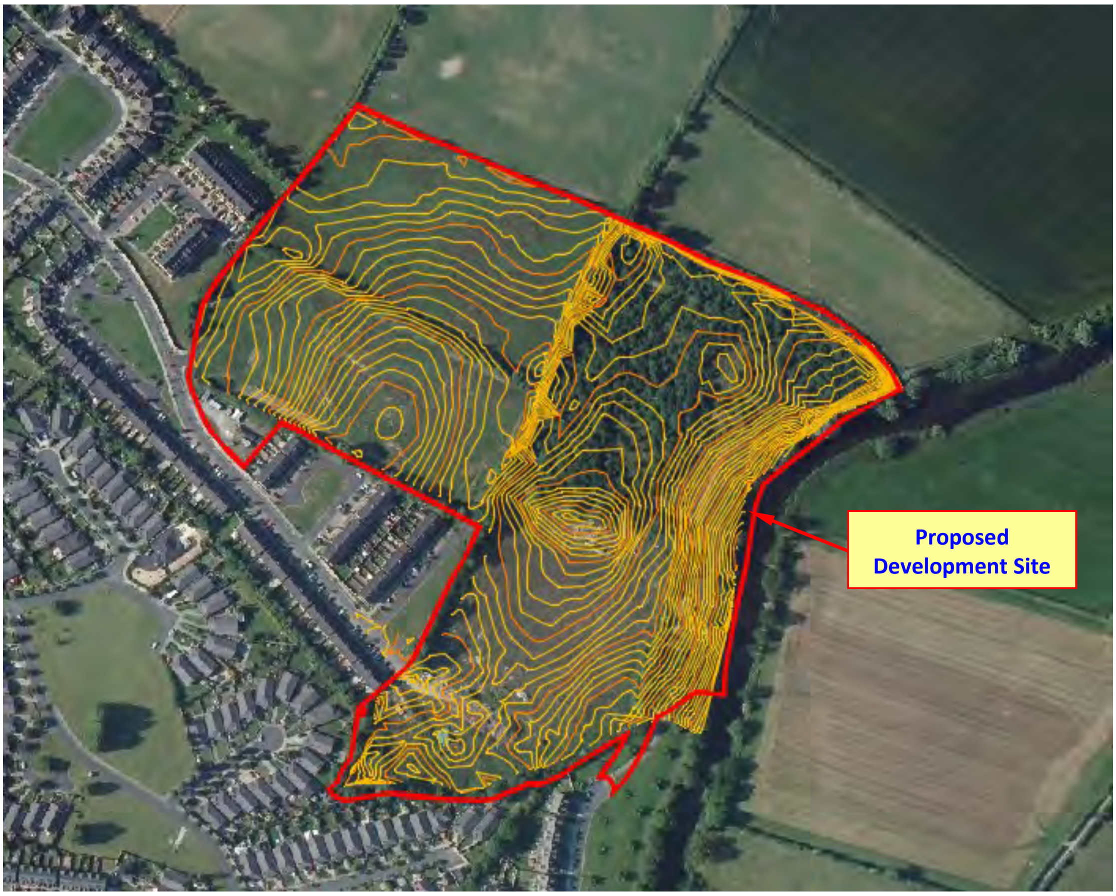


Figure 14 – Contour Mapping

Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	63.40	63.62	
2	63.62	63.84	
3	63.84	64.06	
4	64.06	64.28	
5	64.28	64.50	
6	64.50	64.72	
7	64.72	64.94	
8	64.94	65.16	
9	65.16	65.38	
10	65.38	65.60	
11	65.60	65.82	
12	65.82	66.04	
13	66.04	66.26	
14	66.26	66.48	
15	66.48	66.70	
16	66.70	66.92	
17	66.92	67.14	
18	67.14	67.36	
19	67.36	67.58	
20	67.58	67.80	

Figure 15 – Topographical Survey Derived DTM

6.4 Flood Zone Mapping & Delineation

Utilising the DTM illustrated in *Figure 14* and *Figure 15* above, and the 1 in 100 year (1% AEP) and 1 in 1000 year (0.1% AEP) extreme flood levels for the River Liffey along the reach adjacent to the proposed development site, the Site Specific 1% AEP and 0.1% AEP flood zones were delineated using the hydrology module of an appropriate software package. The software enables a user defined flood level to be mapped and modelled onto a DTM over the full extent of the area being assessed.

Drawing Number IE2181-002-A, Appendix A illustrates the delineated 1 in 100 year flood extent (Flood Zone 'A') and 1 in 1000 year flood extent (Flood Zone 'B') over the full area of the proposed development site.

Drawing Number IE2181-003-A, Appendix A illustrates representative cross-sectional elevations through the site, illustrating existing and proposed ground levels and finished floor levels relative to predictive 1% AEP and 0.1% AEP flood levels in the River Liffey.

The above analysis and flood zone delineation undertaken as part of this Site Specific Flood Risk Assessment (SSFRA) indicates that the area of the site where development is proposed does not fall within a delineated flood zone. The area of the site where development is proposed is therefore not susceptible to flood risk during the occurrence of an extreme fluvial event in the River Liffey.

In order to ensure sustainable development of this particular site the following is recommended:-

- *Proposed finished ground levels (road levels, etc) should be constructed to a minimum level of 0.15m above the maximum predicted 0.1% AEP flood level – i.e. 65.18m + 0.15m =* ***65.33m OD****.*
- *Proposed finished floor levels should be constructed to a minimum level of 0.30m above the maximum predicted 0.1% AEP flood level – i.e. 65.18m + 0.30m =* ***65.48m OD****.*
- *The proposed development site should incorporate an appropriately designed stormwater management system that should limited stormwater runoff from the site to existing pre-development runoff rates.*

In consideration of the assessment and analysis undertaken as part of this Site Specific Flood Risk Assessment, and the recommendations presented above, the development as proposed is not at significant risk due to the occurrence of an extreme fluvial flood event in the River Liffey. The development as proposed would not result in an adverse impact to the existing hydrological regime of the area and would not result in an increased flood risk elsewhere.

6.5 Assessment of Potential Residual Pluvial Flood Risk

As illustrated on the Proposed Foul & Surface Water Drainage layout drawing prepared by BCA Consulting Engineers, the stormwater management system to serve the proposed development has been designed in general consideration of the Kildare County Council drainage policy and the GDSDS guidelines.

In order to access any potential residual pluvial flood risk associated with the stormwater drainage network to serve the proposed development the network has been subject to an additional hydraulic simulation analysis utilising the Micro-Drainage software package in order to demonstrate the following:-

- Analysis to demonstrate that the proposed development storm water drainage and management system has been designed not to flood any part of the site in a 1 in 30 year return design storm and to ensure a free-board of 300mm below each manhole cover level & inclusive of climate change allowance and inclusive of allowance for urban creep (GDSDS Level of Service – Site Flooding criteria)

- Analysis to check for exceedence up to the 1 in 100 year return design storm and inclusive of climate change allowance and inclusive of allowance for urban creep (GDSDS Level of Service – Site Flooding criteria)
- Additional simulation analysis in consideration of 1 in 1 year and 1 in 2 year return design storm event (inclusive of climate change allowance).

The output of the Micro-Drainage hydraulic simulation analysis is presented in *Appendix B*.

As presented in the hydraulic simulation analysis output in *Appendix B*, under 'Summary of Critical Results by Maximum Level (Rank 1) for Storm', the simulation criteria for each simulated return period (1 in 1 year, 1 in 2 year, 1 in 30 year & 1 in 100 year) has applied a 'Margin of Flood Risk Warning' of 300m. This criteria has been set in order to ensure that in the event of an extreme rainfall event, and where surcharging of the storm water drainage pipes and manholes is predicted to occur during these events, then a freeboard of 300mm is maintained between each manhole cover level and the surcharged water level in each manhole.

As summarised in the Micro-Drainage hydraulic simulation output analysis presented in *Appendix B*, in consideration of a 1 in 30 year return period design storm, inclusive of climate change, a minimum freeboard of 300mm is maintained within the storm water drainage system (Page 32-35 of Micro-Drainage calculations).

In consideration of a 1 in 100 year return period design storm, inclusive of climate change, maximum water levels within the storm water drainage system would not exceed proposed manhole cover levels and would therefore not present a residual pluvial flood risk to the proposed development site (Page 37-40 of Micro-Drainage calculations).

In summary the storm water drainage and management system to serve the proposed strategic housing development is not predicted to present a residual pluvial flood risk to the development and is considered to comply with the GDSDS Level of Service – Site Flooding Criteria.

7 Proposed Development in the Context of the Guidelines

In the context of the *'Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'* three flood zones are designated in consideration of flood risk to a particular development site.

Flood Zone 'A' – where the probability of flooding from rivers and watercourses is the highest (greater than 1% or 1 in 100 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

Flood Zone 'B' – where the probability of flooding from rivers and watercourses is moderate (between 0.1% or 1 in 1000 year for river and watercourse flooding and 0.5% or 1 on 200 for coastal or tidal flooding).

Flood Zone 'C' – where the probability of flooding from rivers and watercourses is low or negligible (less than 0.1% of 1 in 1000 year for both river and watercourse and coastal flooding). *Flood Zone 'C'* covers all areas that are not in *Zones 'A'* or '*B*'.

The *'Planning System and Flood Risk Management Guidelines'* list the planning implications for each flood zone, as summarised below:-

Zone A – High Probability of Flooding. Most types of development would not be considered in this zone. Development in this zone should be only be considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and where the *'Planning System and Flood Risk Management Guidelines'* justification test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space and outdoor sports and reaction would be considered appropriate in this zone.

Zone B – Moderate Probability of Flooding. Highly vulnerable development such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses, strategic transport and essential utilities infrastructure would generally be considered inappropriate in this zone, unless the requirements of the justification test can be met. Less vulnerable development such as retail, commercial and industrial uses and recreational facilities might be considered appropriate in this zone.

In general however, less vulnerable development should only be considered in this zone if adequate lands or sites are not available in *Zone 'C'* and subject to a flood risk assessment to the appropriate level of detail to demonstrate that flood risk to the development can be adequately managed and that development in this zone will not adversely affect adjacent lands and properties.

Zone C – Low to Negligible Probability of Flooding. Development in this zone is appropriate from a flood risk perspective. Developments in this zone are generally not considered at risk of fluvial flooding and would not adversely affect adjacent lands and properties from a flood risk perspective.

In the context of the '*Planning System and Flood Risk Management Guidelines, DOEHLG, 2009'* this flood risk assessment has determined that the area of the proposed development site where development is proposed (residential units, roads, site access/egress, etc) works is not at risk of direct fluvial, pluvial or groundwater flooding and therefore falls within Flood Zone 'C'.

Development of the site as proposed is therefore not subject to the requirements of The Justification Test.

8 Summary Conclusions

In consideration of the findings of this site specific flood risk assessment and analysis the following conclusions and recommendations are made in respect of the proposed development site:-

- *A Site Specific Flood Risk (SSFRA) assessment, appropriate to the type and scale of development proposed, and in accordance with 'The Planning System and Flood Risk Management Guidelines – DoEHLG-2009' has been undertaken.*
- *The area of the proposed development site has been screened, scoped and assessed for flood risk in accordance with the above guidelines.*
- *The primary flood risk to the proposed development site can be attributed to potential fluvial flooding from the River Liffey.*
- *The proposed development site is not at risk from pluvial or groundwater flooding.*
- *Utilising the Eastern CFRAM study estimated extreme flood water levels and a detailed DTM developed utiising topographical survey data of the existing site, the 1 in 100 year (1% AEP) and 1 in 1000 (1% AEP) flood extents were delineated.*
- *The analysis and flood zone delineation undertaken as part of this Site Specific Flood Risk Assessment (SSFRA) indicates that the area of the site where development is proposed does not fall within a delineated flood zone. The area of the site where development is proposed is not susceptible to flood risk during the occurrence of an extreme fluvial event in the River Liffey and therefore falls within Flood Zone 'C'.*
- *Development proposals for the site are therefore not subject to the requirements of the Justification Test.*
- *The storm water drainage and management system to serve the proposed strategic housing development is not predicted to present a residual pluvial flood risk to the development and is considered to comply with the GDSDS Level of Service – Site Flooding Criteria.*
- *In summary, and in consideration of the findings and recommendations of this Site Specific Flood Risk Assessment, development of the site as proposed would not result in an adverse impact to the existing hydrological regime of the area and would not result in an increased flood risk elsewhere.*
- *The development as proposed is therefore considered to be appropriate from a flood risk perspective.*

9 Summary Recommendations

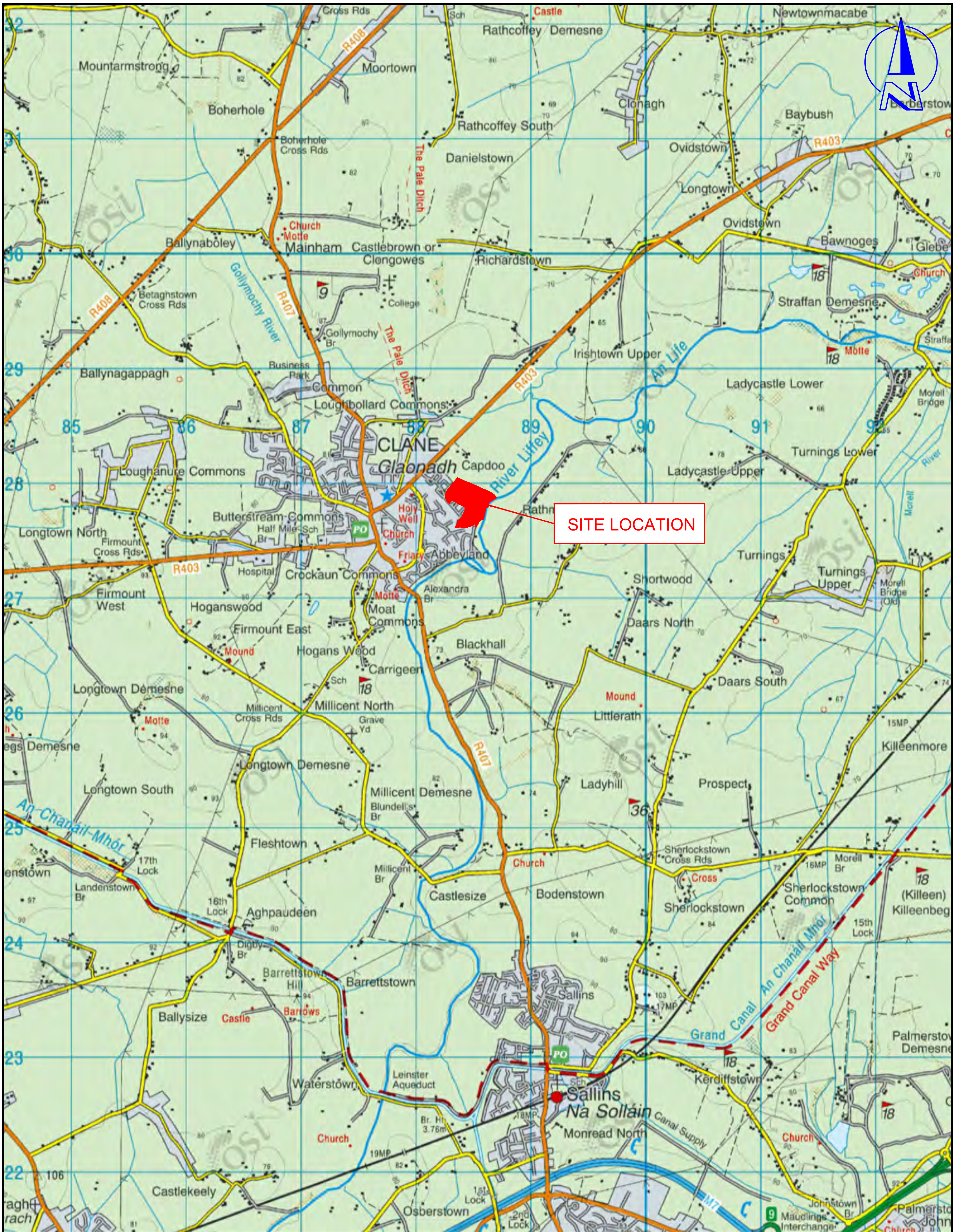
- *It is recommended that proposed finished ground levels (road levels, etc) should be constructed to a minimum level of 0.15m above the maximum predicted 0.1% AEP flood level upstream of the site – i.e. 65.18m + 0.15m =* ***65.33m OD****.*
- *It is recommended that proposed finished floor levels should be constructed to a minimum level of 0.30m above the maximum predicted 0.1% AEP flood level upstream of the site – i.e. 65.18m + 0.30m =* ***65.48m OD****.*

APPENDIX A

Drawing Number IE2181-001-A

Drawing Number IE2181-002-A

Drawing Number IE2181-003-A



Project Title:	FLOOD RISK ASSESSMENT				
Project Address:	Capdoo & Abbeylands, Dublin Road, Clane Co. Kildare				
Client:	WESTAR INVESTMENTS LTD.				
Drg. Title:	SITE LOCATION MAP				
Dwg.Scale: NTS	Date: 29/11/20	Dwg.No: IE2181-001	Job No: IE2181	Revision: A	Dwg.By: LMc

IE Consulting Innovation Centre, Green Road, Carlow, R93 W248.
Ph: 059-9133084
E-mail: info@iece.ie
Web: www.iece.ie

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

LEGEND

- SITE BOUNDARY
- 100 YEAR FLOOD EXTENT (1% AEP) FLOOD ZONE 'A'
- 1000 YEAR FLOOD EXTENT (0.1% AEP) FLOOD ZONE 'B'
- FLOOD ZONE 'C'
- LAND OWNERSHIP

rev.	date	amendment	drn	ckd
B	14.12.20	PLANNING	LMc	PMS
A	29.11.20	PLANNING	LMc	PMS

PROPOSED DEVELOPMENT AT
CAPDOO & ABBEYLANDS, DUBLIN ROAD,
CLANE, CO. KILDARE,

SITE SPECIFIC FLOOD
RISK ASSESSMENT

1 IN 100 YEAR (1% AEP) &
1 IN 1000 YEAR (0.1% AEP)
FLUVIAL FLOOD EXTENTS

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL

CARLOW OFFICE:
INNOVATION CENTRE
GREEN ROAD
CARLOW, R93 W248

NEWRY OFFICE:
1 RDC HOUSE
WIN BUSINESS PARK
NEWRY, BT35 6PH

file location:	N:\IE2181\DRAWINGS	scale:	1:2000 A3
drawing status:	PLANNING	datum:	MALIN
		drawn:	LMC
drawing no. IE2181-002	rev B	checked:	NOM
		approved:	PMS
		date:	29.11.2020

LEGEND

SITE BOUNDARY

rev.	date	amendment	drn	ckd
A	29.11.20	PLANNING	LMc	PMS

PROPOSED DEVELOPMENT AT
CAPDOO&ABBEYLANDS, DUBLIN ROAD,
CLANE,
CO. KILDARE

SITE SPECIFIC FLOOD
RISK ASSESSMENT

PROPOSED & EXISTING
CROSS SECTIONS

IE CONSULTING
WATER-ENVIRONMENTAL-CIVIL
INNOVATION CENTRE
GREEN ROAD
CARLOW
TELEPHONE: 059 91 33084
FAX: 059 91 40499
EMAIL: info@iece.ie

file location:	N:\IE2181\DRAWINGS	scale:	AS SHOWN @ A3
drawing status:	PLANNING	datum:	MALIN
		drawn:	LMC
drawing no.	IE2181-003	checked:	NOM
rev	A	approved:	PMS
		date:	29.11.2020

APPENDIX B

Residual Pluvial Flood Assessment

Summary Hydraulic Simulation Calculations

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - Scotland and Ireland

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	20.000	Add Flow / Climate Change (%)	10
Ratio R	0.200	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm at outfall S (pipe S1.008)

Time (mins)	**Area (ha)**	**Time (mins)**	**Area (ha)**	**Time (mins)**	**Area (ha)**
0-4	0.001	4-8	1.603	8-12	0.834

Total Area Contributing (ha) = 2.439

Total Pipe Volume (m³) = 118.462

Time Area Diagram at outfall S (pipe S10.006)

Time (mins)	**Area (ha)**	**Time (mins)**	**Area (ha)**	**Time (mins)**	**Area (ha)**
0-4	0.199	4-8	2.006	8-12	0.426

Total Area Contributing (ha) = 2.631

Total Pipe Volume (m³) = 205.266

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	**Length (m)**	**Fall (m)**	**Slope (1:X)**	**I.Area (ha)**	**T.E. (mins)**	**Base Flow (l/s)**	**k (mm)**	**HYD SECT**	**DIA (mm)**	**Section Type**	**Auto Design**

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	47.891	0.479	100.0	0.182	4.00	0.0	0.600	o	300	Pipe/Conduit	
S2.000	44.572	0.371	120.0	0.136	4.00	0.0	0.600	o	300	Pipe/Conduit	
S1.001	27.099	0.165	164.2	0.061	0.00	0.0	0.600	o	300	Pipe/Conduit	
S3.000	36.349	0.481	75.6	0.129	4.00	0.0	0.600	o	225	Pipe/Conduit	
S4.000	45.814	0.306	149.7	0.152	4.00	0.0	0.600	o	300	Pipe/Conduit	
S3.001	46.218	0.206	224.4	0.123	0.00	0.0	0.600	o	375	Pipe/Conduit	
S1.002	67.267	0.117	574.9	0.000	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.000	37.726	0.400	94.3	0.118	4.00	0.0	0.600	o	225	Pipe/Conduit	
S5.001	38.653	0.155	249.4	0.042	0.00	0.0	0.600	o	225	Pipe/Conduit	
S5.002	70.035	0.575	121.8	0.118	0.00	0.0	0.600	o	300	Pipe/Conduit	
S6.000	33.520	0.230	145.7	0.108	4.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	4.51	64.904	0.182	0.0	0.0	2.5	1.57	111.1	27.1
S2.000	50.00	4.52	64.425	0.136	0.0	0.0	1.8	1.43	101.4	20.2
S1.001	50.00	4.89	64.053	0.378	0.0	0.0	5.1	1.22	86.5	56.3
S3.000	50.00	4.40	64.575	0.129	0.0	0.0	1.7	1.51	59.9	19.2
S4.000	50.00	4.60	64.400	0.152	0.0	0.0	2.1	1.28	90.7	22.6
S3.001	50.00	5.23	64.019	0.404	0.0	0.0	5.5	1.21	133.1	60.2
S1.002	50.00	6.73	63.813	0.782	0.0	0.0	10.6	0.75	82.7«	116.5
S5.000	50.00	4.47	65.325	0.118	0.0	0.0	1.6	1.35	53.5	17.6
S5.001	50.00	5.25	64.925	0.160	0.0	0.0	2.2	0.82	32.7	23.9
S5.002	50.00	6.07	64.695	0.278	0.0	0.0	3.8	1.42	100.6	41.5
S6.000	50.00	4.52	64.425	0.108	0.0	0.0	1.5	1.08	43.0	16.0

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S5.003	43.075	0.186	231.6	0.096	0.00	0.0	0.600	o	375	Pipe/Conduit	
S5.004	55.087	0.238	231.5	0.181	0.00	0.0	0.600	o	600	Pipe/Conduit	
S7.000	105.943	0.610	173.7	0.288	4.00	0.0	0.600	o	300	Pipe/Conduit	
S8.000	53.499	0.225	237.8	0.286	4.00	0.0	0.600	o	375	Pipe/Conduit	
S8.001	20.097	0.085	236.4	0.022	0.00	0.0	0.600	o	375	Pipe/Conduit	
S7.001	78.729	0.530	148.5	0.161	0.00	0.0	0.600	o	375	Pipe/Conduit	
S9.000	76.216	1.296	58.8	0.236	4.00	0.0	0.600	o	225	Pipe/Conduit	
S7.002	20.805	0.134	155.3	0.000	0.00	0.0	0.600	o	450	Pipe/Conduit	
S1.003	5.902	0.024	245.9	0.000	0.00	0.0	0.600	o	600	Pipe/Conduit	
S1.004	60.709	0.067	906.1	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S1.005	6.764	0.023	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.006	39.086	0.130	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.007	48.491	0.162	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S1.008	6.236	0.021	300.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S5.003	50.00	6.67	64.120	0.482	0.0	0.0	6.5	1.19	131.0	71.9
S5.004	50.00	7.25	63.934	0.664	0.0	0.0	9.0	1.60	451.4	98.9
S7.000	50.00	5.48	64.990	0.288	0.0	0.0	3.9	1.19	84.1	42.9
S8.000	50.00	4.76	64.670	0.286	0.0	0.0	3.9	1.17	129.3	42.6
S8.001	50.00	5.05	64.445	0.308	0.0	0.0	4.2	1.17	129.7	45.9
S7.001	50.00	6.37	64.360	0.757	0.0	0.0	10.2	1.48	164.0	112.7
S9.000	50.00	4.74	65.125	0.236	0.0	0.0	3.2	1.71	67.9	35.1
S7.002	50.00	6.58	63.830	0.993	0.0	0.0	13.4	1.63	259.1	147.9
S1.003	50.00	7.31	63.696	2.439	0.0	0.0	33.0	1.55	437.8	363.3
S1.004	50.00	8.41	63.672	2.439	0.0	0.0	33.0	0.92	407.1	363.3
S1.005	50.00	8.56	63.605	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.006	50.00	9.43	63.582	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.007	50.00	10.51	63.452	2.439	0.0	0.0	33.0	0.75	29.8«	363.3
S1.008	50.00	10.65	63.291	2.439	0.0	0.0	33.0	0.75	29.8«	363.3

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S10.000	47.647	0.210	226.9	0.355	4.00	0.0	0.600	o	300	Pipe/Conduit	
S10.001	76.508	0.340	225.0	0.000	0.00	0.0	0.600	o	300	Pipe/Conduit	
S11.000	50.741	0.230	220.6	0.095	4.00	0.0	0.600	o	225	Pipe/Conduit	
S12.000	55.287	0.240	230.4	0.183	4.00	0.0	0.600	o	225	Pipe/Conduit	
S11.001	26.083	0.120	217.4	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.000	35.184	0.160	219.9	0.052	4.00	0.0	0.600	o	225	Pipe/Conduit	
S13.001	28.457	0.120	237.1	0.098	0.00	0.0	0.600	o	225	Pipe/Conduit	
S13.002	10.027	0.040	250.7	0.032	0.00	0.0	0.600	o	300	Pipe/Conduit	
S13.003	11.539	0.060	192.3	0.011	0.00	0.0	0.600	o	300	Pipe/Conduit	
S13.004	51.717	0.230	224.9	0.054	0.00	0.0	0.600	o	300	Pipe/Conduit	
S14.000	21.348	0.070	305.0	0.049	4.00	0.0	0.600	o	225	Pipe/Conduit	
S13.005	70.828	0.310	228.5	0.264	0.00	0.0	0.600	o	375	Pipe/Conduit	
S13.006	8.146	0.040	203.7	0.017	0.00	0.0	0.600	o	375	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S10.000	50.00	4.76	64.060	0.355	0.0	0.0	4.8	1.04	73.5	52.8
S10.001	50.00	5.99	63.850	0.355	0.0	0.0	4.8	1.04	73.8	52.8
S11.000	50.00	4.97	64.200	0.095	0.0	0.0	1.3	0.88	34.8	14.1
S12.000	50.00	5.07	64.210	0.183	0.0	0.0	2.5	0.86	34.1	27.2
S11.001	50.00	5.57	63.970	0.278	0.0	0.0	3.8	0.88	35.1«	41.3
S13.000	50.00	4.67	64.810	0.052	0.0	0.0	0.7	0.88	34.9	7.7
S13.001	50.00	5.23	64.650	0.150	0.0	0.0	2.0	0.84	33.6	22.3
S13.002	50.00	5.40	64.530	0.182	0.0	0.0	2.5	0.99	69.9	27.1
S13.003	50.00	5.57	64.490	0.193	0.0	0.0	2.6	1.13	79.9	28.8
S13.004	50.00	6.39	64.430	0.248	0.0	0.0	3.4	1.04	73.8	36.9
S14.000	50.00	4.48	64.270	0.049	0.0	0.0	0.7	0.74	29.6	7.3
S13.005	50.00	7.38	64.200	0.561	0.0	0.0	7.6	1.19	131.9	83.5
S13.006	50.00	7.49	63.890	0.578	0.0	0.0	7.8	1.27	139.8	86.1

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S11.002	11.294	0.050	225.9	0.016	0.00	0.0	0.600	o	375	Pipe/Conduit	
S11.003	66.102	0.290	227.9	0.252	0.00	0.0	0.600	o	450	Pipe/Conduit	
S10.002	32.104	0.190	169.0	0.068	0.00	0.0	0.600	o	450	Pipe/Conduit	
S15.000	26.075	0.030	869.2	0.039	4.00	0.0	0.600	o	750	Pipe/Conduit	
S15.001	50.212	0.070	717.3	0.135	0.00	0.0	0.600	o	750	Pipe/Conduit	
S16.000	50.617	0.230	220.1	0.136	4.00	0.0	0.600	o	225	Pipe/Conduit	
S16.001	19.635	0.090	218.2	0.029	0.00	0.0	0.600	o	225	Pipe/Conduit	
S16.002	9.341	0.040	233.5	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	
S17.000	12.814	0.060	213.6	0.027	4.00	0.0	0.600	o	225	Pipe/Conduit	
S16.003	50.011	0.200	250.1	0.049	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.002	51.920	0.070	741.7	0.131	0.00	0.0	0.600	o	750	Pipe/Conduit	
S18.000	20.049	0.340	59.0	0.039	4.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S11.002	50.00	7.65	63.850	0.872	0.0	0.0	11.8	1.20	132.7	129.9
S11.003	50.00	8.47	63.800	1.124	0.0	0.0	15.2	1.34	213.5	167.5
S10.002	50.00	8.81	63.510	1.547	0.0	0.0	21.0	1.56	248.3	230.5
S15.000	50.00	4.46	63.670	0.039	0.0	0.0	0.5	0.94	415.7	5.8
S15.001	50.00	5.27	63.640	0.174	0.0	0.0	2.4	1.04	458.2	25.9
S16.000	50.00	4.96	64.640	0.136	0.0	0.0	1.8	0.88	34.9	20.2
S16.001	50.00	5.33	64.410	0.165	0.0	0.0	2.2	0.88	35.0	24.5
S16.002	50.00	5.52	64.320	0.165	0.0	0.0	2.2	0.85	33.8	24.5
S17.000	50.00	4.24	64.340	0.027	0.0	0.0	0.4	0.89	35.4	4.0
S16.003	50.00	6.36	64.280	0.240	0.0	0.0	3.2	0.99	70.0	35.7
S15.002	50.00	7.21	63.570	0.545	0.0	0.0	7.4	1.02	450.5	81.1
S18.000	50.00	4.20	64.200	0.039	0.0	0.0	0.5	1.71	67.8	5.8

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S15.003	65.202	0.090	724.5	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S19.000	26.689	0.120	222.4	0.043	4.00	0.0	0.600	o	225	Pipe/Conduit	
S20.000	41.030	0.103	398.3	0.058	4.00	0.0	0.600	o	300	Pipe/Conduit	
S19.001	79.656	0.370	215.3	0.209	0.00	0.0	0.600	o	300	Pipe/Conduit	
S15.004	30.318	0.080	379.0	0.125	0.00	0.0	0.600	o	750	Pipe/Conduit	
S15.005	4.016	0.010	401.6	0.066	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.003	20.653	0.031	666.2	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.004	16.333	0.027	604.9	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.005	49.089	0.082	598.6	0.000	0.00	0.0	0.600	o	750	Pipe/Conduit	
S10.006	21.382	0.036	598.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S15.003	50.00	8.26	63.500	0.584	0.0	0.0	7.9	1.03	455.9	86.9
S19.000	50.00	4.51	63.900	0.043	0.0	0.0	0.6	0.87	34.7	6.5
S20.000	50.00	4.87	63.882	0.058	0.0	0.0	0.8	0.78	55.3	8.6
S19.001	50.00	6.12	63.780	0.310	0.0	0.0	4.2	1.07	75.5	46.2
S15.004	50.00	8.61	63.410	1.019	0.0	0.0	13.8	1.43	632.4	151.7
S15.005	50.00	8.66	63.330	1.084	0.0	0.0	14.7	1.39	614.2	161.5
S10.003	50.00	9.13	63.320	2.631	0.0	0.0	35.6	1.08	475.6	391.9
S10.004	50.00	9.37	63.289	2.631	0.0	0.0	35.6	1.13	499.4	391.9
S10.005	50.00	10.09	63.262	2.631	0.0	0.0	35.6	1.14	502.1	391.9
S10.006	50.00	10.77	63.180	2.631	0.0	0.0	35.6	0.53	21.0«	391.9

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SS110	65.950	1.046	Open Manhole	1200	S1.000	64.904	300				
SS111	65.850	1.425	Open Manhole	1200	S2.000	64.425	300				
SS112	66.100	2.047	Open Manhole	1200	S1.001	64.053	300	S1.000	64.425	300	372
								S2.000	64.054	300	1
SS108	66.000	1.425	Open Manhole	1200	S3.000	64.575	225				
SS107	65.900	1.500	Open Manhole	1200	S4.000	64.400	300				
SS109	65.770	1.751	Open Manhole	1350	S3.001	64.019	375	S3.000	64.094	225	
								S4.000	64.094	300	
SS113	66.300	2.487	Open Manhole	1350	S1.002	63.813	375	S1.001	63.888	300	
								S3.001	63.813	375	
SS101	66.750	1.425	Open Manhole	1200	S5.000	65.325	225				
SS102	66.350	1.425	Open Manhole	1200	S5.001	64.925	225	S5.000	64.925	225	
SS103	66.100	1.405	Open Manhole	1200	S5.002	64.695	300	S5.001	64.770	225	
SS104	65.850	1.425	Open Manhole	1200	S6.000	64.425	225				
SS105	65.740	1.620	Open Manhole	1350	S5.003	64.120	375	S5.002	64.120	300	
								S6.000	64.195	225	
SS106	65.900	1.966	Open Manhole	1500	S5.004	63.934	600	S5.003	63.934	375	
SS116	66.600	1.610	Open Manhole	1200	S7.000	64.990	300				
SS114	66.150	1.480	Open Manhole	1350	S8.000	64.670	375				
SS115	66.600	2.155	Open Manhole	1350	S8.001	64.445	375	S8.000	64.445	375	
SS116	66.650	2.290	Open Manhole	1350	S7.001	64.360	375	S7.000	64.380	300	
								S8.001	64.360	375	
SS118	66.550	1.425	Open Manhole	1200	S9.000	65.125	225				
SS119	66.750	2.921	Open Manhole	1350	S7.002	63.830	450	S7.001	63.830	375	
								S9.000	63.829	225	
SS120	66.200	2.504	Open Manhole	1500	S1.003	63.696	600	S1.002	63.696	375	
								S5.004	63.696	600	
								S7.002	63.696	450	
SS121	66.200	2.528	Open Manhole	1800	S1.004	63.672	750	S1.003	63.672	600	
SS122	66.750	3.145	Open Manhole	1800	S1.005	63.605	225	S1.004	63.605	750	
SS123	66.800	3.218	Open Manhole	1200	S1.006	63.582	225	S1.005	63.582	225	
SS124	66.350	2.898	Open Manhole	1200	S1.007	63.452	225	S1.006	63.452	225	
SS125	66.100	2.810	Open Manhole	1200	S1.008	63.291	225	S1.007	63.290	225	
S	66.100	2.830	Open Manhole	0		OUTFALL		S1.008	63.270	225	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdro (mm)
SS214	67.100	3.040	Open Manhole	1200	S10.000	64.060	300				
SS215	67.500	3.650	Open Manhole	1200	S10.001	63.850	300	S10.000	63.850	300	
SS210	66.700	2.500	Open Manhole	1200	S11.000	64.200	225				
SS209	66.750	2.540	Open Manhole	1200	S12.000	64.210	225				
SS211	66.800	2.830	Open Manhole	1200	S11.001	63.970	225	S11.000	63.970	225	
								S12.000	63.970	225	
SS201	66.750	1.940	Open Manhole	1200	S13.000	64.810	225				
SS202	66.850	2.200	Open Manhole	1200	S13.001	64.650	225	S13.000	64.650	225	
SS203	66.900	2.370	Open Manhole	1200	S13.002	64.530	300	S13.001	64.530	225	
SS204	66.850	2.360	Open Manhole	1200	S13.003	64.490	300	S13.002	64.490	300	
SS205	66.800	2.370	Open Manhole	1200	S13.004	64.430	300	S13.003	64.430	300	
SS206	66.950	2.680	Open Manhole	1200	S14.000	64.270	225				
SS207	66.700	2.500	Open Manhole	1350	S13.005	64.200	375	S13.004	64.200	300	
								S14.000	64.200	225	
SS208	66.800	2.910	Open Manhole	1350	S13.006	63.890	375	S13.005	63.890	375	
SS212	66.900	3.050	Open Manhole	1350	S11.002	63.850	375	S11.001	63.850	225	
								S13.006	63.850	375	
SS213	67.000	3.200	Open Manhole	1350	S11.003	63.800	450	S11.002	63.800	375	
SS216	67.250	3.740	Open Manhole	1350	S10.002	63.510	450	S10.001	63.510	300	
								S11.003	63.510	450	
SS222	65.900	2.230	Open Manhole	1800	S15.000	63.670	750				
SS223	66.200	2.560	Open Manhole	1800	S15.001	63.640	750	S15.000	63.640	750	
SS217	66.000	1.360	Open Manhole	1200	S16.000	64.640	225				
SS218	66.200	1.790	Open Manhole	1200	S16.001	64.410	225	S16.000	64.410	225	
SS219	66.350	2.030	Open Manhole	1200	S16.002	64.320	225	S16.001	64.320	225	
SS220	66.100	1.760	Open Manhole	1200	S17.000	64.340	225				
SS221	66.150	1.870	Open Manhole	1200	S16.003	64.280	300	S16.002	64.280	225	
								S17.000	64.280	225	
SS224	66.100	2.530	Open Manhole	1800	S15.002	63.570	750	S15.001	63.570	750	
								S16.003	64.080	300	6(
SS225	66.000	1.800	Open Manhole	1200	S18.000	64.200	225				
SS220	65.850	2.350	Open Manhole	1800	S15.003	63.500	750	S15.002	63.500	750	
								S18.000	63.860	225	

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
SS229	67.000	3.100	Open Manhole	1200	S19.000	63.900	225				
SS228	66.500	2.618	Open Manhole	1200	S20.000	63.882	300				
SS230	66.500	2.721	Open Manhole	1200	S19.001	63.780	300	S19.000	63.780	225	
								S20.000	63.779	300	
SS227	66.450	3.040	Open Manhole	1800	S15.004	63.410	750	S15.003	63.410	750	
								S19.001	63.410	300	
SS231	66.450	3.120	Open Manhole	1800	S15.005	63.330	750	S15.004	63.330	750	
SS232	66.750	3.430	Open Manhole	1800	S10.003	63.320	750	S10.002	63.320	450	
								S15.005	63.320	750	
SS233	66.000	2.711	Open Manhole	1800	S10.004	63.289	750	S10.003	63.289	750	
SS234	65.500	2.238	Open Manhole	1800	S10.005	63.262	750	S10.004	63.262	750	
SS235	65.350	2.170	Open Manhole	1800	S10.006	63.180	225	S10.005	63.180	750	
S	64.700	1.556	Open Manhole	0		OUTFALL		S10.006	63.144	225	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	300	SS110	65.950	64.904	0.746	Open Manhole	1200
S2.000	o	300	SS111	65.850	64.425	1.125	Open Manhole	1200
S1.001	o	300	SS112	66.100	64.053	1.747	Open Manhole	1200
S3.000	o	225	SS108	66.000	64.575	1.200	Open Manhole	1200
S4.000	o	300	SS107	65.900	64.400	1.200	Open Manhole	1200
S3.001	o	375	SS109	65.770	64.019	1.376	Open Manhole	1350
S1.002	o	375	SS113	66.300	63.813	2.112	Open Manhole	1350
S5.000	o	225	SS101	66.750	65.325	1.200	Open Manhole	1200
S5.001	o	225	SS102	66.350	64.925	1.200	Open Manhole	1200
S5.002	o	300	SS103	66.100	64.695	1.105	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	47.891	100.0	SS112	66.100	64.425	1.375	Open Manhole	1200
S2.000	44.572	120.0	SS112	66.100	64.054	1.746	Open Manhole	1200
S1.001	27.099	164.2	SS113	66.300	63.888	2.112	Open Manhole	1350
S3.000	36.349	75.6	SS109	65.770	64.094	1.451	Open Manhole	1350
S4.000	45.814	149.7	SS109	65.770	64.094	1.376	Open Manhole	1350
S3.001	46.218	224.4	SS113	66.300	63.813	2.112	Open Manhole	1350
S1.002	67.267	574.9	SS120	66.200	63.696	2.129	Open Manhole	1500
S5.000	37.726	94.3	SS102	66.350	64.925	1.200	Open Manhole	1200
S5.001	38.653	249.4	SS103	66.100	64.770	1.105	Open Manhole	1200
S5.002	70.035	121.8	SS105	65.740	64.120	1.320	Open Manhole	1350

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S6.000	o	225	SS104	65.850	64.425	1.200	Open Manhole	1200
S5.003	o	375	SS105	65.740	64.120	1.245	Open Manhole	1350
S5.004	o	600	SS106	65.900	63.934	1.366	Open Manhole	1500
S7.000	o	300	SS116	66.600	64.990	1.310	Open Manhole	1200
S8.000	o	375	SS114	66.150	64.670	1.105	Open Manhole	1350
S8.001	o	375	SS115	66.600	64.445	1.780	Open Manhole	1350
S7.001	o	375	SS116	66.650	64.360	1.915	Open Manhole	1350
S9.000	o	225	SS118	66.550	65.125	1.200	Open Manhole	1200
S7.002	o	450	SS119	66.750	63.830	2.470	Open Manhole	1350
S1.003	o	600	SS120	66.200	63.696	1.904	Open Manhole	1500
S1.004	o	750	SS121	66.200	63.672	1.778	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S6.000	33.520	145.7	SS105	65.740	64.195	1.320	Open Manhole	1350
S5.003	43.075	231.6	SS106	65.900	63.934	1.591	Open Manhole	1500
S5.004	55.087	231.5	SS120	66.200	63.696	1.904	Open Manhole	1500
S7.000	105.943	173.7	SS116	66.650	64.380	1.970	Open Manhole	1350
S8.000	53.499	237.8	SS115	66.600	64.445	1.780	Open Manhole	1350
S8.001	20.097	236.4	SS116	66.650	64.360	1.915	Open Manhole	1350
S7.001	78.729	148.5	SS119	66.750	63.830	2.545	Open Manhole	1350
S9.000	76.216	58.8	SS119	66.750	63.829	2.696	Open Manhole	1350
S7.002	20.805	155.3	SS120	66.200	63.696	2.054	Open Manhole	1500
S1.003	5.902	245.9	SS121	66.200	63.672	1.928	Open Manhole	1800
S1.004	60.709	906.1	SS122	66.750	63.605	2.395	Open Manhole	1800

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.005	o	225	SS122	66.750	63.605	2.920	Open Manhole	1800
S1.006	o	225	SS123	66.800	63.582	2.993	Open Manhole	1200
S1.007	o	225	SS124	66.350	63.452	2.673	Open Manhole	1200
S1.008	o	225	SS125	66.100	63.291	2.584	Open Manhole	1200
S10.000	o	300	SS214	67.100	64.060	2.740	Open Manhole	1200
S10.001	o	300	SS215	67.500	63.850	3.350	Open Manhole	1200
S11.000	o	225	SS210	66.700	64.200	2.275	Open Manhole	1200
S12.000	o	225	SS209	66.750	64.210	2.315	Open Manhole	1200
S11.001	o	225	SS211	66.800	63.970	2.605	Open Manhole	1200
S13.000	o	225	SS201	66.750	64.810	1.715	Open Manhole	1200
S13.001	o	225	SS202	66.850	64.650	1.975	Open Manhole	1200
S13.002	o	300	SS203	66.900	64.530	2.070	Open Manhole	1200
S13.003	o	300	SS204	66.850	64.490	2.060	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.005	6.764	300.0	SS123	66.800	63.582	2.993	Open Manhole	1200
S1.006	39.086	300.0	SS124	66.350	63.452	2.673	Open Manhole	1200
S1.007	48.491	300.0	SS125	66.100	63.290	2.585	Open Manhole	1200
S1.008	6.236	300.0	S	66.100	63.270	2.605	Open Manhole	0
S10.000	47.647	226.9	SS215	67.500	63.850	3.350	Open Manhole	1200
S10.001	76.508	225.0	SS216	67.250	63.510	3.440	Open Manhole	1350
S11.000	50.741	220.6	SS211	66.800	63.970	2.605	Open Manhole	1200
S12.000	55.287	230.4	SS211	66.800	63.970	2.605	Open Manhole	1200
S11.001	26.083	217.4	SS212	66.900	63.850	2.825	Open Manhole	1350
S13.000	35.184	219.9	SS202	66.850	64.650	1.975	Open Manhole	1200
S13.001	28.457	237.1	SS203	66.900	64.530	2.145	Open Manhole	1200
S13.002	10.027	250.7	SS204	66.850	64.490	2.060	Open Manhole	1200
S13.003	11.539	192.3	SS205	66.800	64.430	2.070	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S13.004	o	300	SS205	66.800	64.430	2.070	Open Manhole	1200
S14.000	o	225	SS206	66.950	64.270	2.455	Open Manhole	1200
S13.005	o	375	SS207	66.700	64.200	2.125	Open Manhole	1350
S13.006	o	375	SS208	66.800	63.890	2.535	Open Manhole	1350
S11.002	o	375	SS212	66.900	63.850	2.675	Open Manhole	1350
S11.003	o	450	SS213	67.000	63.800	2.750	Open Manhole	1350
S10.002	o	450	SS216	67.250	63.510	3.290	Open Manhole	1350
S15.000	o	750	SS222	65.900	63.670	1.480	Open Manhole	1800
S15.001	o	750	SS223	66.200	63.640	1.810	Open Manhole	1800
S16.000	o	225	SS217	66.000	64.640	1.135	Open Manhole	1200
S16.001	o	225	SS218	66.200	64.410	1.565	Open Manhole	1200
S16.002	o	225	SS219	66.350	64.320	1.805	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S13.004	51.717	224.9	SS207	66.700	64.200	2.200	Open Manhole	1350
S14.000	21.348	305.0	SS207	66.700	64.200	2.275	Open Manhole	1350
S13.005	70.828	228.5	SS208	66.800	63.890	2.535	Open Manhole	1350
S13.006	8.146	203.7	SS212	66.900	63.850	2.675	Open Manhole	1350
S11.002	11.294	225.9	SS213	67.000	63.800	2.825	Open Manhole	1350
S11.003	66.102	227.9	SS216	67.250	63.510	3.290	Open Manhole	1350
S10.002	32.104	169.0	SS232	66.750	63.320	2.980	Open Manhole	1800
S15.000	26.075	869.2	SS223	66.200	63.640	1.810	Open Manhole	1800
S15.001	50.212	717.3	SS224	66.100	63.570	1.780	Open Manhole	1800
S16.000	50.617	220.1	SS218	66.200	64.410	1.565	Open Manhole	1200
S16.001	19.635	218.2	SS219	66.350	64.320	1.805	Open Manhole	1200
S16.002	9.341	233.5	SS221	66.150	64.280	1.645	Open Manhole	1200

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.000	o	225	SS220	66.100	64.340	1.535	Open Manhole	1200
S16.003	o	300	SS221	66.150	64.280	1.570	Open Manhole	1200
S15.002	o	750	SS224	66.100	63.570	1.780	Open Manhole	1800
S18.000	o	225	SS225	66.000	64.200	1.575	Open Manhole	1200
S15.003	o	750	SS220	65.850	63.500	1.600	Open Manhole	1800
S19.000	o	225	SS229	67.000	63.900	2.875	Open Manhole	1200
S20.000	o	300	SS228	66.500	63.882	2.318	Open Manhole	1200
S19.001	o	300	SS230	66.500	63.780	2.420	Open Manhole	1200
S15.004	o	750	SS227	66.450	63.410	2.290	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S17.000	12.814	213.6	SS221	66.150	64.280	1.645	Open Manhole	1200
S16.003	50.011	250.1	SS224	66.100	64.080	1.720	Open Manhole	1800
S15.002	51.920	741.7	SS220	65.850	63.500	1.600	Open Manhole	1800
S18.000	20.049	59.0	SS220	65.850	63.860	1.765	Open Manhole	1800
S15.003	65.202	724.5	SS227	66.450	63.410	2.290	Open Manhole	1800
S19.000	26.689	222.4	SS230	66.500	63.780	2.495	Open Manhole	1200
S20.000	41.030	398.3	SS230	66.500	63.779	2.421	Open Manhole	1200
S19.001	79.656	215.3	SS227	66.450	63.410	2.740	Open Manhole	1800
S15.004	30.318	379.0	SS231	66.450	63.330	2.370	Open Manhole	1800

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S15.005	o	750	SS231	66.450	63.330	2.370	Open Manhole	1800
S10.003	o	750	SS232	66.750	63.320	2.680	Open Manhole	1800
S10.004	o	750	SS233	66.000	63.289	1.961	Open Manhole	1800
S10.005	o	750	SS234	65.500	63.262	1.488	Open Manhole	1800
S10.006	o	225	SS235	65.350	63.180	1.945	Open Manhole	1800

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S15.005	4.016	401.6	SS232	66.750	63.320	2.680	Open Manhole	1800
S10.003	20.653	666.2	SS233	66.000	63.289	1.961	Open Manhole	1800
S10.004	16.333	604.9	SS234	65.500	63.262	1.488	Open Manhole	1800
S10.005	49.089	598.6	SS235	65.350	63.180	1.420	Open Manhole	1800
S10.006	21.382	598.6	S	64.700	63.144	1.331	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.182	0.182	0.182
2.000	User	-	100	0.136	0.136	0.136
1.001	User	-	100	0.061	0.061	0.061
3.000	User	-	100	0.129	0.129	0.129
4.000	User	-	100	0.152	0.152	0.152
3.001	User	-	100	0.123	0.123	0.123
1.002	-	-	100	0.000	0.000	0.000
5.000	User	-	100	0.118	0.118	0.118
5.001	User	-	100	0.042	0.042	0.042
5.002	User	-	100	0.118	0.118	0.118
6.000	User	-	100	0.108	0.108	0.108
5.003	User	-	100	0.096	0.096	0.096
5.004	User	-	100	0.181	0.181	0.181
7.000	User	-	100	0.288	0.288	0.288
8.000	User	-	100	0.286	0.286	0.286
8.001	User	-	100	0.022	0.022	0.022
7.001	User	-	100	0.161	0.161	0.161
9.000	User	-	100	0.236	0.236	0.236
7.002	-	-	100	0.000	0.000	0.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.000	0.000	0.000
1.007	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.000	0.000	0.000
10.000	User	-	100	0.355	0.355	0.355
10.001	-	-	100	0.000	0.000	0.000
11.000	User	-	100	0.095	0.095	0.095
12.000	User	-	100	0.183	0.183	0.183
11.001	-	-	100	0.000	0.000	0.000
13.000	User	-	100	0.052	0.052	0.052
13.001	User	-	100	0.098	0.098	0.098
13.002	User	-	100	0.032	0.032	0.032
13.003	User	-	100	0.011	0.011	0.011
13.004	User	-	100	0.054	0.054	0.054
14.000	User	-	100	0.049	0.049	0.049
13.005	User	-	100	0.264	0.264	0.264
13.006	User	-	100	0.017	0.017	0.017
11.002	User	-	100	0.016	0.016	0.016
11.003	User	-	100	0.252	0.252	0.252
10.002	User	-	100	0.068	0.068	0.068
15.000	User	-	100	0.039	0.039	0.039
15.001	User	-	100	0.135	0.135	0.135
16.000	User	-	100	0.136	0.136	0.136
16.001	User	-	100	0.029	0.029	0.029
16.002	-	-	100	0.000	0.000	0.000

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
17.000	User	-	100	0.027	0.027	0.027
16.003	User	-	100	0.049	0.049	0.049
15.002	User	-	100	0.131	0.131	0.131
18.000	User	-	100	0.039	0.039	0.039
15.003	-	-	100	0.000	0.000	0.000
19.000	User	-	100	0.043	0.043	0.043
20.000	User	-	100	0.058	0.058	0.058
19.001	User	-	100	0.209	0.209	0.209
15.004	User	-	100	0.125	0.125	0.125
15.005	User	-	100	0.066	0.066	0.066
10.003	-	-	100	0.000	0.000	0.000
10.004	-	-	100	0.000	0.000	0.000
10.005	-	-	100	0.000	0.000	0.000
10.006	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				5.070	5.070	5.070

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.008	S	66.100	63.270	0.000	0	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S10.006	S	64.700	63.144	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	10.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Offline Controls	0	Number of Time/Area Diagrams	0
Number of Online Controls	2	Number of Storage Structures	2	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	Scotland and Ireland	Cv (Winter)	0.840
M5-60 (mm)	20.000	Storm Duration (mins)	30
Ratio R	0.200		

Online Controls for Storm

Hydro-Brake® Optimum Manhole: SS121, DS/PN: S1.004, Volume (m³): 7.6

Unit Reference	MD-SHE-0206-2430-1700-2430
Design Head (m)	1.700
Design Flow (l/s)	24.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	206
Invert Level (m)	63.672
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1800

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.700	24.3	Kick-Flo®	1.100	19.7
Flush-Flo™	0.506	24.3	Mean Flow over Head Range	-	21.0

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	7.1	1.200	20.6	3.000	31.9	7.000	48.0
0.200	19.8	1.400	22.1	3.500	34.3	7.500	49.6
0.300	23.2	1.600	23.6	4.000	36.6	8.000	51.2
0.400	24.1	1.800	25.0	4.500	38.7	8.500	52.7
0.500	24.3	2.000	26.2	5.000	40.8	9.000	54.2
0.600	24.2	2.200	27.5	5.500	42.7	9.500	55.6
0.800	23.4	2.400	28.6	6.000	44.5		
1.000	21.6	2.600	29.8	6.500	46.3		

Hydro-Brake® Optimum Manhole: SS234, DS/PN: S10.005, Volume (m³): 12.1

Unit Reference	MD-SHE-0290-5100-1600-5100
Design Head (m)	1.600
Design Flow (l/s)	51.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	290
Invert Level (m)	63.262
Minimum Outlet Pipe Diameter (mm)	375

Hydro-Brake® Optimum Manhole: SS234, DS/PN: S10.005, Volume (m^3): 12.1

Suggested Manhole Diameter (mm) 2100

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.600	51.0	Kick-Flo®	1.119	42.9
Flush-Flo™	0.520	50.9	Mean Flow over Head Range	-	43.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	9.0	1.200	44.4	3.000	69.1	7.000	104.3
0.200	29.8	1.400	47.8	3.500	74.5	7.500	107.9
0.300	48.4	1.600	51.0	4.000	79.5	8.000	111.4
0.400	50.3	1.800	54.0	4.500	84.1	8.500	114.7
0.500	50.9	2.000	56.8	5.000	88.6	9.000	118.0
0.600	50.8	2.200	59.5	5.500	92.8	9.500	121.1
0.800	49.5	2.400	62.0	6.000	96.8		
1.000	46.8	2.600	64.5	6.500	100.6		

Storage Structures for Storm

Cellular Storage Manhole: SS121, DS/PN: S1.004

Invert Level (m) 63.672 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.60
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	1133.0	0.0	0.400	1133.0	0.0
0.100	1133.0	0.0	0.500	1133.0	0.0
0.200	1133.0	0.0	0.700	1133.0	0.0
0.300	1133.0	0.0	0.885	1133.0	0.0

Cellular Storage Manhole: SS234, DS/PN: S10.005

Invert Level (m) 63.262 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.60
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	871.0	0.0	0.600	871.0	0.0
0.100	871.0	0.0	0.700	871.0	0.0
0.200	871.0	0.0	0.717	871.0	0.0
0.300	871.0	0.0	1.000	871.0	0.0
0.400	871.0	0.0	1.200	871.0	0.0
0.500	871.0	0.0			

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1
Climate Change (%) 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	1	+10%					65.006
S2.000	SS111	15 Winter	1	+10%					64.518
S1.001	SS112	30 Winter	1	+10%	1/15 Winter				64.367
S3.000	SS108	15 Winter	1	+10%					64.664
S4.000	SS107	15 Winter	1	+10%					64.504
S3.001	SS109	30 Winter	1	+10%					64.352
S1.002	SS113	30 Winter	1	+10%	1/15 Summer				64.322
S5.000	SS101	15 Winter	1	+10%					65.415
S5.001	SS102	15 Winter	1	+10%					65.068
S5.002	SS103	15 Winter	1	+10%					64.819
S6.000	SS104	15 Winter	1	+10%					64.522
S5.003	SS105	720 Winter	1	+10%					64.316
S5.004	SS106	720 Winter	1	+10%					64.312
S7.000	SS116	15 Winter	1	+10%					65.144
S8.000	SS114	15 Winter	1	+10%					64.823
S8.001	SS115	15 Winter	1	+10%					64.653

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	-0.198	0.000	0.26		26.7	OK	
S2.000	SS111	-0.207	0.000	0.21		20.0	OK	
S1.001	SS112	0.014	0.000	0.54		42.0	SURCHARGED	
S3.000	SS108	-0.136	0.000	0.34		19.0	OK	
S4.000	SS107	-0.196	0.000	0.26		22.1	OK	
S3.001	SS109	-0.042	0.000	0.34		42.0	OK	
S1.002	SS113	0.134	0.000	0.89		69.7	SURCHARGED	
S5.000	SS101	-0.135	0.000	0.34		17.4	OK	
S5.001	SS102	-0.082	0.000	0.71		22.1	OK	
S5.002	SS103	-0.176	0.000	0.36		34.8	OK	
S6.000	SS104	-0.128	0.000	0.39		15.9	OK	
S5.003	SS105	-0.179	0.000	0.10		11.7	OK	
S5.004	SS106	-0.222	0.000	0.04		15.5	OK	
S7.000	SS116	-0.146	0.000	0.48		39.6	OK	
S8.000	SS114	-0.222	0.000	0.34		41.2	OK	
S8.001	SS115	-0.167	0.000	0.38		41.5	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	1	+10%					64.579
S9.000	SS118	15 Winter	1	+10%					65.242
S7.002	SS119	720 Winter	1	+10%	1/480 Winter				64.314
S1.003	SS120	480 Winter	1	+10%	1/480 Winter				64.319
S1.004	SS121	480 Winter	1	+10%					64.330
S1.005	SS122	480 Winter	1	+10%	1/180 Winter				63.884
S1.006	SS123	480 Winter	1	+10%					63.793
S1.007	SS124	480 Winter	1	+10%					63.651
S1.008	SS125	600 Summer	1	+10%					63.516
S10.000	SS214	15 Winter	1	+10%					64.260
S10.001	SS215	15 Winter	1	+10%					64.040
S11.000	SS210	15 Winter	1	+10%					64.310
S12.000	SS209	15 Winter	1	+10%					64.391
S11.001	SS211	15 Winter	1	+10%	1/15 Summer				64.268
S13.000	SS201	15 Winter	1	+10%					64.883
S13.001	SS202	15 Winter	1	+10%					64.776
S13.002	SS203	15 Winter	1	+10%					64.670
S13.003	SS204	15 Winter	1	+10%					64.626
S13.004	SS205	15 Winter	1	+10%					64.565
S14.000	SS206	15 Winter	1	+10%					64.383
S13.005	SS207	15 Winter	1	+10%					64.387
S13.006	SS208	15 Winter	1	+10%					64.212
S11.002	SS212	15 Winter	1	+10%					64.170
S11.003	SS213	30 Winter	1	+10%					64.061
S10.002	SS216	30 Winter	1	+10%	1/30 Winter				63.962
S15.000	SS222	30 Winter	1	+10%					63.891
S15.001	SS223	30 Winter	1	+10%					63.879
S16.000	SS217	15 Winter	1	+10%					64.767
S16.001	SS218	15 Winter	1	+10%					64.554
S16.002	SS219	15 Winter	1	+10%					64.475
S17.000	SS220	15 Winter	1	+10%					64.424
S16.003	SS221	15 Winter	1	+10%					64.423
S15.002	SS224	30 Winter	1	+10%					63.872
S18.000	SS225	15 Winter	1	+10%					64.241
S15.003	SS220	30 Winter	1	+10%					63.857
S19.000	SS229	15 Winter	1	+10%					63.972
S20.000	SS228	15 Winter	1	+10%					63.975
S19.001	SS230	15 Winter	1	+10%					63.935
S15.004	SS227	30 Winter	1	+10%					63.865
S15.005	SS231	360 Winter	1	+10%					63.888
S10.003	SS232	360 Winter	1	+10%					63.889
S10.004	SS233	360 Winter	1	+10%					63.879
S10.005	SS234	360 Winter	1	+10%					63.884
S10.006	SS235	600 Winter	1	+10%	1/30 Summer				63.554

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	-0.156	0.000	0.61		95.0	OK	
S9.000	SS118	-0.108	0.000	0.52		34.2	OK	
S7.002	SS119	0.034	0.000	0.11		23.4	SURCHARGED	
S1.003	SS120	0.023	0.000	0.31		70.9	SURCHARGED	
S1.004	SS121	-0.092	0.000	0.07		23.9	OK	
S1.005	SS122	0.054	0.000	1.03		23.9	SURCHARGED	
S1.006	SS123	-0.014	0.000	0.84		23.9	OK	
S1.007	SS124	-0.026	0.000	0.84		23.9	OK	
S1.008	SS125	0.000	0.000	1.05		24.0	OK	
S10.000	SS214	-0.100	0.000	0.74		51.3	OK	
S10.001	SS215	-0.110	0.000	0.69		49.0	OK	
S11.000	SS210	-0.115	0.000	0.40		13.3	OK	
S12.000	SS209	-0.044	0.000	0.78		25.5	OK	
S11.001	SS211	0.073	0.000	0.91		29.5	SURCHARGED	
S13.000	SS201	-0.152	0.000	0.23		7.6	OK	
S13.001	SS202	-0.099	0.000	0.60		18.7	OK	
S13.002	SS203	-0.160	0.000	0.40		22.0	OK	
S13.003	SS204	-0.164	0.000	0.38		23.5	OK	
S13.004	SS205	-0.165	0.000	0.41		28.9	OK	
S14.000	SS206	-0.112	0.000	0.26		7.0	OK	
S13.005	SS207	-0.188	0.000	0.48		60.0	OK	
S13.006	SS208	-0.053	0.000	0.61		60.0	OK	
S11.002	SS212	-0.055	0.000	0.87		87.5	OK	
S11.003	SS213	-0.189	0.000	0.54		107.2	OK	
S10.002	SS216	0.002	0.000	0.61		131.0	SURCHARGED	
S15.000	SS222	-0.529	0.000	0.02		4.3	OK	
S15.001	SS223	-0.511	0.000	0.03		13.5	OK	
S16.000	SS217	-0.098	0.000	0.58		19.4	OK	
S16.001	SS218	-0.081	0.000	0.69		22.0	OK	
S16.002	SS219	-0.070	0.000	0.79		22.1	OK	
S17.000	SS220	-0.141	0.000	0.13		3.9	OK	
S16.003	SS221	-0.157	0.000	0.46		30.3	OK	
S15.002	SS224	-0.448	0.000	0.12		45.4	OK	
S18.000	SS225	-0.184	0.000	0.09		5.7	OK	
S15.003	SS220	-0.393	0.000	0.10		38.7	OK	
S19.000	SS229	-0.153	0.000	0.20		6.4	OK	
S20.000	SS228	-0.207	0.000	0.16		8.1	OK	
S19.001	SS230	-0.145	0.000	0.50		36.6	OK	
S15.004	SS227	-0.295	0.000	0.13		65.9	OK	
S15.005	SS231	-0.192	0.000	0.09		33.4	OK	
S10.003	SS232	-0.181	0.000	0.32		86.5	OK	
S10.004	SS233	-0.160	0.000	0.35		85.4	OK	
S10.005	SS234	-0.128	0.000	0.10		43.4	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.149	0.000	2.69		44.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 2
Climate Change (%) 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	2	+10%					65.017
S2.000	SS111	15 Winter	2	+10%					64.528
S1.001	SS112	30 Winter	2	+10%	2/15 Summer				64.490
S3.000	SS108	15 Winter	2	+10%					64.674
S4.000	SS107	30 Winter	2	+10%					64.530
S3.001	SS109	30 Winter	2	+10%	2/15 Summer				64.477
S1.002	SS113	720 Winter	2	+10%	2/15 Summer				64.460
S5.000	SS101	15 Winter	2	+10%					65.426
S5.001	SS102	15 Winter	2	+10%					65.091
S5.002	SS103	15 Winter	2	+10%					64.834
S6.000	SS104	15 Winter	2	+10%					64.534
S5.003	SS105	720 Winter	2	+10%					64.458
S5.004	SS106	720 Winter	2	+10%					64.454
S7.000	SS116	15 Winter	2	+10%					65.164
S8.000	SS114	15 Winter	2	+10%					64.841
S8.001	SS115	15 Winter	2	+10%					64.674

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	-0.187	0.000	0.31		32.3	OK	
S2.000	SS111	-0.197	0.000	0.25		24.1	OK	
S1.001	SS112	0.137	0.000	0.58		45.3	SURCHARGED	
S3.000	SS108	-0.126	0.000	0.40		22.9	OK	
S4.000	SS107	-0.170	0.000	0.26		22.2	OK	
S3.001	SS109	0.083	0.000	0.39		48.1	SURCHARGED	
S1.002	SS113	0.272	0.000	0.26		20.1	SURCHARGED	
S5.000	SS101	-0.124	0.000	0.41		21.0	OK	
S5.001	SS102	-0.059	0.000	0.85		26.5	OK	
S5.002	SS103	-0.161	0.000	0.43		41.8	OK	
S6.000	SS104	-0.116	0.000	0.47		19.1	OK	
S5.003	SS105	-0.037	0.000	0.11		13.4	OK	
S5.004	SS106	-0.080	0.000	0.04		17.5	OK	
S7.000	SS116	-0.126	0.000	0.58		47.7	OK	
S8.000	SS114	-0.204	0.000	0.41		49.8	OK	
S8.001	SS115	-0.146	0.000	0.46		50.4	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	2	+10%					64.613
S9.000	SS118	15 Winter	2	+10%					65.257
S7.002	SS119	720 Winter	2	+10%	2/15 Summer				64.456
S1.003	SS120	480 Winter	2	+10%	2/180 Winter				64.453
S1.004	SS121	480 Winter	2	+10%	2/480 Winter				64.460
S1.005	SS122	480 Winter	2	+10%	2/120 Summer				63.886
S1.006	SS123	480 Winter	2	+10%					63.796
S1.007	SS124	480 Winter	2	+10%					63.652
S1.008	SS125	600 Summer	2	+10%					63.516
S10.000	SS214	15 Winter	2	+10%					64.309
S10.001	SS215	30 Winter	2	+10%					64.103
S11.000	SS210	15 Winter	2	+10%					64.382
S12.000	SS209	15 Winter	2	+10%	2/15 Summer				64.473
S11.001	SS211	15 Winter	2	+10%	2/15 Summer				64.348
S13.000	SS201	15 Winter	2	+10%					64.891
S13.001	SS202	15 Winter	2	+10%					64.793
S13.002	SS203	15 Winter	2	+10%					64.680
S13.003	SS204	15 Winter	2	+10%					64.636
S13.004	SS205	15 Winter	2	+10%					64.581
S14.000	SS206	15 Winter	2	+10%					64.412
S13.005	SS207	15 Winter	2	+10%					64.417
S13.006	SS208	30 Winter	2	+10%	2/15 Winter				64.317
S11.002	SS212	30 Winter	2	+10%	2/30 Winter				64.240
S11.003	SS213	30 Winter	2	+10%					64.143
S10.002	SS216	30 Winter	2	+10%	2/15 Winter				64.021
S15.000	SS222	600 Winter	2	+10%					63.935
S15.001	SS223	30 Winter	2	+10%					63.948
S16.000	SS217	15 Winter	2	+10%					64.784
S16.001	SS218	15 Winter	2	+10%					64.598
S16.002	SS219	15 Winter	2	+10%					64.497
S17.000	SS220	15 Winter	2	+10%					64.429
S16.003	SS221	15 Winter	2	+10%					64.434
S15.002	SS224	30 Winter	2	+10%					63.954
S18.000	SS225	15 Winter	2	+10%					64.246
S15.003	SS220	600 Winter	2	+10%					63.933
S19.000	SS229	15 Winter	2	+10%					63.986
S20.000	SS228	15 Winter	2	+10%					63.993
S19.001	SS230	30 Winter	2	+10%					63.989
S15.004	SS227	360 Winter	2	+10%					63.943
S15.005	SS231	360 Winter	2	+10%					63.966
S10.003	SS232	360 Winter	2	+10%					63.979
S10.004	SS233	360 Winter	2	+10%					63.975
S10.005	SS234	360 Winter	2	+10%					63.975
S10.006	SS235	600 Winter	2	+10%	2/15 Winter				63.592

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	-0.122	0.000	0.73		113.6	OK	
S9.000	SS118	-0.093	0.000	0.62		41.2	OK	
S7.002	SS119	0.176	0.000	0.13		26.8	SURCHARGED	
S1.003	SS120	0.157	0.000	0.35		80.5	SURCHARGED	
S1.004	SS121	0.038	0.000	0.07		24.0	SURCHARGED	
S1.005	SS122	0.056	0.000	1.03		24.0	SURCHARGED	
S1.006	SS123	-0.011	0.000	0.85		24.0	OK	
S1.007	SS124	-0.025	0.000	0.84		24.0	OK	
S1.008	SS125	0.000	0.000	1.06		24.2	OK	
S10.000	SS214	-0.051	0.000	0.88		61.1	OK	
S10.001	SS215	-0.047	0.000	0.69		48.7	OK	
S11.000	SS210	-0.043	0.000	0.48		15.9	OK	
S12.000	SS209	0.038	0.000	0.91		29.9	SURCHARGED	
S11.001	SS211	0.153	0.000	1.07		34.8	SURCHARGED	
S13.000	SS201	-0.144	0.000	0.28		9.1	OK	
S13.001	SS202	-0.082	0.000	0.72		22.6	OK	
S13.002	SS203	-0.150	0.000	0.49		26.6	OK	
S13.003	SS204	-0.154	0.000	0.46		28.3	OK	
S13.004	SS205	-0.149	0.000	0.50		34.8	OK	
S14.000	SS206	-0.083	0.000	0.31		8.3	OK	
S13.005	SS207	-0.158	0.000	0.57		70.9	OK	
S13.006	SS208	0.052	0.000	0.66		64.9	SURCHARGED	
S11.002	SS212	0.015	0.000	0.97		97.5	SURCHARGED	
S11.003	SS213	-0.107	0.000	0.62		123.6	OK	
S10.002	SS216	0.061	0.000	0.74		158.5	SURCHARGED	
S15.000	SS222	-0.485	0.000	0.00		1.1	OK	
S15.001	SS223	-0.442	0.000	0.05		18.3	OK	
S16.000	SS217	-0.081	0.000	0.69		23.3	OK	
S16.001	SS218	-0.037	0.000	0.77		24.5	OK	
S16.002	SS219	-0.048	0.000	0.89		24.7	OK	
S17.000	SS220	-0.136	0.000	0.15		4.6	OK	
S16.003	SS221	-0.146	0.000	0.52		34.0	OK	
S15.002	SS224	-0.366	0.000	0.14		54.3	OK	
S18.000	SS225	-0.179	0.000	0.11		6.9	OK	
S15.003	SS220	-0.317	0.000	0.04		14.4	OK	
S19.000	SS229	-0.139	0.000	0.23		7.5	OK	
S20.000	SS228	-0.189	0.000	0.19		9.7	OK	
S19.001	SS230	-0.091	0.000	0.54		39.5	OK	
S15.004	SS227	-0.217	0.000	0.07		34.0	OK	
S15.005	SS231	-0.114	0.000	0.10		35.8	OK	
S10.003	SS232	-0.091	0.000	0.36		96.4	OK	
S10.004	SS233	-0.064	0.000	0.39		94.7	OK	
S10.005	SS234	-0.037	0.000	0.11		48.3	OK	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.187	0.000	2.94		48.9	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 30
Climate Change (%) 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	30	+10%	30/15 Winter				65.305
S2.000	SS111	15 Winter	30	+10%	30/15 Summer				65.278
S1.001	SS112	960 Winter	30	+10%	30/15 Summer				65.191
S3.000	SS108	15 Winter	30	+10%	30/15 Summer				65.292
S4.000	SS107	30 Winter	30	+10%	30/15 Summer				65.232
S3.001	SS109	960 Winter	30	+10%	30/15 Summer				65.190
S1.002	SS113	960 Winter	30	+10%	30/15 Summer				65.187
S5.000	SS101	15 Winter	30	+10%	30/15 Winter				65.552
S5.001	SS102	15 Winter	30	+10%	30/15 Summer				65.355
S5.002	SS103	960 Winter	30	+10%	30/15 Winter				65.190
S6.000	SS104	960 Winter	30	+10%	30/15 Summer				65.188
S5.003	SS105	960 Winter	30	+10%	30/15 Summer				65.185
S5.004	SS106	960 Winter	30	+10%	30/15 Winter				65.181
S7.000	SS116	15 Winter	30	+10%	30/15 Summer				65.566
S8.000	SS114	15 Winter	30	+10%	30/15 Summer				65.346
S8.001	SS115	15 Winter	30	+10%	30/15 Summer				65.267

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	0.101	0.000	0.55		57.6	SURCHARGED	
S2.000	SS111	0.553	0.000	0.36		33.8	SURCHARGED	
S1.001	SS112	0.838	0.000	0.17		12.9	SURCHARGED	
S3.000	SS108	0.492	0.000	0.64		36.2	SURCHARGED	
S4.000	SS107	0.532	0.000	0.39		33.3	SURCHARGED	
S3.001	SS109	0.796	0.000	0.11		13.7	SURCHARGED	
S1.002	SS113	0.999	0.000	0.34		26.4	SURCHARGED	
S5.000	SS101	0.002	0.000	0.71		36.0	SURCHARGED	
S5.001	SS102	0.205	0.000	1.48		45.9	SURCHARGED	
S5.002	SS103	0.195	0.000	0.11		10.3	SURCHARGED	
S6.000	SS104	0.538	0.000	0.10		3.8	SURCHARGED	
S5.003	SS105	0.690	0.000	0.14		16.6	SURCHARGED	
S5.004	SS106	0.647	0.000	0.06		22.8	SURCHARGED	
S7.000	SS116	0.276	0.000	0.96		78.2	SURCHARGED	
S8.000	SS114	0.301	0.000	0.72		86.5	SURCHARGED	
S8.001	SS115	0.447	0.000	0.60		65.5	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	30	+10%	30/15 Summer				65.239
S9.000	SS118	15 Winter	30	+10%	30/15 Summer				65.725
S7.002	SS119	960 Winter	30	+10%	30/15 Summer				65.183
S1.003	SS120	960 Winter	30	+10%	30/15 Summer				65.179
S1.004	SS121	960 Winter	30	+10%	30/60 Winter				65.177
S1.005	SS122	240 Summer	30	+10%	30/30 Summer				63.886
S1.006	SS123	60 Winter	30	+10%					63.797
S1.007	SS124	240 Summer	30	+10%					63.652
S1.008	SS125	720 Summer	30	+10%					63.516
S10.000	SS214	30 Summer	30	+10%	30/15 Summer				65.148
S10.001	SS215	30 Winter	30	+10%	30/15 Summer				64.871
S11.000	SS210	30 Winter	30	+10%	30/15 Summer				65.398
S12.000	SS209	30 Winter	30	+10%	30/15 Summer				65.595
S11.001	SS211	30 Winter	30	+10%	30/15 Summer				65.296
S13.000	SS201	30 Winter	30	+10%	30/15 Summer				65.563
S13.001	SS202	30 Winter	30	+10%	30/15 Summer				65.521
S13.002	SS203	30 Winter	30	+10%	30/15 Summer				65.423
S13.003	SS204	30 Winter	30	+10%	30/15 Summer				65.393
S13.004	SS205	30 Winter	30	+10%	30/15 Summer				65.362
S14.000	SS206	30 Winter	30	+10%	30/15 Summer				65.285
S13.005	SS207	30 Winter	30	+10%	30/15 Summer				65.266
S13.006	SS208	30 Winter	30	+10%	30/15 Summer				65.061
S11.002	SS212	30 Winter	30	+10%	30/15 Summer				64.960
S11.003	SS213	30 Winter	30	+10%	30/15 Summer				64.771
S10.002	SS216	360 Winter	30	+10%	30/15 Summer				64.550
S15.000	SS222	600 Winter	30	+10%	30/240 Winter				64.520
S15.001	SS223	600 Winter	30	+10%	30/180 Winter				64.520
S16.000	SS217	15 Winter	30	+10%	30/15 Summer				65.129
S16.001	SS218	15 Winter	30	+10%	30/15 Summer				64.866
S16.002	SS219	15 Winter	30	+10%	30/15 Summer				64.671
S17.000	SS220	600 Winter	30	+10%					64.528
S16.003	SS221	600 Winter	30	+10%					64.527
S15.002	SS224	600 Winter	30	+10%	30/180 Winter				64.520
S18.000	SS225	360 Winter	30	+10%	30/240 Winter				64.520
S15.003	SS220	360 Winter	30	+10%	30/120 Winter				64.521
S19.000	SS229	600 Winter	30	+10%	30/15 Summer				64.530
S20.000	SS228	360 Winter	30	+10%	30/15 Summer				64.535
S19.001	SS230	360 Winter	30	+10%	30/15 Summer				64.536
S15.004	SS227	360 Winter	30	+10%	30/60 Winter				64.536
S15.005	SS231	360 Winter	30	+10%	30/15 Winter				64.537
S10.003	SS232	360 Winter	30	+10%	30/15 Winter				64.551
S10.004	SS233	360 Winter	30	+10%	30/60 Summer				64.560
S10.005	SS234	360 Winter	30	+10%	30/60 Summer				64.562
S10.006	SS235	360 Summer	30	+10%	30/15 Summer				63.614

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	0.504	0.000	1.01		156.7	SURCHARGED	
S9.000	SS118	0.375	0.000	0.94		62.2	SURCHARGED	
S7.002	SS119	0.903	0.000	0.17		34.2	SURCHARGED	
S1.003	SS120	0.883	0.000	0.36		82.6	SURCHARGED	
S1.004	SS121	0.755	0.000	0.07		24.3	SURCHARGED	
S1.005	SS122	0.056	0.000	1.03		24.0	SURCHARGED	
S1.006	SS123	-0.010	0.000	0.83		23.6	OK	
S1.007	SS124	-0.025	0.000	0.84		24.0	OK	
S1.008	SS125	0.000	0.000	1.06		24.3	OK	
S10.000	SS214	0.788	0.000	1.36		94.0	SURCHARGED	
S10.001	SS215	0.721	0.000	1.10		78.0	SURCHARGED	
S11.000	SS210	0.973	0.000	0.54		18.0	SURCHARGED	
S12.000	SS209	1.160	0.000	1.14		37.5	SURCHARGED	
S11.001	SS211	1.101	0.000	1.67		54.1	SURCHARGED	
S13.000	SS201	0.528	0.000	0.37		12.3	SURCHARGED	
S13.001	SS202	0.646	0.000	0.99		30.8	SURCHARGED	
S13.002	SS203	0.593	0.000	0.60		33.0	SURCHARGED	
S13.003	SS204	0.603	0.000	0.57		34.8	SURCHARGED	
S13.004	SS205	0.632	0.000	0.64		44.3	SURCHARGED	
S14.000	SS206	0.790	0.000	0.39		10.4	SURCHARGED	
S13.005	SS207	0.691	0.000	0.79		98.3	SURCHARGED	
S13.006	SS208	0.796	0.000	1.04		101.6	SURCHARGED	
S11.002	SS212	0.735	0.000	1.58		159.0	SURCHARGED	
S11.003	SS213	0.521	0.000	1.02		201.9	SURCHARGED	
S10.002	SS216	0.590	0.000	0.45		96.6	SURCHARGED	
S15.000	SS222	0.100	0.000	0.01		1.6	SURCHARGED	
S15.001	SS223	0.130	0.000	0.02		6.2	SURCHARGED	
S16.000	SS217	0.264	0.000	1.14		38.2	SURCHARGED	
S16.001	SS218	0.231	0.000	1.38		43.7	SURCHARGED	
S16.002	SS219	0.126	0.000	1.57		43.7	SURCHARGED	
S17.000	SS220	-0.037	0.000	0.04		1.3	OK	
S16.003	SS221	-0.053	0.000	0.18		11.8	OK	
S15.002	SS224	0.200	0.000	0.05		20.5	SURCHARGED	
S18.000	SS225	0.095	0.000	0.04		2.6	SURCHARGED	
S15.003	SS220	0.271	0.000	0.08		32.1	SURCHARGED	
S19.000	SS229	0.405	0.000	0.06		2.0	SURCHARGED	
S20.000	SS228	0.353	0.000	0.07		3.8	SURCHARGED	
S19.001	SS230	0.456	0.000	0.27		19.6	SURCHARGED	
S15.004	SS227	0.376	0.000	0.12		57.0	SURCHARGED	
S15.005	SS231	0.457	0.000	0.17		61.6	SURCHARGED	
S10.003	SS232	0.481	0.000	0.59		157.9	SURCHARGED	
S10.004	SS233	0.521	0.000	0.63		154.4	SURCHARGED	
S10.005	SS234	0.550	0.000	0.12		50.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.209	0.000	3.06		50.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	10.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Ratio R	0.200
Region	Scotland and Ireland	Cv (Summer)	0.750
M5-60 (mm)	20.000	Cv (Winter)	0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	10

PN	**US/MH Name**	**Storm**	**Return Period**	**Climate Change**	**First (X) Surcharge**	**First (Y) Flood**	**First (Z) Overflow**	**Overflow Act.**	**Water Level (m)**
S1.000	SS110	15 Winter	100	+10%	100/15 Summer				65.845
S2.000	SS111	15 Winter	100	+10%	100/15 Summer				65.819
S1.001	SS112	30 Winter	100	+10%	100/15 Summer				65.893
S3.000	SS108	15 Winter	100	+10%	100/15 Summer				65.830
S4.000	SS107	15 Winter	100	+10%	100/15 Summer				65.728
S3.001	SS109	15 Winter	100	+10%	100/15 Summer				65.675
S1.002	SS113	960 Winter	100	+10%	100/15 Summer				65.646
S5.000	SS101	15 Winter	100	+10%	100/15 Summer				65.988
S5.001	SS102	15 Winter	100	+10%	100/15 Summer				65.771
S5.002	SS103	960 Winter	100	+10%	100/15 Summer				65.649
S6.000	SS104	960 Winter	100	+10%	100/15 Summer				65.647
S5.003	SS105	960 Winter	100	+10%	100/15 Summer				65.644
S5.004	SS106	960 Winter	100	+10%	100/15 Summer				65.640
S7.000	SS116	15 Winter	100	+10%	100/15 Summer				66.379
S8.000	SS114	15 Winter	100	+10%	100/15 Summer				65.971
S8.001	SS115	15 Winter	100	+10%	100/15 Summer				65.876

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	0.641	0.000	0.65		68.0	SURCHARGED	
S2.000	SS111	1.094	0.000	0.41		39.2	SURCHARGED	
S1.001	SS112	1.540	0.000	1.16		90.3	SURCHARGED	
S3.000	SS108	1.030	0.000	0.67		38.0	SURCHARGED	
S4.000	SS107	1.028	0.000	0.51		43.0	SURCHARGED	
S3.001	SS109	1.281	0.000	0.89		108.6	SURCHARGED	
S1.002	SS113	1.458	0.000	0.42		32.4	SURCHARGED	
S5.000	SS101	0.438	0.000	0.83		41.9	SURCHARGED	
S5.001	SS102	0.621	0.000	1.63		50.6	SURCHARGED	
S5.002	SS103	0.654	0.000	0.13		12.4	SURCHARGED	
S6.000	SS104	0.997	0.000	0.11		4.5	SURCHARGED	
S5.003	SS105	1.149	0.000	0.17		20.0	SURCHARGED	
S5.004	SS106	1.106	0.000	0.07		27.6	SURCHARGED	
S7.000	SS116	1.089	0.000	1.05		86.0	SURCHARGED	
S8.000	SS114	0.926	0.000	0.82		98.7	SURCHARGED	
S8.001	SS115	1.056	0.000	0.76		82.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	100	+10%	100/15 Summer				65.807
S9.000	SS118	15 Winter	100	+10%	100/15 Summer				66.401
S7.002	SS119	960 Winter	100	+10%	100/15 Summer				65.642
S1.003	SS120	960 Winter	100	+10%	100/15 Summer				65.638
S1.004	SS121	960 Winter	100	+10%	100/30 Winter				65.636
S1.005	SS122	60 Summer	100	+10%	100/15 Summer				63.891
S1.006	SS123	480 Winter	100	+10%					63.796
S1.007	SS124	60 Summer	100	+10%					63.657
S1.008	SS125	2160 Winter	100	+10%					63.516
S10.000	SS214	15 Winter	100	+10%	100/15 Summer				66.057
S10.001	SS215	15 Winter	100	+10%	100/15 Summer				65.518
S11.000	SS210	30 Winter	100	+10%	100/15 Summer				66.214
S12.000	SS209	30 Winter	100	+10%	100/15 Summer				66.551
S11.001	SS211	30 Winter	100	+10%	100/15 Summer				66.085
S13.000	SS201	30 Winter	100	+10%	100/15 Summer				66.440
S13.001	SS202	30 Winter	100	+10%	100/15 Summer				66.388
S13.002	SS203	30 Winter	100	+10%	100/15 Summer				66.240
S13.003	SS204	30 Winter	100	+10%	100/15 Summer				66.194
S13.004	SS205	30 Winter	100	+10%	100/15 Summer				66.138
S14.000	SS206	30 Winter	100	+10%	100/15 Summer				66.023
S13.005	SS207	30 Winter	100	+10%	100/15 Summer				65.996
S13.006	SS208	30 Winter	100	+10%	100/15 Summer				65.696
S11.002	SS212	30 Winter	100	+10%	100/15 Summer				65.555
S11.003	SS213	30 Winter	100	+10%	100/15 Summer				65.287
S10.002	SS216	480 Winter	100	+10%	100/15 Summer				65.079
S15.000	SS222	600 Winter	100	+10%	100/120 Summer				65.051
S15.001	SS223	600 Winter	100	+10%	100/60 Winter				65.051
S16.000	SS217	15 Winter	100	+10%	100/15 Summer				65.532
S16.001	SS218	15 Winter	100	+10%	100/15 Summer				65.105
S16.002	SS219	600 Winter	100	+10%	100/15 Summer				65.062
S17.000	SS220	600 Winter	100	+10%	100/15 Summer				65.059
S16.003	SS221	600 Winter	100	+10%	100/15 Summer				65.058
S15.002	SS224	600 Winter	100	+10%	100/30 Winter				65.051
S18.000	SS225	480 Winter	100	+10%	100/60 Winter				65.056
S15.003	SS220	480 Winter	100	+10%	100/15 Winter				65.054
S19.000	SS229	600 Winter	100	+10%	100/15 Summer				65.061
S20.000	SS228	480 Winter	100	+10%	100/15 Summer				65.065
S19.001	SS230	480 Winter	100	+10%	100/15 Summer				65.070
S15.004	SS227	480 Winter	100	+10%	100/15 Winter				65.067
S15.005	SS231	480 Winter	100	+10%	100/15 Summer				65.072
S10.003	SS232	480 Winter	100	+10%	100/15 Summer				65.072
S10.004	SS233	480 Winter	100	+10%	100/15 Summer				65.071
S10.005	SS234	480 Winter	100	+10%	100/30 Summer				65.075
S10.006	SS235	60 Summer	100	+10%	100/15 Summer				63.614

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	1.072	0.000	1.28		199.1	SURCHARGED	
S9.000	SS118	1.051	0.000	1.09		72.3	SURCHARGED	
S7.002	SS119	1.362	0.000	0.19		39.8	SURCHARGED	
S1.003	SS120	1.342	0.000	0.43		99.5	SURCHARGED	
S1.004	SS121	1.214	0.000	0.07		24.9	SURCHARGED	
S1.005	SS122	0.061	0.000	1.01		23.5	SURCHARGED	
S1.006	SS123	-0.011	0.000	0.85		24.0	OK	
S1.007	SS124	-0.020	0.000	0.86		24.5	OK	
S1.008	SS125	0.000	0.000	1.07		24.4	OK	
S10.000	SS214	1.697	0.000	1.71		118.3	SURCHARGED	
S10.001	SS215	1.368	0.000	1.54		108.9	SURCHARGED	
S11.000	SS210	1.789	0.000	0.68		22.6	SURCHARGED	
S12.000	SS209	2.116	0.000	1.45		47.7	SURCHARGED	
S11.001	SS211	1.890	0.000	2.12		68.8	SURCHARGED	
S13.000	SS201	1.405	0.000	0.40		13.0	SURCHARGED	
S13.001	SS202	1.513	0.000	1.06		33.2	SURCHARGED	
S13.002	SS203	1.410	0.000	0.74		40.4	SURCHARGED	
S13.003	SS204	1.404	0.000	0.73		44.7	SURCHARGED	
S13.004	SS205	1.408	0.000	0.80		55.8	SURCHARGED	
S14.000	SS206	1.528	0.000	0.42		11.3	SURCHARGED	
S13.005	SS207	1.421	0.000	1.00		124.2	SURCHARGED	
S13.006	SS208	1.431	0.000	1.30		127.7	SURCHARGED	
S11.002	SS212	1.330	0.000	2.00		200.4	SURCHARGED	
S11.003	SS213	1.037	0.000	1.29		255.8	SURCHARGED	
S10.002	SS216	1.119	0.000	0.45		97.8	SURCHARGED	
S15.000	SS222	0.631	0.000	0.01		2.0	SURCHARGED	
S15.001	SS223	0.661	0.000	0.02		8.3	SURCHARGED	
S16.000	SS217	0.667	0.000	1.36		45.6	SURCHARGED	
S16.001	SS218	0.470	0.000	1.72		54.3	SURCHARGED	
S16.002	SS219	0.517	0.000	0.36		10.0	SURCHARGED	
S17.000	SS220	0.494	0.000	0.05		1.6	SURCHARGED	
S16.003	SS221	0.478	0.000	0.22		14.4	SURCHARGED	
S15.002	SS224	0.731	0.000	0.07		25.7	SURCHARGED	
S18.000	SS225	0.631	0.000	0.04		2.7	SURCHARGED	
S15.003	SS220	0.804	0.000	0.08		31.6	SURCHARGED	
S19.000	SS229	0.936	0.000	0.08		2.4	SURCHARGED	
S20.000	SS228	0.883	0.000	0.07		3.8	SURCHARGED	
S19.001	SS230	0.990	0.000	0.28		20.5	SURCHARGED	
S15.004	SS227	0.907	0.000	0.12		56.8	SURCHARGED	
S15.005	SS231	0.992	0.000	0.17		59.8	SURCHARGED	
S10.003	SS232	1.002	0.000	0.57		153.2	SURCHARGED	
S10.004	SS233	1.032	0.000	0.61		151.1	SURCHARGED	
S10.005	SS234	1.063	0.000	0.12		50.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.209	0.000	3.06		50.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 10.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coeffiecient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 2 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR Ratio R 0.200
Region Scotland and Ireland Cv (Summer) 0.750
M5-60 (mm) 20.000 Cv (Winter) 0.850

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Coarse Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years) 1, 2, 30, 100
Climate Change (%) 10, 10, 10, 10

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S1.000	SS110	15 Winter	100	+10%	30/15 Winter				65.845
S2.000	SS111	15 Winter	100	+10%	30/15 Summer				65.819
S1.001	SS112	30 Winter	100	+10%	1/15 Winter				65.893
S3.000	SS108	15 Winter	100	+10%	30/15 Summer				65.830
S4.000	SS107	15 Winter	100	+10%	30/15 Summer				65.728
S3.001	SS109	15 Winter	100	+10%	2/15 Summer				65.675
S1.002	SS113	960 Winter	100	+10%	1/15 Summer				65.646
S5.000	SS101	15 Winter	100	+10%	30/15 Winter				65.988
S5.001	SS102	15 Winter	100	+10%	30/15 Summer				65.771
S5.002	SS103	960 Winter	100	+10%	30/15 Winter				65.649
S6.000	SS104	960 Winter	100	+10%	30/15 Summer				65.647
S5.003	SS105	960 Winter	100	+10%	30/15 Summer				65.644
S5.004	SS106	960 Winter	100	+10%	30/15 Winter				65.640
S7.000	SS116	15 Winter	100	+10%	30/15 Summer				66.379
S8.000	SS114	15 Winter	100	+10%	30/15 Summer				65.971
S8.001	SS115	15 Winter	100	+10%	30/15 Summer				65.876

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	SS110	0.641	0.000	0.65		68.0	SURCHARGED	
S2.000	SS111	1.094	0.000	0.41		39.2	SURCHARGED	
S1.001	SS112	1.540	0.000	1.16		90.3	SURCHARGED	
S3.000	SS108	1.030	0.000	0.67		38.0	SURCHARGED	
S4.000	SS107	1.028	0.000	0.51		43.0	SURCHARGED	
S3.001	SS109	1.281	0.000	0.89		108.6	SURCHARGED	
S1.002	SS113	1.458	0.000	0.42		32.4	SURCHARGED	
S5.000	SS101	0.438	0.000	0.83		41.9	SURCHARGED	
S5.001	SS102	0.621	0.000	1.63		50.6	SURCHARGED	
S5.002	SS103	0.654	0.000	0.13		12.4	SURCHARGED	
S6.000	SS104	0.997	0.000	0.11		4.5	SURCHARGED	
S5.003	SS105	1.149	0.000	0.17		20.0	SURCHARGED	
S5.004	SS106	1.106	0.000	0.07		27.6	SURCHARGED	
S7.000	SS116	1.089	0.000	1.05		86.0	SURCHARGED	
S8.000	SS114	0.926	0.000	0.82		98.7	SURCHARGED	
S8.001	SS115	1.056	0.000	0.76		82.8	SURCHARGED	

Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)
S7.001	SS116	15 Winter	100	+10%	30/15 Summer				65.807
S9.000	SS118	15 Winter	100	+10%	30/15 Summer				66.401
S7.002	SS119	960 Winter	100	+10%	1/480 Winter				65.642
S1.003	SS120	960 Winter	100	+10%	1/480 Winter				65.638
S1.004	SS121	960 Winter	100	+10%	2/480 Winter				65.636
S1.005	SS122	60 Summer	100	+10%	1/180 Winter				63.891
S1.006	SS123	60 Winter	30	+10%					63.797
S1.007	SS124	60 Summer	100	+10%					63.657
S1.008	SS125	2160 Winter	100	+10%					63.516
S10.000	SS214	15 Winter	100	+10%	30/15 Summer				66.057
S10.001	SS215	15 Winter	100	+10%	30/15 Summer				65.518
S11.000	SS210	30 Winter	100	+10%	30/15 Summer				66.214
S12.000	SS209	30 Winter	100	+10%	2/15 Summer				66.551
S11.001	SS211	30 Winter	100	+10%	1/15 Summer				66.085
S13.000	SS201	30 Winter	100	+10%	30/15 Summer				66.440
S13.001	SS202	30 Winter	100	+10%	30/15 Summer				66.388
S13.002	SS203	30 Winter	100	+10%	30/15 Summer				66.240
S13.003	SS204	30 Winter	100	+10%	30/15 Summer				66.194
S13.004	SS205	30 Winter	100	+10%	30/15 Summer				66.138
S14.000	SS206	30 Winter	100	+10%	30/15 Summer				66.023
S13.005	SS207	30 Winter	100	+10%	30/15 Summer				65.996
S13.006	SS208	30 Winter	100	+10%	2/15 Winter				65.696
S11.002	SS212	30 Winter	100	+10%	2/30 Winter				65.555
S11.003	SS213	30 Winter	100	+10%	30/15 Summer				65.287
S10.002	SS216	480 Winter	100	+10%	1/30 Winter				65.079
S15.000	SS222	600 Winter	100	+10%	30/240 Winter				65.051
S15.001	SS223	600 Winter	100	+10%	30/180 Winter				65.051
S16.000	SS217	15 Winter	100	+10%	30/15 Summer				65.532
S16.001	SS218	15 Winter	100	+10%	30/15 Summer				65.105
S16.002	SS219	600 Winter	100	+10%	30/15 Summer				65.062
S17.000	SS220	600 Winter	100	+10%	100/15 Summer				65.059
S16.003	SS221	600 Winter	100	+10%	100/15 Summer				65.058
S15.002	SS224	600 Winter	100	+10%	30/180 Winter				65.051
S18.000	SS225	480 Winter	100	+10%	30/240 Winter				65.056
S15.003	SS220	480 Winter	100	+10%	30/120 Winter				65.054
S19.000	SS229	600 Winter	100	+10%	30/15 Summer				65.061
S20.000	SS228	480 Winter	100	+10%	30/15 Summer				65.065
S19.001	SS230	480 Winter	100	+10%	30/15 Summer				65.070
S15.004	SS227	480 Winter	100	+10%	30/60 Winter				65.067
S15.005	SS231	480 Winter	100	+10%	30/15 Winter				65.072
S10.003	SS232	480 Winter	100	+10%	30/15 Winter				65.072
S10.004	SS233	480 Winter	100	+10%	30/60 Summer				65.071
S10.005	SS234	480 Winter	100	+10%	30/60 Summer				65.075
S10.006	SS235	360 Summer	30	+10%	1/30 Summer				63.614

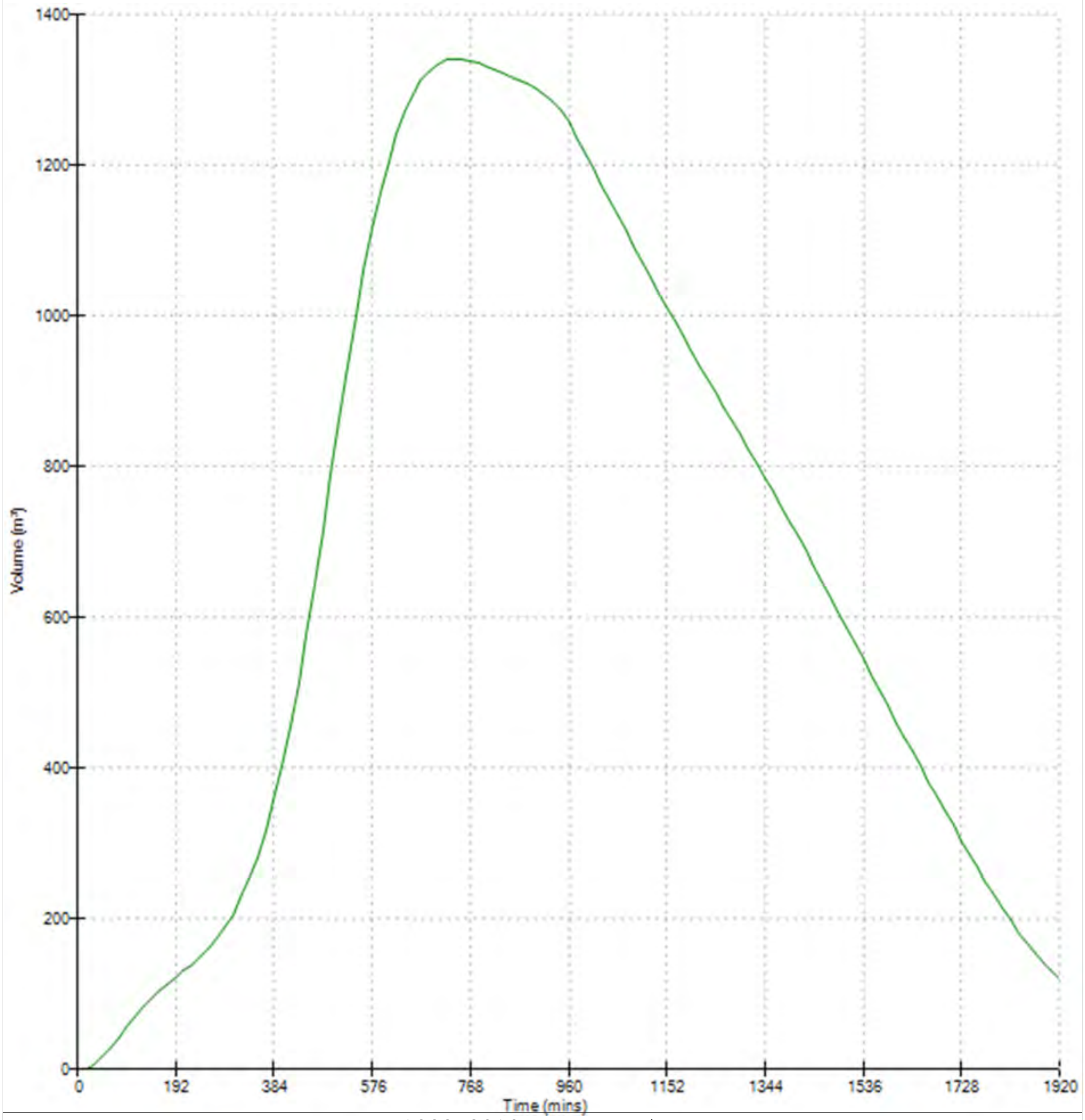
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S7.001	SS116	1.072	0.000	1.28		199.1	SURCHARGED	
S9.000	SS118	1.051	0.000	1.09		72.3	SURCHARGED	
S7.002	SS119	1.362	0.000	0.19		39.8	SURCHARGED	
S1.003	SS120	1.342	0.000	0.43		99.5	SURCHARGED	
S1.004	SS121	1.214	0.000	0.07		24.9	SURCHARGED	
S1.005	SS122	0.061	0.000	1.01		23.5	SURCHARGED	
S1.006	SS123	-0.010	0.000	0.83		23.6	OK	
S1.007	SS124	-0.020	0.000	0.86		24.5	OK	
S1.008	SS125	0.000	0.000	1.07		24.4	OK	
S10.000	SS214	1.697	0.000	1.71		118.3	SURCHARGED	
S10.001	SS215	1.368	0.000	1.54		108.9	SURCHARGED	
S11.000	SS210	1.789	0.000	0.68		22.6	SURCHARGED	
S12.000	SS209	2.116	0.000	1.45		47.7	SURCHARGED	
S11.001	SS211	1.890	0.000	2.12		68.8	SURCHARGED	
S13.000	SS201	1.405	0.000	0.40		13.0	SURCHARGED	
S13.001	SS202	1.513	0.000	1.06		33.2	SURCHARGED	
S13.002	SS203	1.410	0.000	0.74		40.4	SURCHARGED	
S13.003	SS204	1.404	0.000	0.73		44.7	SURCHARGED	
S13.004	SS205	1.408	0.000	0.80		55.8	SURCHARGED	
S14.000	SS206	1.528	0.000	0.42		11.3	SURCHARGED	
S13.005	SS207	1.421	0.000	1.00		124.2	SURCHARGED	
S13.006	SS208	1.431	0.000	1.30		127.7	SURCHARGED	
S11.002	SS212	1.330	0.000	2.00		200.4	SURCHARGED	
S11.003	SS213	1.037	0.000	1.29		255.8	SURCHARGED	
S10.002	SS216	1.119	0.000	0.45		97.8	SURCHARGED	
S15.000	SS222	0.631	0.000	0.01		2.0	SURCHARGED	
S15.001	SS223	0.661	0.000	0.02		8.3	SURCHARGED	
S16.000	SS217	0.667	0.000	1.36		45.6	SURCHARGED	
S16.001	SS218	0.470	0.000	1.72		54.3	SURCHARGED	
S16.002	SS219	0.517	0.000	0.36		10.0	SURCHARGED	
S17.000	SS220	0.494	0.000	0.05		1.6	SURCHARGED	
S16.003	SS221	0.478	0.000	0.22		14.4	SURCHARGED	
S15.002	SS224	0.731	0.000	0.07		25.7	SURCHARGED	
S18.000	SS225	0.631	0.000	0.04		2.7	SURCHARGED	
S15.003	SS220	0.804	0.000	0.08		31.6	SURCHARGED	
S19.000	SS229	0.936	0.000	0.08		2.4	SURCHARGED	
S20.000	SS228	0.883	0.000	0.07		3.8	SURCHARGED	
S19.001	SS230	0.990	0.000	0.28		20.5	SURCHARGED	
S15.004	SS227	0.907	0.000	0.12		56.8	SURCHARGED	
S15.005	SS231	0.992	0.000	0.17		59.8	SURCHARGED	
S10.003	SS232	1.002	0.000	0.57		153.2	SURCHARGED	
S10.004	SS233	1.032	0.000	0.61		151.1	SURCHARGED	
S10.005	SS234	1.063	0.000	0.12		50.8	SURCHARGED	

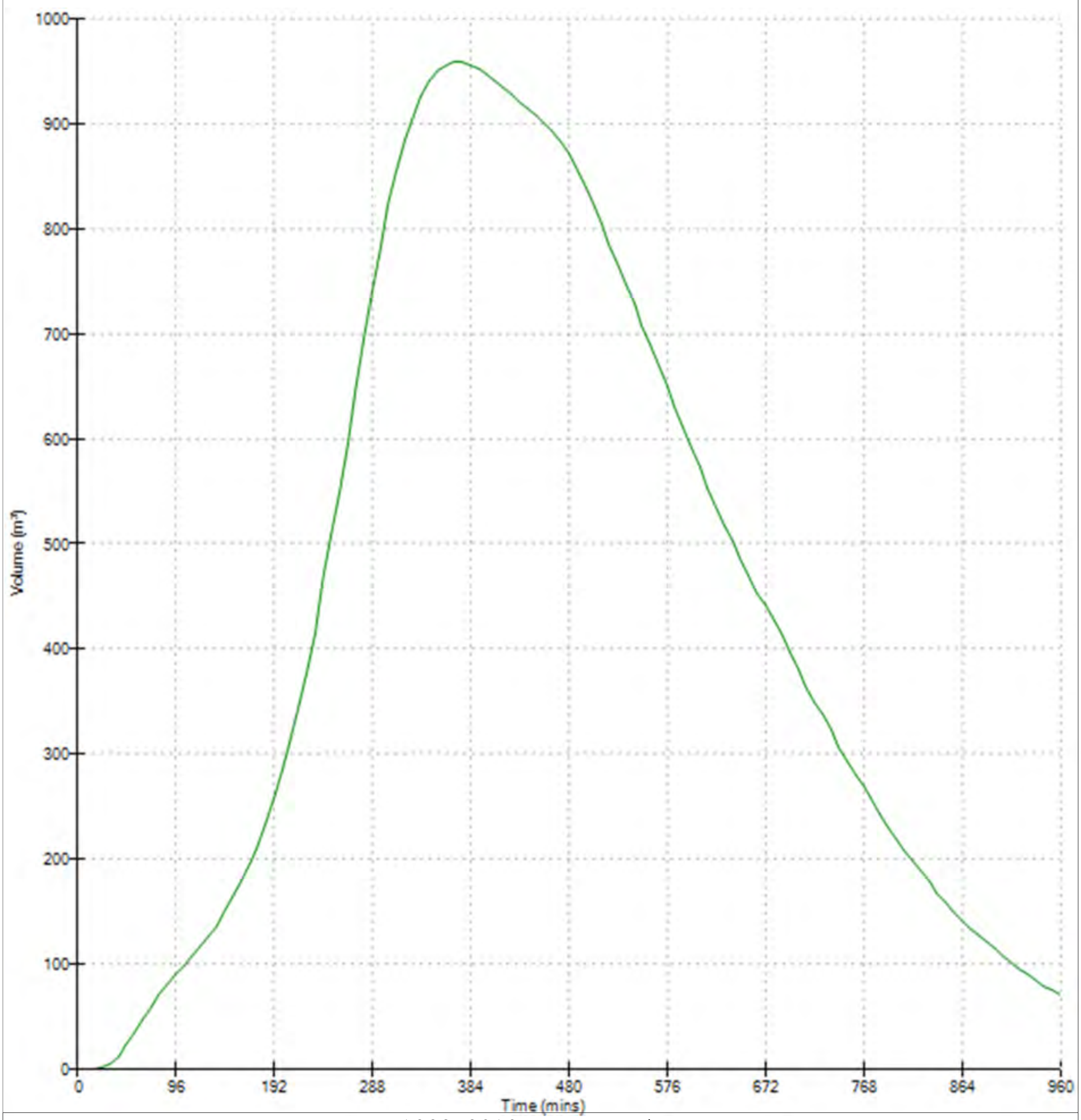
Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
S10.006	SS235	0.209	0.000	3.06		50.8	SURCHARGED	

Graphs for Pipe S1.004 US/MH SS121 (Storm)
960 minute 100 year Winter I+0%
Status: SURCHARGED



Graphs for Pipe S10.005 US/MH SS234 (Storm)
480 minute 100 year Winter I+0%
Status: SURCHARGED



Appendix 7.2 Irish Water Webmap

Irish Water Webmap

21/10/2019 14:31:33

Legend

Sewer Gravity Mains (Irish Water owned)
- Combined
- Foul
- Overflow
- Unknown

Sewer Gravity Mains (Non-Irish Water owned)
- Combined
- Foul
- Overflow
- Unknown

Sewer Pressurized Mains (Irish Water owned)
- Combined
- Foul
- Overflow
- Unknown

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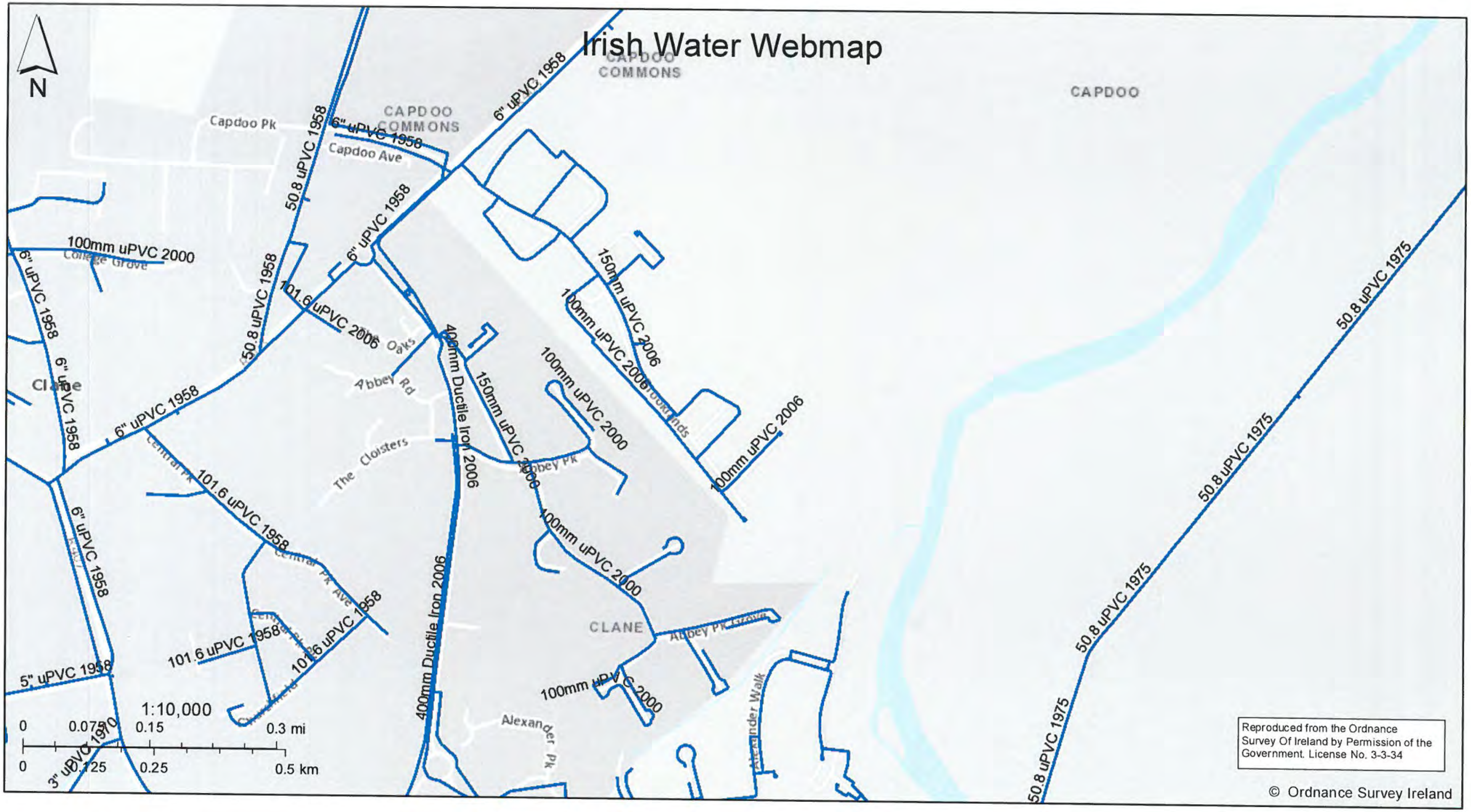
Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland. It should not be relied upon in the event of excavations or other works being carried out in the vicinity of the network. The onus is on the parties carrying out the works to ensure the exact location of the network is identified prior to mechanical works being carried out. Service pipes are not generally shown but their presence should be

"Gas Networks Ireland (GNI), their affiliates and assigns, accept no responsibility for any information contained in this document concerning location and technical designation of the gas distribution and transmission network ("the Information"). Any representations and warranties express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect, special, incidental, punitive or consequential loss including loss of profits, arising out of or in connection with the use of the Information (including maps or mapping data). NOTE: DIAL BEFORE YOU DIG Phone 1850 427 747 or e-mail dig@gasnetworks.ie – The actual position of the gas/electricity distribution and transmission network must be verified on site before any mechanical excavating takes place. If any mechanical excavation is proposed, hard copy maps must be requested from GNI re gas. All work in the vicinity of the gas distribution and transmission network must be completed in accordance with the current edition of the Health & Safety Authority publication, 'Code of Practice For Avoiding Danger From Underground Services' which is available from the Health and Safety Authority (1890 28 93

Irish Water Webmap



21/10/2019 14:29:05

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Legend

Treatment Plant

Reservoir

Potable

Raw Water

Pump Stations

Water Mains(Irish Water Owned)

Untreated

Potable Water

Water Mains(Non Irish Water Owned)

Untreated

Potable Water

Water Lateral Lines

Irish Water

Non IW

Water Abandoned Lines

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William Fadden

Dublin Road,
Clane,
Co. Kildare
W91FPW2

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

3 July 2020

Re: CDS20002208 pre-connection enquiry - Subject to contract | Contract denied

Connection for Multi/Mixed Use Development of 306 units at Capdoo & Abbeylands, Clane, Kildare

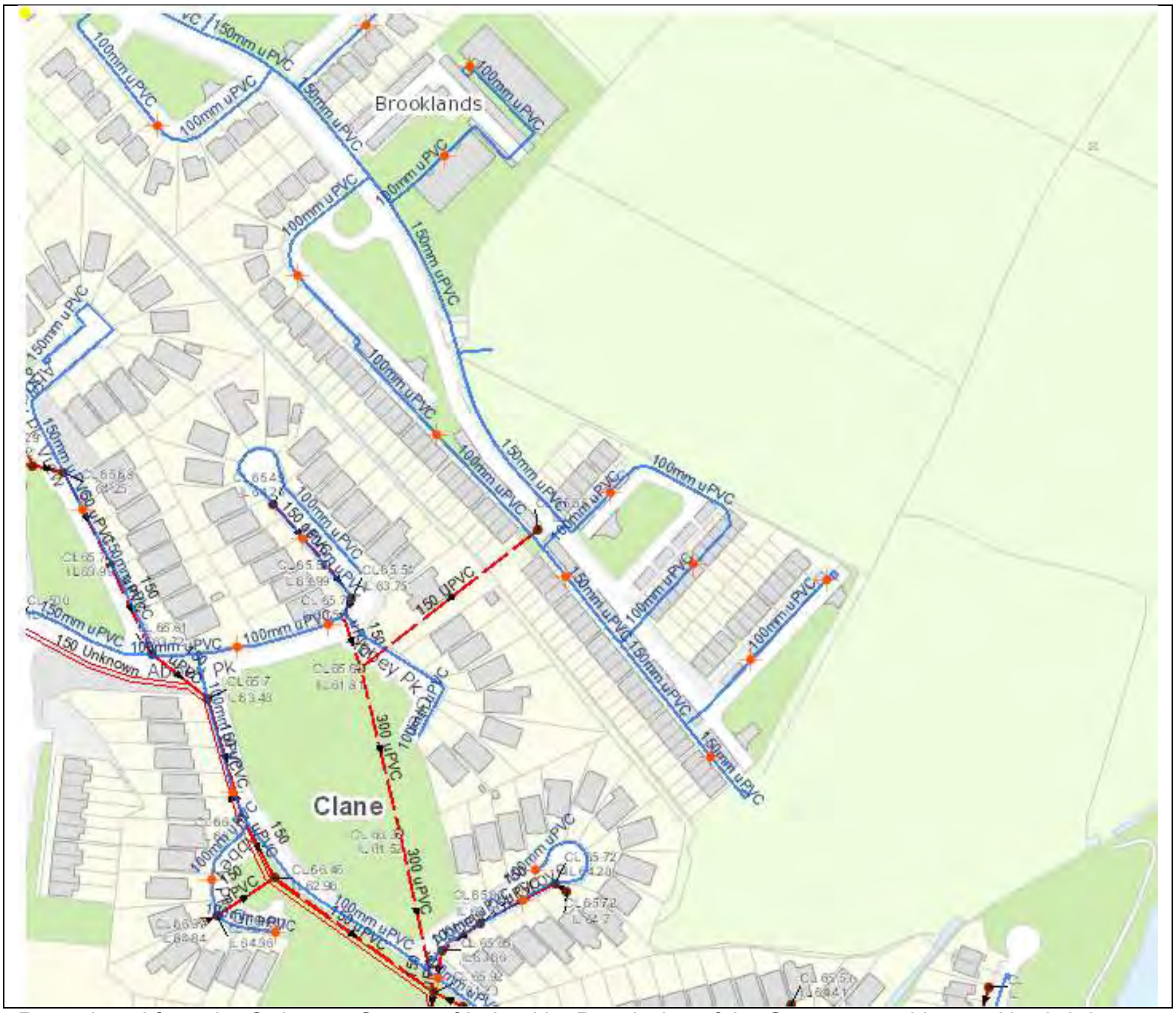
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Capdoo & Abbeylands, Clane, Kildare (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	**OUTCOME OF PRE-CONNECTION ENQUIRY** **<u>THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.</u>**
Water Connection	Feasible without infrastructure upgrade by Irish Water
Wastewater Connection	Feasible Subject to upgrades
SITE SPECIFIC COMMENTS	
Water Connection	• On site storage for the average day peak week demand of the commercial section (crèche) is required to supply this demand for 24 hours and have a re-fill time of 12 hours.
Wastewater Connection	• Irish Water has a project underway to relieve capacity constraints in Clane (Upper Liffey Valley Sewerage Scheme Contract 2B – ULVSS). Connections of units can be facilitated during the commissioning phase scheduled for Q3/2021 (this may be subject to change). Connection of Phase A in advance of Q3/2021 will be subject to a Connection Agreement with Irish Water. • Connection of the Development should be via the private wastewater infrastructure in Abbeylands Housing Estate. At connection application stage the Developer has to demonstrate that the Third Party infrastructure is in compliance with requirements of

	Irish Water Code of Practice and Standard Details and has adequate capacity and integrity to cater for the additional load.
The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

The map included below outlines the current Irish Water infrastructure adjacent to your site:



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Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Marina Zivanovic Byrne from the design team on 01 89 25991 or email mzbyrne@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,

Maria O'Dwyer

Connections and Developer Services

Uisce Éireann
Bosca OP 448
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Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
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Delivery Office,
Cork City.

www.water.ie

Patrick Fadden
Capdoo
Dublin Road
Clane, Kildare W91NNK2

26 November 2020

Re: Design Submission for Capdoo Commons, Clane, Kildare (the "Development") (the "Design Submission") / Connection Reference No: CDS19006765

Dear Patrick Fadden,

Many thanks for your recent Design Submission.

We have reviewed your proposal for the connection(s) at the Development. Based on the information provided, which included the documents outlined in Appendix A to this letter, Irish Water has no objection to your proposals.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Irish Water infrastructure. Before you can connect to our network you must sign a connection agreement with Irish Water. This can be applied for by completing the connection application form at www.water.ie/connections. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities (CRU)(https://www.cru.ie/document_group/irish-waters-water-charges-plan-2018/).

You the Customer (including any designers/contractors or other related parties appointed by you) is entirely responsible for the design and construction of all water and/or wastewater infrastructure within the Development which is necessary to facilitate connection(s) from the boundary of the Development to Irish Water's network(s) (the "**Self-Lay Works**"), as reflected in your Design Submission. Acceptance of the Design Submission by Irish Water does not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Irish Water representative:
Name: Kevin McManmon
Phone: 018230374
Email: kmcmanmon@water.ie

Yours sincerely,

Yvonne Harris

Yvonne Harris
Head of Customer Operations

Appendix A

Document Title & Revision

- 20017 304-1-B Water Services Layout 201126 DC
- 20017 304-2-B Water Services Layout 201126 DC
- 20017 300 -Site Layout Services 201117 DC-303-1 Sewer Sections (100)
- 20017 300 -Site Layout Services 201117 DC-303-2 Sewer Sections (200)
- 20017 300 -Site Layout Services 201117 DC-304 Foul & Surface Layout

For further information, visit ***www.water.ie/connections***

Notwithstanding any matters listed above, the Customer (including any appointed designers/contractors, etc.) is entirely responsible for the design and construction of the Self-Lay Works. Acceptance of the Design Submission by Irish Water will not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

Appendix 8.1 Photolog

Photo 1: NMP1

Photo 2: NMP2

Photo 3: NMP3

Photo 4: Unattended Meter at NMP2

Appendix 8.2 Certificate of Calibration and Conformance

Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, Essex, GB-CM6 1HD
www.campbell-associates.co.uk
Phone 01371 871030 Facsimile 01371879106

Certificate of Calibration and Conformance

CALIBRATION

0789

Certificate No.: U29202

Test object:	**Sound Level Meter, BS EN IEC 61672-1:2003 Class 1 (Precision)**
Manufacturer:	**NTi Audio**
Type:	**XL2-TA**
Serial no:	**A2A-08898-E0**
Customer:	**Redkite Environmental Ltd**
Address:	**Hunter's Moon, Ballykeane Road, Redcross, Co. Wicklow. Ireland.**
Contact Person:	**Siobhan Maher**
Order No:	**P009/01**

Method :
Calibration has been performed as set out in CA Technical Procedures TP01 & 02 as appropriate. These are based on the procedures for periodic verification set out in BS EN IEC 61672-3:2006. Results and conformance statement are overleaf and detailed results are in the attached Test Report.

	Producer:	Type:	Serial No:	Certificate number
Microphone	NTi Audio	MC230	8694	29201
Calibrator*	Larson Davis	CAL200	11728	U29200
Preamplifier	NTi Audio	MA220	5062	Included

Additional items that also have been submitted for verification

Wind shield	None
Attenuator	None
Extension cable	None

These items have been taken into account wherever appropriate.

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	101.73 ± 0.01kPa	21.5 ± 0.2°C	42.3 ± 2%RH

Date received :	30/07/2018
Date of calibration:	02/08/2018
Date of issue:	02/08/2018

Engineer

M-Planivel

Palanivel Marappan B.Eng (Hons), M.Sc

Supervisor

Michael Tickner

Certificate of Calibration and Conformance

UKAS Laboratory Number 0789

Certificate No.: U29202

Conformance

From markings on the sound level meter or by reference to the manufacturer's published literature it has been determined that the instrument submitted for verification was originally manufactured to BS EN IEC 61672-1:2002 and similarly that the associated sound calibrator conforms to BS EN IEC 60942.

Statement of conformance

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of BS EN IEC 61672-3:2006, for the environmental conditions under which the tests were performed. As public evidence was available[1], from an independent testing organisation responsible for approving the results of pattern evaluation tests performed in accordance with BS EN IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in BS EN IEC 61672-1:2002, and that the sound level meter submitted for testing conforms to the class 1 requirements of BS EN IEC 61672-1:2003.

[1] This evidence is held on file at the calibration laboratory

Measurement Results:

Indication at the calibration check frequency - IEC61672-3 Ed.1 #9	Passed
Self-generated noise - IEC 61672-3 Ed.1 #10	Passed
Acoustical signal tests of a frequency weighting - IEC 61672-3 Ed.1 #11	Passed
Frequency weightings: A Network - IEC 61672-3 Ed.1 #12.3	Passed
Frequency weightings: C Network - IEC 61672-3 Ed.1 #12.3	Passed
Frequency weightings: Z Network - IEC 61672-3 Ed.1 #12.3	Passed
Frequency and time weightings at 1 kHz IEC 61672-3 Ed.1 #13	Passed
Level linearity on the reference level range - IEC 61672-3 Ed.1 #14	Passed
Level linearity including the level range control - IEC 61672-3 Ed.1 #15	Passed
Toneburst response - IEC 61672-3 Ed.1 #16	Passed
Peak C sound level - IEC 61672-3 Ed.1 #17	Passed
Overload indication - IEC 61672-3 Ed.1 #18	Passed
Electrical signal tests of frequency weightings - IEC 61672-3 Ed.1 #12	Passed

Comment

Correct level with associated calibrator is 113.9dB(A).

Observations

No information on the uncertainty of measurement, required by 11.7 of BS EN IEC 61672-3:2006 of the adjustment data given in the instruction manual or obtained from the manufacturer or supplier of the sound level meter, or the manufacturer of the microphone, or the manufacture of the electrostatic actuator was published in the instruction manual or made available by the manufacturer or supplier. The uncertainty of measurement of the adjustment data has therefore been assumed to be numerically zero for the purposes of this periodic test. If these uncertainties are not actually zero, there is a possibility that the frequency response of the sound level meter may not conform to the requirements of BS EN IEC 61672-1:2003.

No adjustment data have been published in the instruction manual or made available by the manufacturer or supplier of the sound level meter to account for the average effects of reflections from the case of the sound level meter and diffraction of sound around the microphone as required by sub-clause 11.4 and 12.6 of BS EN IEC 61672-3:2006. The average effects of reflections from the case of the sound level meter and diffraction of sound around the microphone have therefore been assumed to be numerically zero for the purposes of this periodic test. If these adjustment data are not actually zero, there is a possibility that the frequency response of the sound level meter may not meet the requirements of BS EN IEC 61672-1:2003.

The details of the uncertainty for each measurement is available from the Calibration Laboratory on request and is based on the standard uncertainty multiplied by a coverage factor K=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements. Details on the sources of corrections and their associated uncertainties that relate to this verification are contained the detailed test report accompanying this certificate.

Campbell Associates Ltd
5b Chelmsford Road Industrial Estate
GREAT DUNMOW, CM6 1HD, England
www.campbell-associates.co.uk
info@campbell-associates.co.uk
Phone 01371 871030 Facsimile 01371879106

CALIBRATION

0789

Certificate number: U29200

Certificate of Calibration and Conformance

Test object: **Sound Calibrator**
Manufacturer: **Larson Davis**
Type: **CAL200**
Serial no: **11728**

Customer: Redkite Environmental Ltd
Address: Hunter's Moon, Ballykeane Road, Redcross, Co. Wicklow. Ireland.
Contact Person: Siobhan Maher
Order No: P009/01

Measurement Results:	Level	Level Stability	Frequency	Frequency Stability	Distortion
1:	114.04 dB	0.06 dB	1000.38 Hz	0.00 %	0.33 %
2:	114.04 dB	0.06 dB	1000.38 Hz	0.00 %	0.33 %
3:	114.04 dB	0.06 dB	1000.38 Hz	0.00 %	0.32 %
Result (Average):	**114.04 dB**	**0.06 dB**	**1000.38 Hz**	**0.00 %**	**0.33 %**
Expanded Uncertainty:	0.10 dB	0.02 dB	1.00 Hz	0.01 %	0.10 %
Degree of Freedom:	>100	>100	>100	>100	>100
Coverage Factor:	2.00	2.00	2.00	2.00	2.00

The stated level is relative to 20µPa. The level is traceable to National Standards.

The reported expanded uncertainty of measurements is based on a standard uncertainty multiplied by the coverage factor of k=2, providing a level of confidence of approximately 95%. Where the degrees of freedom are insufficient to maintain this confidence level, the coverage factor is increased to maintain this confidence level. The uncertainty has been determined in accordance with UKAS requirements.
Records: K:\C A\Calibration\Nor-1504\Nor-1018 CalCal\2018\LDL200_11728_M1.nmf

Environmental conditions:	Pressure:	Temperature:	Relative humidity:
Reference conditions:	101.325 kPa	23.0 °C	50 %RH
Measurement conditions:	101.746 ± 0.042 kPa	21.4 ± 0.1 °C	43.9 ± 1.2 %RH

Date received for calibration: 30/07/2018
Date of calibration: 02/08/2018
Date of issue: 02/08/2018
Engineer

M. Panivel

Palanivel Marappan B.Eng(Hons), M.Sc

Supervisor

Michael Tickner

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceablity of measurement to recognised national standards, and to the units of measurement realised at an accredited national physical laboratory or other recognised standards laboratories. This certificate may not be reproduced other than in full without the prior written approval of the issuing laboratory.

Template UKAS_PE v2.10 DocR Cert-C0001

Certificate number: U29200

Preconditioning
The equipment was preconditioned for more than 4 hours in the specified calibration environment.

Measurements
The calibrator has been tested as described in the following annexes to BS EN IEC60942:2003 Sound Calibrators; B3.4 for sound pressure level, B3.5 for frequency, B3.6 for total distortion and A4.4 for short term stability of the pressure level.

Method
Calibration has been performed as set out in the current version of CA Technical procedure TP01

Instruments and program
A complete list of equipment, hardware and software that has been used in this calibration is available from the calibration laboratory on request.

Traceability
The measured values are traceable to an accredited national physical laboratory within the EU or EFTA.

Comment
94dB spot check = 94.04dB. Note this is not UKAS data.

Statement of conformance
As public evidence was available[1], from a testing organisation responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in annex A of BS EN IEC 60942:2003, the sound calibrator tested is considered to conform to all the class 1 requirements of that BS EN IEC 60942:2003.

[1] This evidence is held on file at the calibration laboratory.

Notes:
The sound pressure level generated by the calibrator in its ½ inch configuration was measured five times and averaged by a WS2P working standard microphone for class 1 or 2 devices or a LS2P reference microphone for class 0 or LS devices as specified in the International Standard BS EN 61094-4. The results of three replications and the mean of the measurements obtained are given in the measurement results table of this certificate. The frequency and distortion were measured in a similar manner. The figures in **BOLD** are the final results; a small correction factor may need to be added to the sound pressure level quoted here if the device is used to calibrate a sound level meter that is fitted with a free field response microphone. See manufacturer's handbooks for full details of this and other corrections that may be applicable.

Sonitus House, 5b Chelmsford Road Industrial Estate, Great Dunmow, GB-CM6 1HD
Tel (+44) 01371 871030 Fax (+44) 01371 879106
email calibration@campbell-associates.co.uk

Calibration Report

Certificate No.:29201

Manufacturer:	**NTi Audio**
Type:	**MC230**
Serial no:	**8694**

Customer:	**Redkite Environmental Ltd**
Address:	**Hunter's Moon, Ballykeane Road, Redcross, Co. Wicklow. Ireland.**
Order No:	**P009/01**
Contact Person:	**Siobhan Maher**

Measurement Results:

	Sensitivity: (dB re 1V/Pa)	Capacitance: (pF)
1:	-26.51	17.8
2:	-26.51	17.7
3:	-26.52	17.7
Result (Average):	**-26.51**	**17.7**
Expanded Uncertainty:	0.10	2.00
Degree of Freedom:	>100	>100
Coverage Factor:	2.00	2.00

The following correction factors have been applied during the measurement:
Pressure:-0.005 dB/kPa Temperature:-0.010 dB/°C Relative humidity:0.000 dB/%RH

Reference Calibrator: WSC2 - GRAS42AA-18277 Volume correction: 0.000 dB
Records:K:\C A\Calibration\Nor-1504\Nor-1017 MicCal\2018\MC230_8694_M1.nmf
Measurement procedure: TP05
All results quoted are directly traceable to National Physical Laboratory, London

The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k = 2, which for a normal distribution corresponds to coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with EA publication EA-4/02.

Comment:

Environmental conditions:

Pressure:	Temperature:	Relative humidity:
101.720 ± 0.041 kPa	21.1 ± 0.1 °C	47.1 ± 0.9 %RH

Date of calibration: 02/08/2018
Date of issue: 02/08/2018

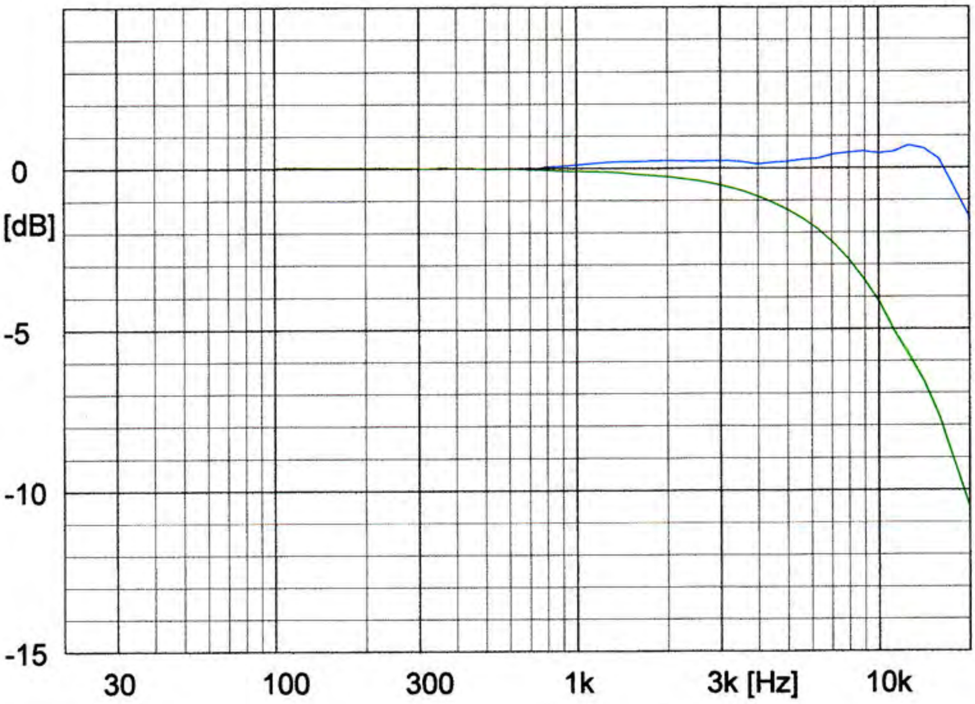
Supervisor : Darren Batten TechIOA
Engineer :

M. Planivel

Palanivel Marappan B.Eng (Hons), M.Sc
Software version: 6.0h

Campbell Associates
www.campbell-associates.co.uk

Microphone Calibration Certificate



NTi Audio
Type: MC230

Serial no: 8694

Sensitivity: 47.24 mV/Pa
-26.51 ±0.10 dB re. 1 V/Pa
Capacitance: 17.7 ±2.0 pF
Date: 02/08/2018

Signature: M. Hanivel

Measurement conditions:

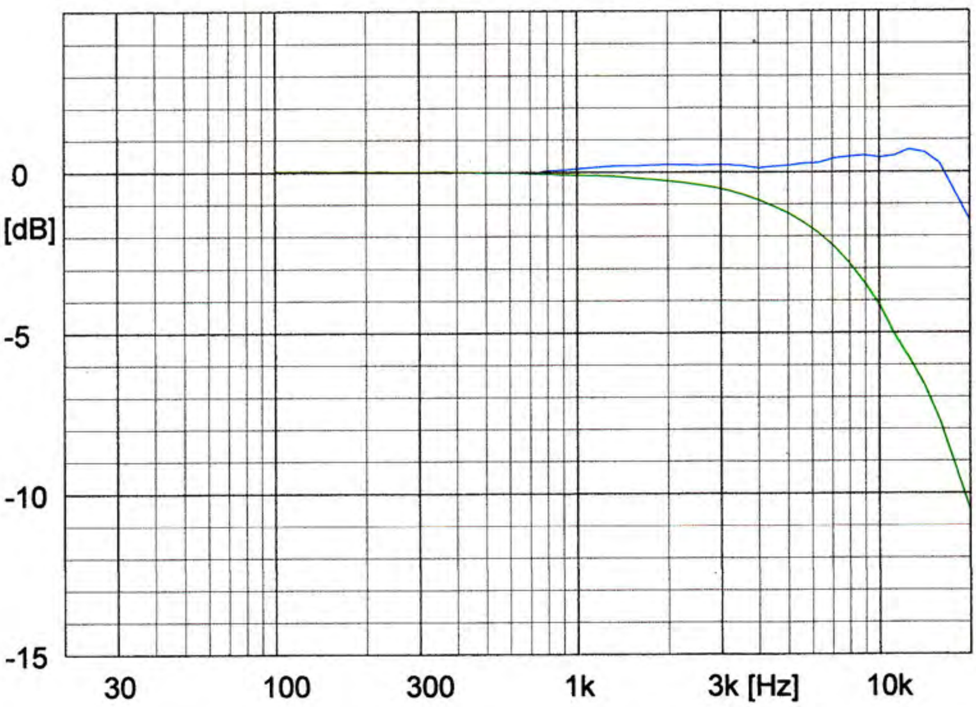
Polarisation voltage:	0.0 V
Pressure:	101.72 ±0.04 kPa
Temperature:	21.1 ±0.1 °C
Relative humidity:	47.1 ±0.9 %RH

Results are normalized to the reference conditions.

Free field response
Pressure (Actuator) response

Campbell Associates
www.campbell-associates.co.uk

Microphone Calibration Certificate



NTi Audio
Type: MC230

Serial no: 8694

Sensitivity: 47.24 mV/Pa
-26.51 ±0.10 dB re. 1 V/Pa
Capacitance: 17.7 ±2.0 pF
Date: 02/08/2018

Signature: M. Hanivel

Measurement conditions:

Polarisation voltage:	0.0 V
Pressure:	101.72 ±0.04 kPa
Temperature:	21.1 ±0.1 °C
Relative humidity:	47.1 ±0.9 %RH

Results are normalized to the reference conditions.

Free field response
Pressure (Actuator) response

Campbell Associates
www.campbell-associates.co.uk

Comment:

SONITUS SYSTEMS

Certificate of Calibration

Issued to:	Certificate Number
Redkite Environmental Huntersmoon Ballykeane Road Redcross Co. Wicklow	AC190062

Test Date: 01/07/2019

Equipment Information

Item Calibrated:	Acoustic Calibrator	**Model:**	CR:515
Make:	Cirrus	**Serial Number:**	55191

Calibration Procedure

The above calibrator was verified in line with the requirements of BS EN 60942:2003. The calibrator was allowed to stablize for a suitable period, as described in the manufacturer's instruction manual, in laboratory conditions. The sound pressure level in the cavity (half-inch). The operating frequency and signal distortion were also measured.

Calibration Standards

Description	Serial Number
National Instruments PXI-4461	19C91D2
GRAS 42AA Pistonphone	227947
GRAS 46A0 Pressure Field Microphone	228216

The standards used in this calibration are traceable to NIST and/or other National Measurement Institutes (NMI's) that are signatories of the International Committee of Weights and Measures (CIPM) mutual recognition agreement (MRA).

Signed on behalf of Sonitus Systems:

SONITUS SYSTEMS

Calibration Report

Equipment Information

Model: CR:515
Serial Number: 55191

Ambient Conditions

Measurement conditions were within the tolerances defined in BS EN 60942.

Barometric Pressure: 1040 hPa
Temperature: 19.5 °C
Relative Humidity: 50 %

Results

Calibrator Setting	Measured Parameter	Measured Value	Tolerance +/-	Uncertainty +/-
94 dB, 1KHz	Sound pressure level (dB)	94.07	0.75	0.14 dB
	Frequency (Hz)	1000.11	20 Hz	0.25 Hz
	Distortion (%)	0.09	4.0	0.3

RESULT: **PASS**

As public evidence was available, from a testing organization responsible for approving the results of pattern evaluation tests, to demonstrate that the model of sound calibrator fully conformed to the requirements for pattern evaluation described in Annex A of IEC 60942:2003, the sound calibrator tested is considered to conform to all the Class 1 requirements of IEC 60942:2003

The manufacturer's guidelines concerning free-field correction should be observed when using the calibrator.

Notes

1. All measurements were made with the half-inch configuration of the calibrator in place.
2. The measurement uncertainty is reported as a standard uncertainty multiplied by a coverage factor k=2 which, for a normal probability distribution, corresponds to a coverage probability of approximately 95%.
3. The given uncertainty corresponds to measured values only and does not relate to the long term stability of the device under test.

Unit 2, Goldenbridge Industrial Estate, Tyrconnell Rd, Inchicore, Dublin, D08 YY38
www.sonitussystems.com Email: info@sonitussystems.com

Certificate of Calibration

Cirrus Research plc
dedicated to noise measurement

Equipment Details

Instrument Manufacturer	Cirrus Research Plc
Instrument Type	CR:171B
Description	Sound Level Meter
Serial Number	G056143

Calibration Procedure

The instrument detailed above has been calibrated to the publish test and calibration data as detailed in the instrument hand book, using the techniques recommended in the latest revisions of the International Standards IEC 61672-1:2013, IEC 61672-1:2002, IEC 60651:1979, IEC 60804:2001, IEC 61260:1995, IEC 60942:2003, IEC 60942:1997, IEC 61252:1993, ANSI S1.4-1983, ANSI S1.11-1986 and ANSI S1.43-1997 where applicable.
Sound Level Meters: All Calibration procedures were carried out by substituting the microphone capsule with a suitable electrical signal, apart from the final acoustic calibration.

Calibration Traceability

The equipment detailed above was calibrated against the calibration laboratory standards held by Cirrus Research plc. These are traceable to International Standards {A.0.6}. The standards are:

Microphone Type	GRAS 40AP	Serial Number	173198	Calibration Ref.	0170
Calibrator Type	B&K 4231	Serial Number	2564324	Calibration Ref.	A1914
Calibrator Type	B&K 4231	Serial Number	2564325	Calibration Ref.	A1915
Calibrator Type	B&K 4231	Serial Number	2594796	Calibration Ref.	A1916

Calibrated by	M.BERRY
Calibration Date	05 June 2018
Calibration Certificate Number	260720

This Calibration Certificate is valid for 24 months from the date above.

Cirrus Research plc, Acoustic House, Bridlington Road, Hunmanby, North Yorkshire, YO14 0PH
Telephone: +44 (0) 1723 891655 Fax: +44 (0) 1723 891742
Email: sales@cirrusresearch.co.uk

Brüel & Kjær

The Calibration Laboratory
Skodsborgvej 307, DK-2850 Nærum, Denmark

ilac-MRA DANAK
CAL Reg.nr. 307

CERTIFICATE OF CALIBRATION

No: CDK1802543

CALIBRATION OF

Sound Level Meter:	Brüel & Kjær Type 2238	No: 2590900 Id: -
Microphone:	Brüel & Kjær Type 4188	No: 1773652

CUSTOMER

Enfonic Ltd
Charlestown Centre
Dublin
D11 KXC7
Ireland

CALIBRATION CONDITIONS

Preconditioning: 4 hours at 23°C ± 3°C

Environment conditions: Pressure: 101,3kPa ± 3kPa. Humidity: 25% - 70% RH. Temperature: 23°C ± 3°C.

SPECIFICATIONS

The Sound Level Meter Brüel & Kjær Type 2238 has been calibrated in accordance with the requirements as specified in IEC 60651 and 60804 type 1. The accreditation assures the traceability to the international units system SI.

PROCEDURE

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System 3630 with application software type 7763 (version 5.0 - DB: 5.00) by using procedure 2238-4188-BZ7125.

RESULTS

Calibration Mode: **Calibration as received.**

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of calibration: 2018-04-04

Date of issue: 2018-04-04

M. Önder
Mikail Önder
Calibration Technician

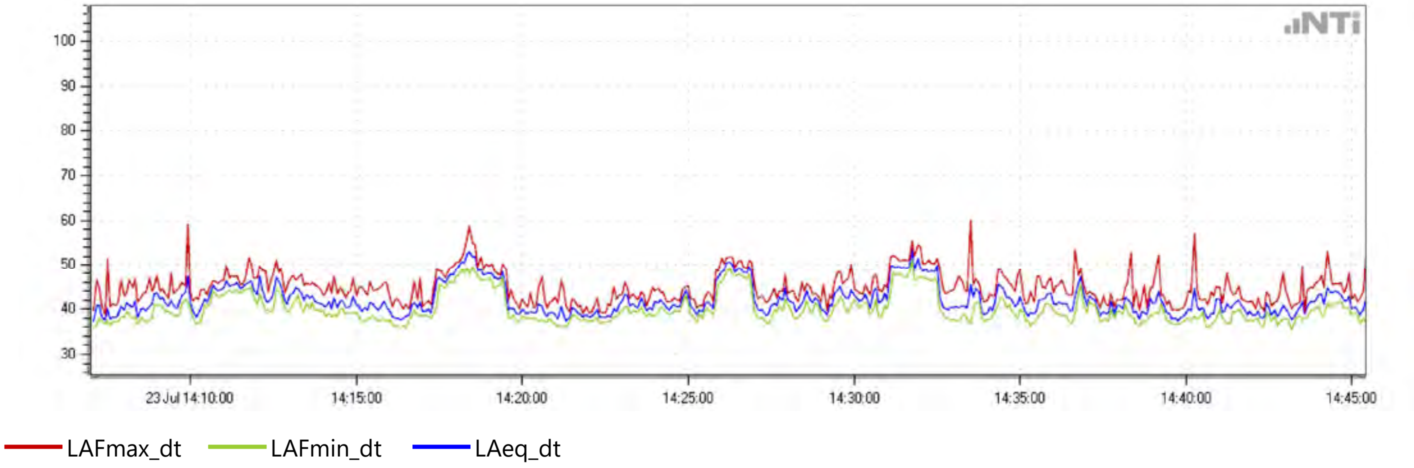
Erik Bruus
Approved Signatory

Appendix 8.3 Summary Sheets/Print-Outs from Noise Meters

NMP1 Daytime

Start: 2019-07-23 14:07:02

End: 2019-07-23 14:45:24



Configuration

Device Info: XL2, SNo. A2A-08898-E0, FW3.11 Type Approved

Mic Type: NTi Audio M2230, SNo. 5062, User calibrated 2019-07-23 14:04

Mic Sensitivity: 43.3 mV/Pa

Range: 0 - 100 dB

Ln based on: LAeq_dt

Results

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
Recorded		**00:38:22**	**60.1**	**35.4**	**43.7**		
Project Result		**00:38:22**	**60.1**	**35.4**	**43.7**	**47.9**	**38.6**

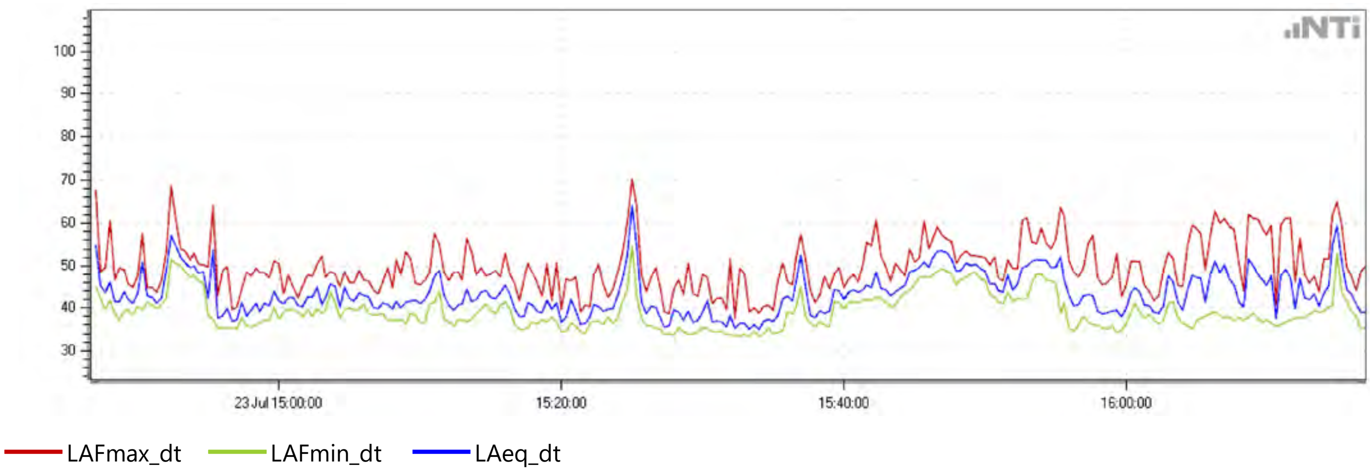
Audit Intervals

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
15'	**2019-07-23 14:00:00**	**00:07:58**	**59.1**	**35.8**	**42.9**	**45.6**	**38.9**
15'	**2019-07-23 14:15:00**	**00:15:00**	**58.8**	**35.8**	**44.3**	**48.6**	**38.5**
15'	**2019-07-23 14:30:00**	**00:15:00**	**60.1**	**35.4**	**43.5**	**48.0**	**38.6**
15'	**2019-07-23 14:45:00**	**00:00:24**	**51.8**	**36.9**	**40.3**	**41.3**	**38.6**

NMP1 Daytime

Start: 2019-07-23 14:46:46

End: 2019-07-23 16:16:52



Configuration

Device Info: XL2, SNo. A2A-08898-E0, FW3.11 Type Approved

Mic Type: NTi Audio M2230, SNo. 5062, User calibrated 2019-07-23 14:04

Mic Sensitivity: 43.3 mV/Pa

Range: 0 - 100 dB

Ln based on: LAeq_dt

Results

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
Recorded		**01:30:06**	**70.2**	**33.3**	**47.2**		
Project Result		**01:30:06**	**70.2**	**33.3**	**47.2**	**50.2**	**37.1**

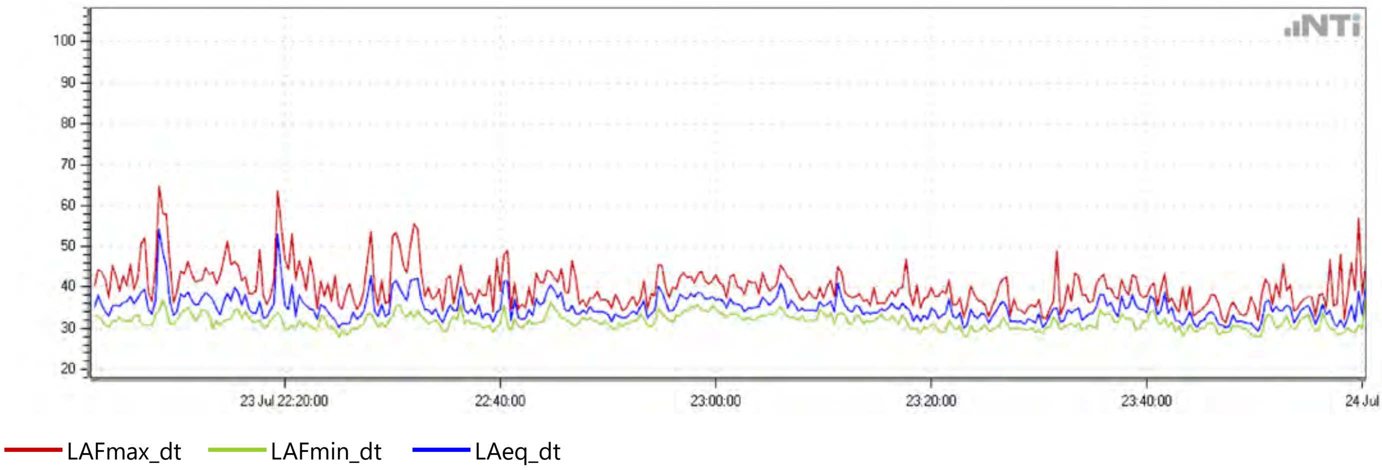
Audit Intervals

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
15'	**2019-07-23 14:45:00**	**00:13:14**	**68.6**	**35.1**	**47.9**	**51.8**	**37.3**
15'	**2019-07-23 15:00:00**	**00:15:00**	**57.5**	**35.9**	**42.8**	**45.3**	**39.4**
15'	**2019-07-23 15:15:00**	**00:15:00**	**70.2**	**33.6**	**48.8**	**45.4**	**36.0**
15'	**2019-07-23 15:30:00**	**00:15:00**	**60.8**	**33.3**	**43.6**	**46.4**	**35.5**
15'	**2019-07-23 15:45:00**	**00:15:00**	**63.6**	**34.3**	**48.7**	**52.3**	**38.3**
15'	**2019-07-23 16:00:00**	**00:15:00**	**64.9**	**35.0**	**48.0**	**52.2**	**38.5**
15'	**2019-07-23 16:15:00**	**00:01:52**	**59.4**	**34.9**	**45.4**	**47.9**	**37.6**

NMP1 Evening & Night time

Start: 2019-07-23 22:02:10

End: 2019-07-24 00:00:05



Configuration

Device Info: XL2, SNo. A2A-08898-E0, FW3.11 Type Approved

Mic Type: NTi Audio M2230, SNo. 5062, User calibrated 2019-07-23 21:58

Mic Sensitivity: 43.1 mV/Pa

Range: 0 - 100 dB

Ln based on: LAeq_dt

Results

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
Recorded		**01:57:55**	**64.8**	**27.9**	**37.2**		
Project Result		**01:57:55**	**64.8**	**27.9**	**37.2**	**38.5**	**31.2**

Audit Intervals

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
15'	**2019-07-23 22:00:00**	**00:12:50**	**64.8**	**29.8**	**41.4**	**40.5**	**32.8**
15'	**2019-07-23 22:15:00**	**00:15:00**	**63.6**	**27.9**	**39.5**	**39.4**	**31.1**
15'	**2019-07-23 22:30:00**	**00:15:00**	**55.6**	**28.9**	**37.1**	**40.5**	**31.8**
15'	**2019-07-23 22:45:00**	**00:15:00**	**46.5**	**29.4**	**35.9**	**38.5**	**32.4**
15'	**2019-07-23 23:00:00**	**00:15:00**	**45.5**	**31.0**	**36.0**	**38.0**	**33.4**
15'	**2019-07-23 23:15:00**	**00:15:00**	**46.9**	**28.0**	**33.7**	**36.1**	**30.6**
15'	**2019-07-23 23:30:00**	**00:15:00**	**48.9**	**28.2**	**34.7**	**37.6**	**30.8**
15'	**2019-07-23 23:45:00**	**00:15:00**	**57.0**	**28.0**	**33.5**	**35.7**	**30.0**
15'	**2019-07-24 00:00:00**	**00:00:05**	**45.7**	**37.8**	**40.4**	**41.1**	**40.3**

Cirrus Research plc

Measurement Summary Report

Name	NMP2 Daytime #1
Time	7/23/2019 2:30:01 PM
Duration	00:15:00
Instrument	G056143, CR:171B

Summary

LAeq	43.3 dB
LAE	72.8 dB
LAFMax	59.2 dB

LAF1	50.8 dB
LAF5	46.7 dB
LAF10	45.4 dB
LAF50	41.6 dB
LAF90	39.2 dB
LAF95	38.7 dB
LAF99	37.9 dB

Calibration Information

7/23/2019 2:15:54 PM 0.44 dB

7/23/2019 4:06:26 PM 0.44 dB

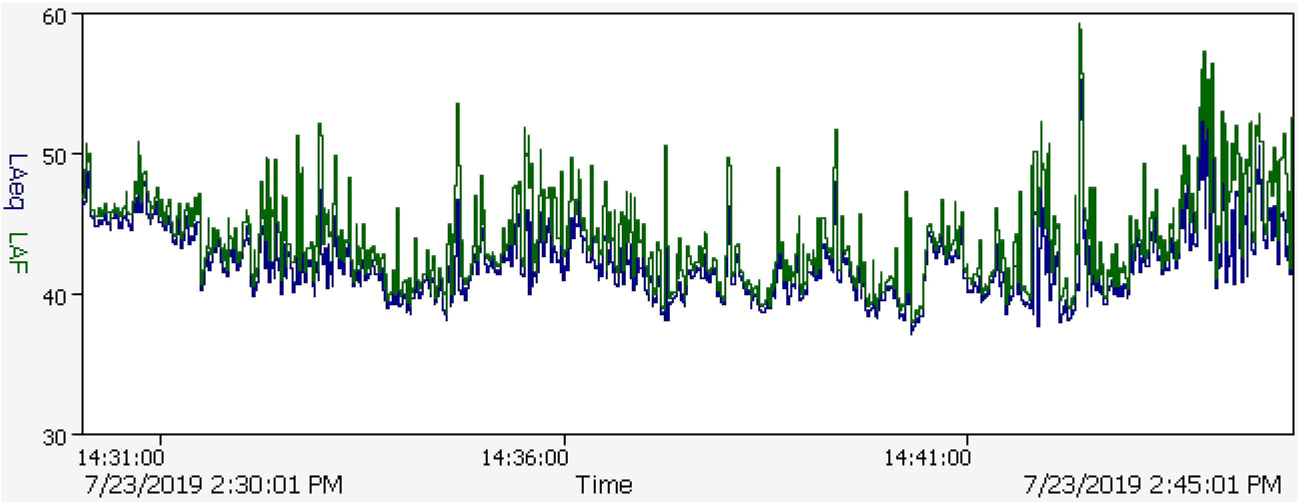
Person

Maher Siobhan

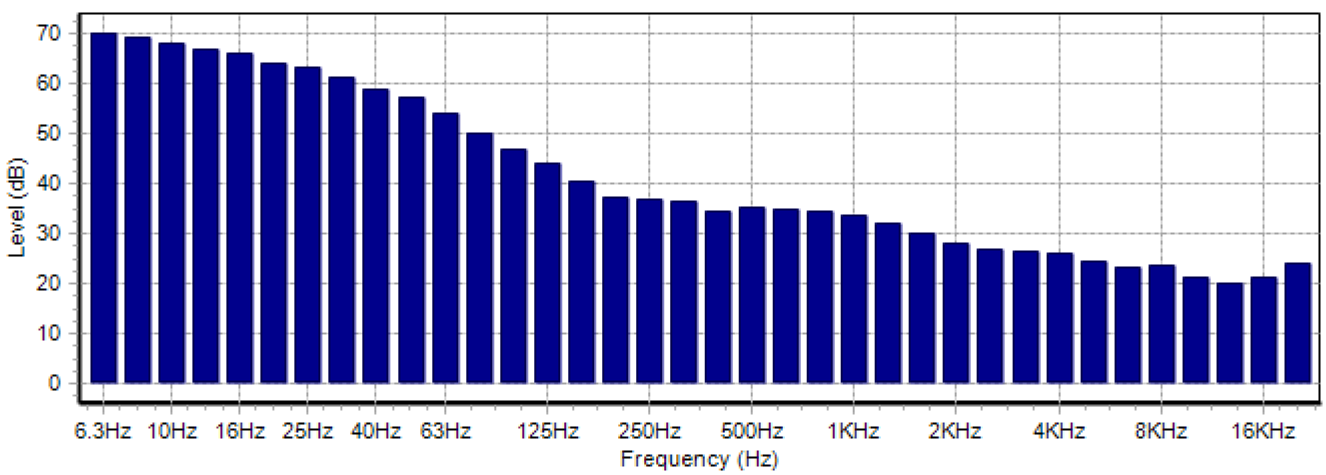
Place

Capdoo, Clane

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

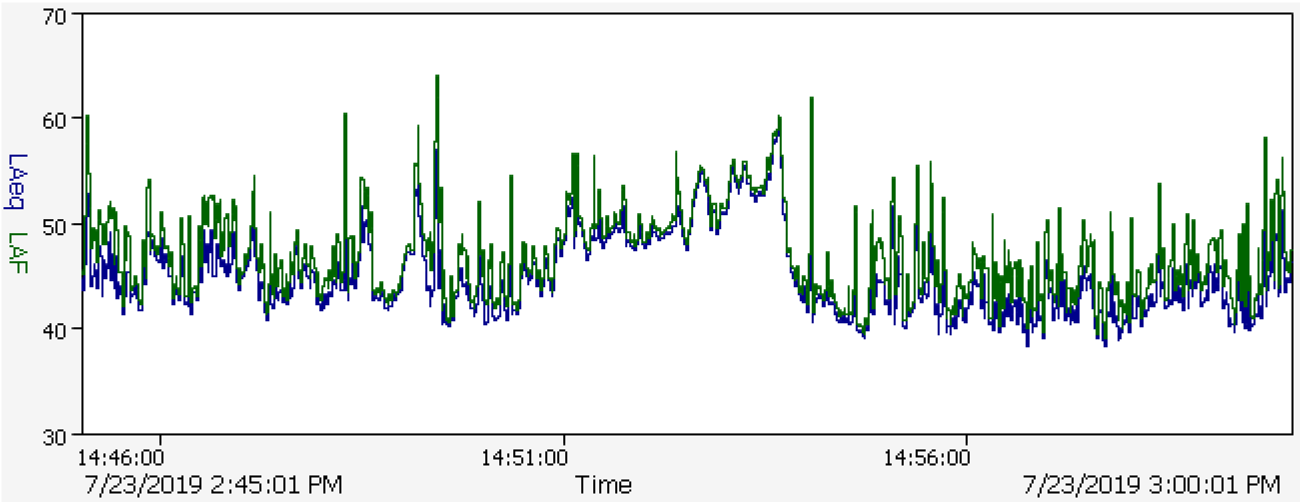
Name	NMP2 Daytime #2	**Summary**		LAF1	55.6 dB
Time	7/23/2019 2:45:01 PM	LAeq	47.2 dB	LAF5	52.9 dB
Duration	00:15:00	LAE	76.8 dB	LAF10	50.7 dB
Instrument	G056143, CR:171B	LAFMax	63.9 dB	LAF50	43.7 dB
				LAF90	40.4 dB
				LAF95	39.8 dB
				LAF99	38.9 dB

Calibration Information
7/23/2019 2:15:54 PM 0.44 dB
7/23/2019 4:06:26 PM 0.44 dB

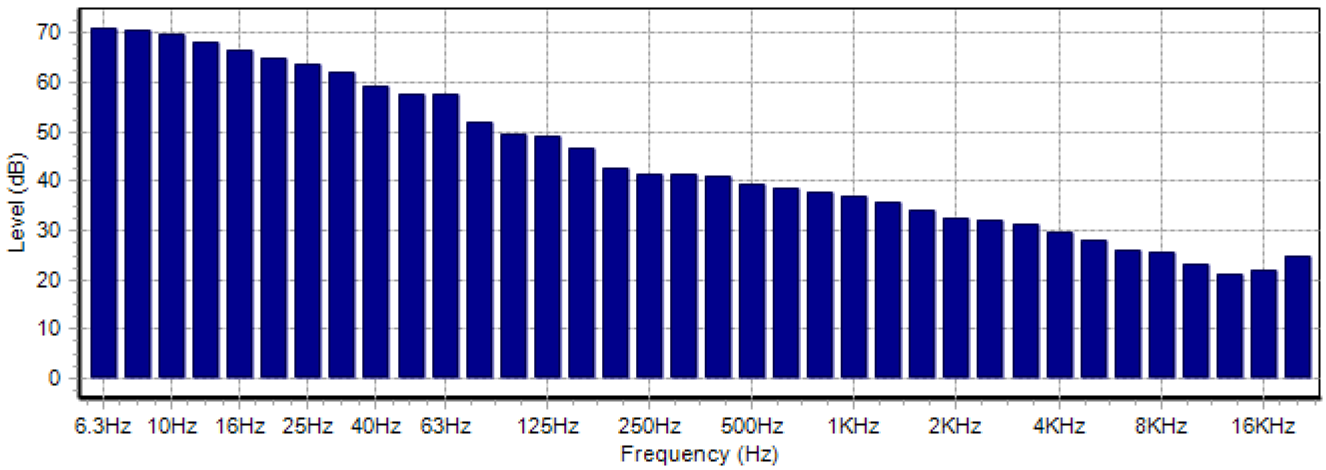
Person
Maher Siobhan

Place
Capdoo, Clane

Time History



Frequency Bands



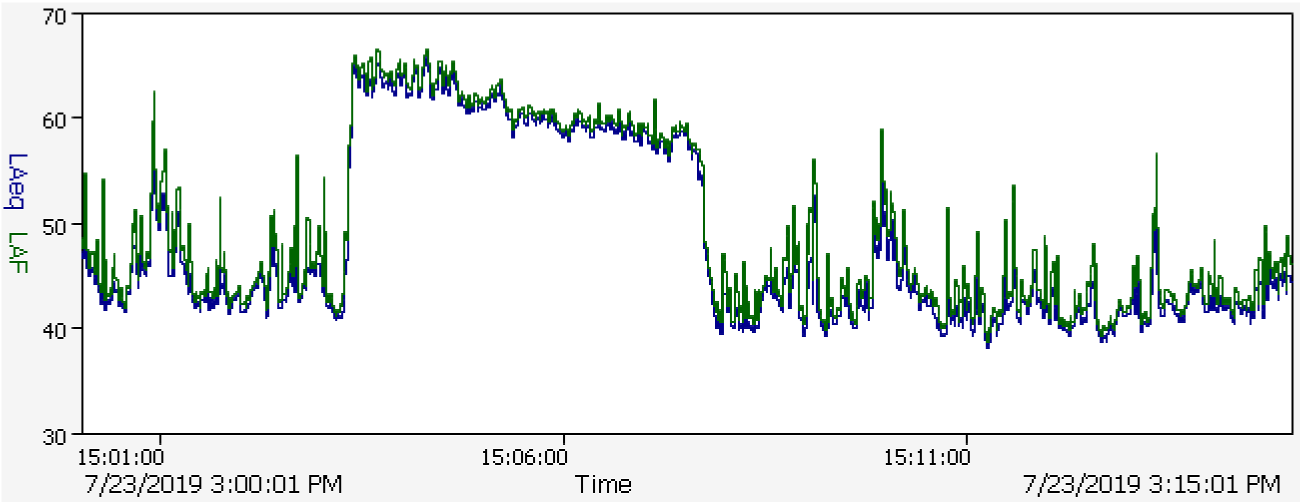
Cirrus Research plc

Measurement Summary Report

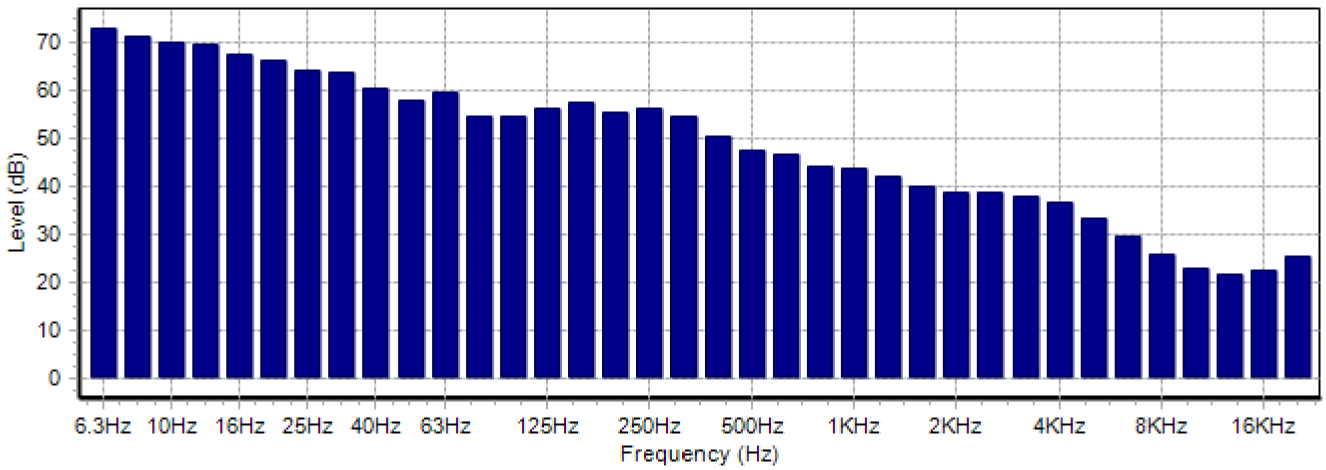
Name	NMP2 Daytime #3	**Summary**		LAF1	64.7 dB
Time	7/23/2019 3:00:01 PM	LAeq	56.0 dB	LAF5	63.1 dB
Duration	00:15:00	LAE	85.5 dB	LAF10	61.5 dB
Instrument	G056143, CR:171B	LAFMax	66.5 dB	LAF50	43.8 dB
				LAF90	40.3 dB
				LAF95	39.7 dB
				LAF99	38.8 dB

Calibration Information		**Person**	**Place**
7/23/2019 2:15:54 PM	0.44 dB	Maher Siobhan	Capdoo, Clane
7/23/2019 4:06:26 PM	0.44 dB		

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

Name	NMP2 Daytime #4	**Summary**		LAF1	63.8 dB
Time	7/23/2019 3:15:02 PM	LAeq	53.6 dB	LAF5	59.5 dB
Duration	00:15:00	LAE	83.1 dB	LAF10	58.6 dB
Instrument	G056143, CR:171B	LAFMax	69.2 dB	LAF50	41.9 dB
				LAF90	38.7 dB
				LAF95	38.1 dB
				LAF99	37.2 dB

Calibration Information

7/23/2019 2:15:54 PM 0.44 dB

7/23/2019 4:06:26 PM 0.44 dB

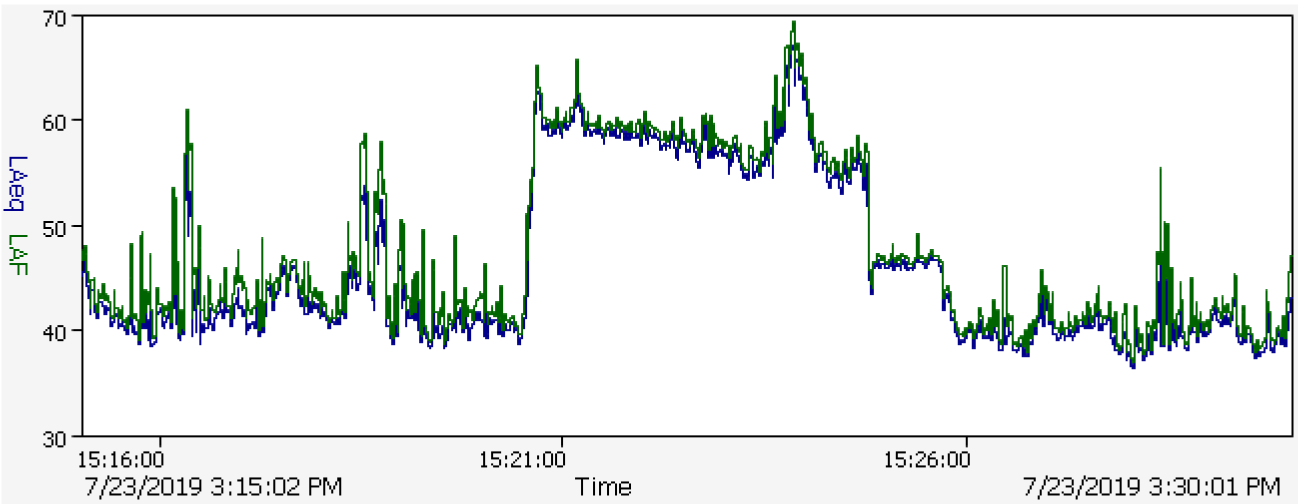
Person

Maher Siobhan

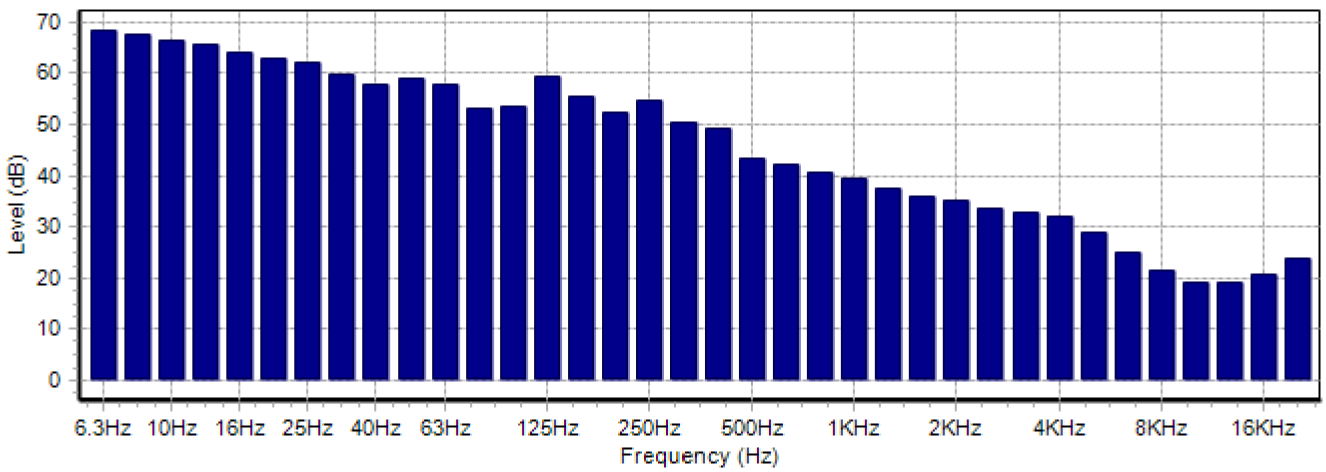
Place

Capdoo, Clane

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

Name	NMP2 Daytime #5	**Summary**		LAF1	55.3 dB
Time	7/23/2019 3:30:01 PM	LAeq	46.9 dB	LAF5	53.4 dB
Duration	00:15:00	LAE	76.4 dB	LAF10	51.7 dB
Instrument	G056143, CR:171B	LAFMax	60.9 dB	LAF50	43.5 dB
				LAF90	38.5 dB
				LAF95	38.0 dB
				LAF99	37.3 dB

Calibration Information

7/23/2019 2:15:54 PM 0.44 dB

7/23/2019 4:06:26 PM 0.44 dB

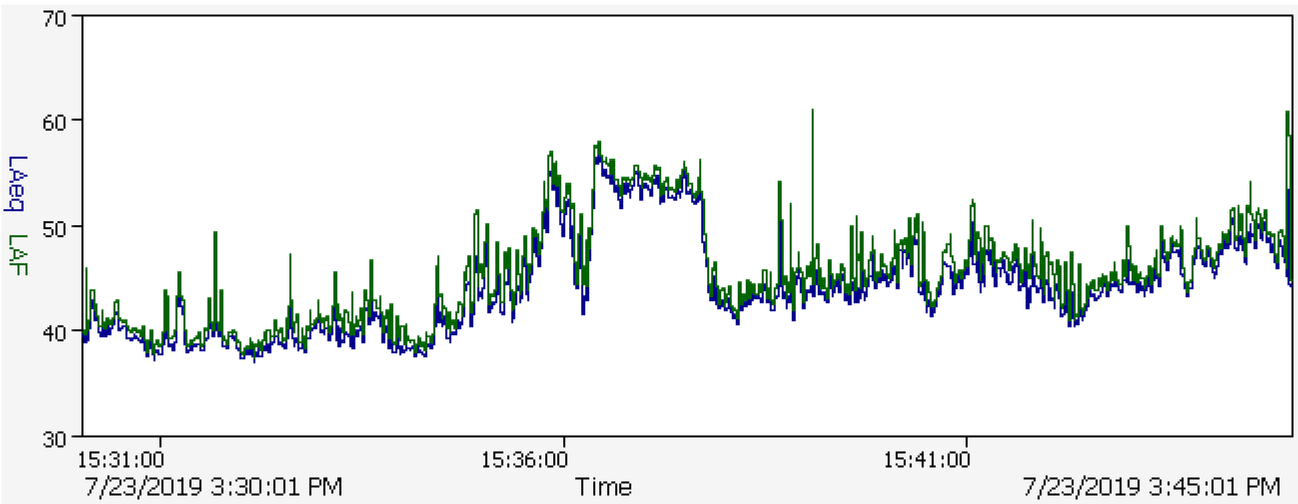
Person

Maher Siobhan

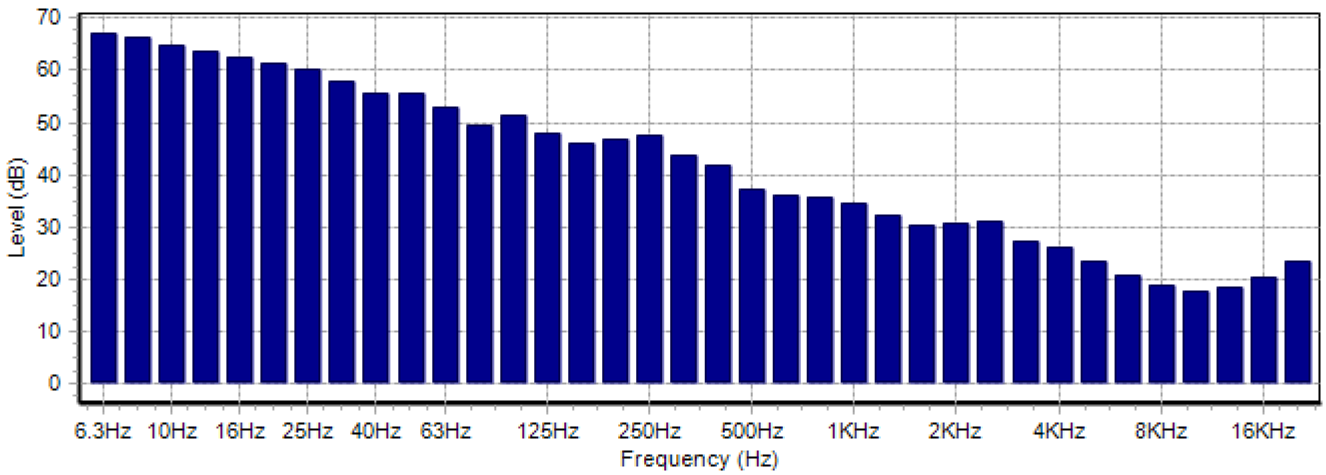
Place

Capdoo, Clane

Time History



Frequency Bands



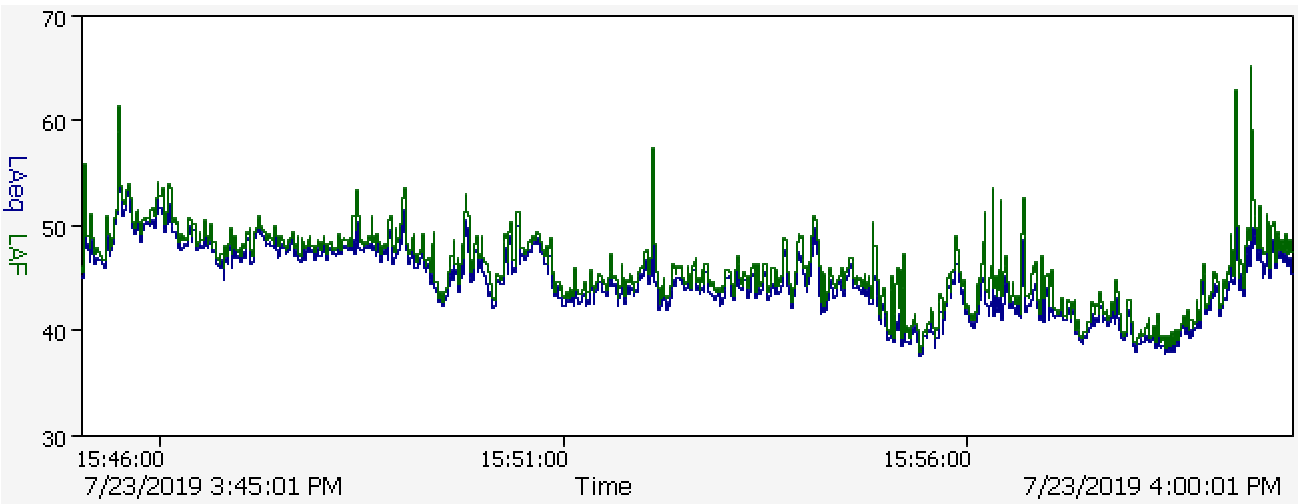
Cirrus Research plc

Measurement Summary Report

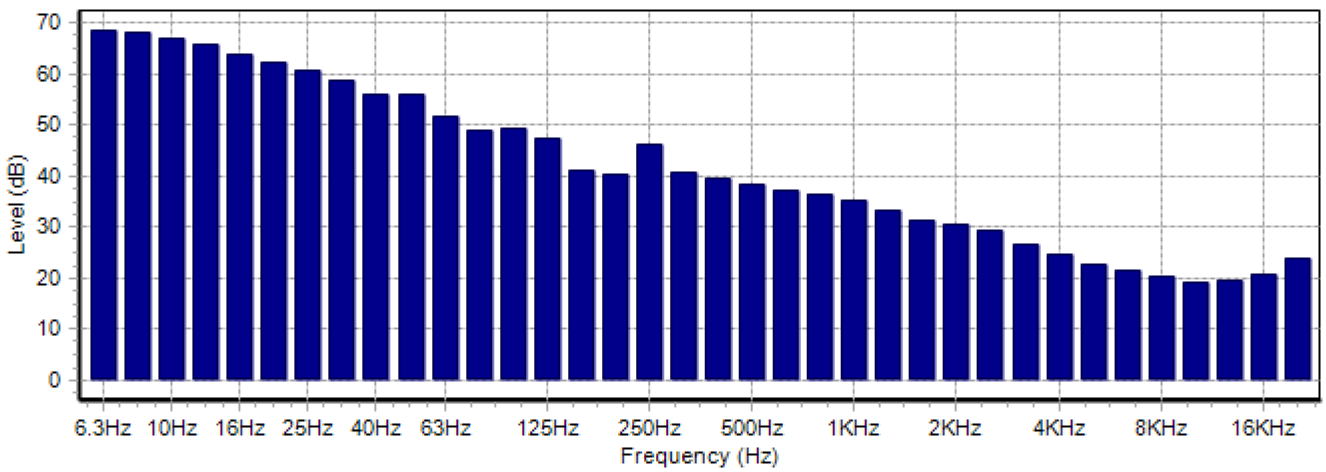
Name	NMP2 Daytime #6	**Summary**		LAF1	52.3 dB
Time	7/23/2019 3:45:01 PM	LAeq	46.0 dB	LAF5	49.8 dB
Duration	00:15:00	LAE	75.6 dB	LAF10	48.6 dB
Instrument	G056143, CR:171B	LAFMax	65.1 dB	LAF50	44.5 dB
				LAF90	40.0 dB
				LAF95	38.9 dB
				LAF99	38.0 dB

Calibration Information		Person	Place
7/23/2019 2:15:54 PM	0.44 dB	Maher Siobhan	Capdoo, Clane
7/23/2019 4:06:26 PM	0.44 dB		

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

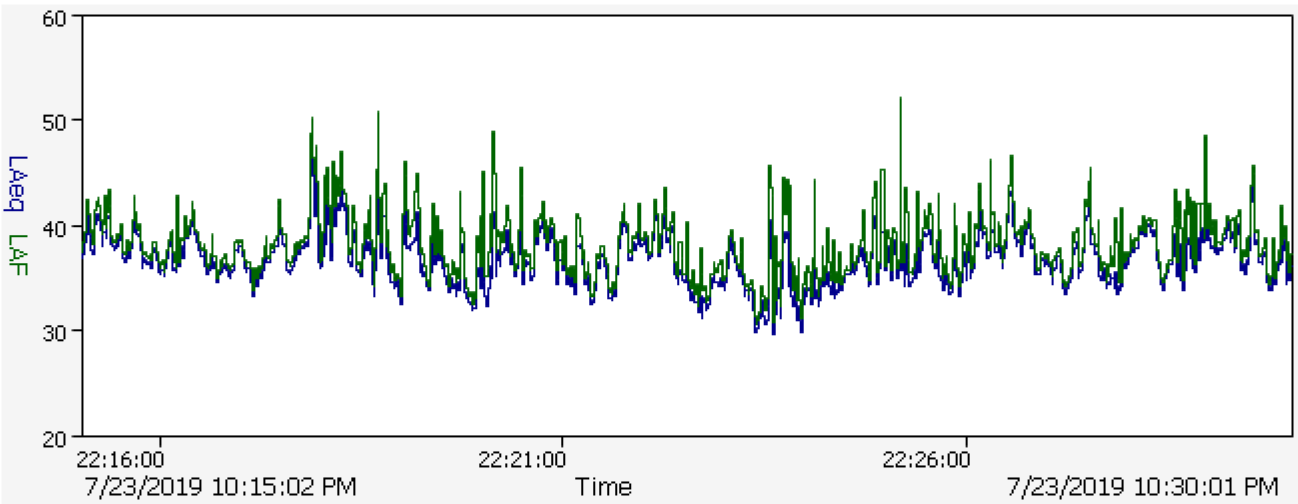
Name	NMP2 Evening #1	**Summary**		LAF1	43.6 dB
Time	7/23/2019 10:15:02 PM	LAeq	37.5 dB	LAF5	41.0 dB
Duration	00:15:00	LAE	67.0 dB	LAF10	39.8 dB
Instrument	G056143, CR:171B	LAFMax	52.1 dB	LAF50	36.4 dB
				LAF90	33.4 dB
				LAF95	32.6 dB
				LAF99	30.6 dB

Calibration Information
7/23/2019 10:03:42 PM 0.40 dB
7/24/2019 12:03:58 AM 0.38 dB

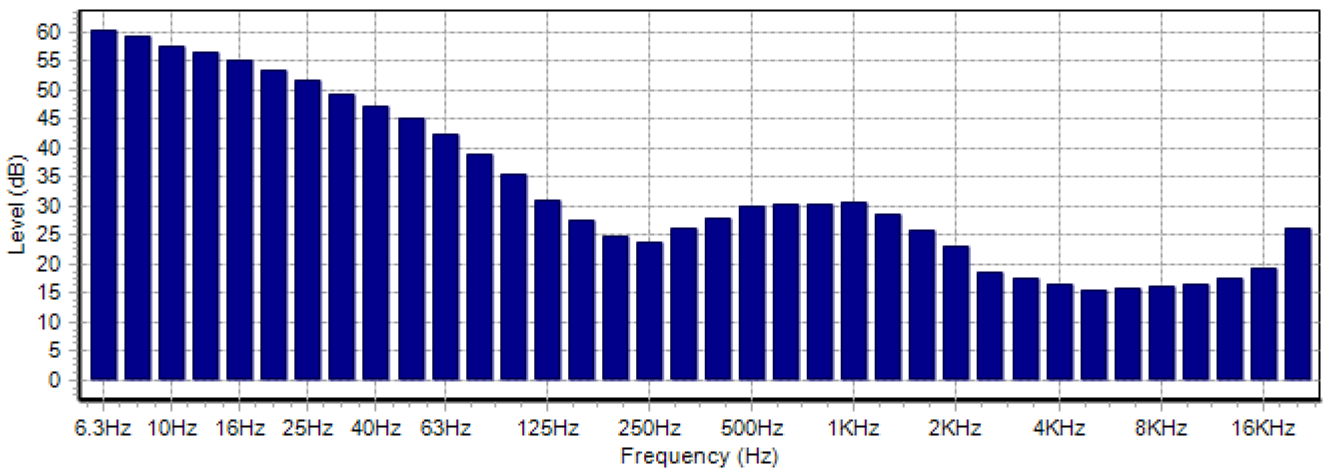
Person
Maher Siobhan

Place
Capdoo, Clane

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

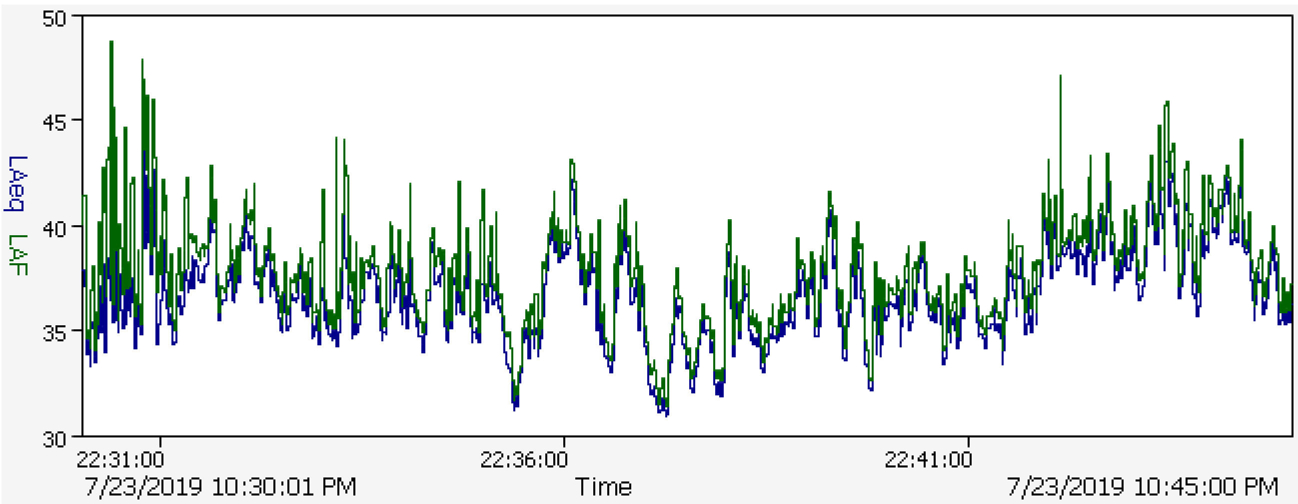
Name	NMP2 Evening #2	**Summary**		LAF1	42.8 dB
Time	7/23/2019 10:30:01 PM	LAeq	37.3 dB	LAF5	40.6 dB
Duration	00:15:00	LAE	66.9 dB	LAF10	39.5 dB
Instrument	G056143, CR:171B	LAFMax	48.8 dB	LAF50	36.4 dB
				LAF90	34.0 dB
				LAF95	33.0 dB
				LAF99	31.4 dB

Calibration Information
7/23/2019 10:03:42 PM 0.40 dB
7/24/2019 12:03:58 AM 0.38 dB

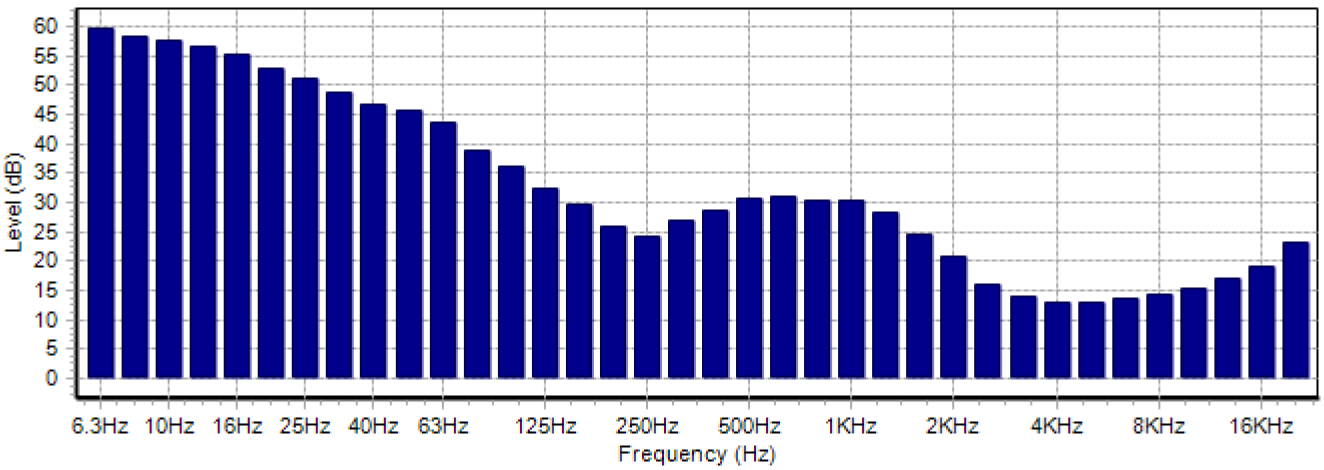
Person
Maher Siobhan

Place
Capdoo, Clane

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

Name	NMP2 Evening #3	**Summary**		LAF1	42.6 dB
Time	7/23/2019 10:45:01 PM	LAeq	37.3 dB	LAF5	40.3 dB
Duration	00:15:00	LAE	66.8 dB	LAF10	39.3 dB
Instrument	G056143, CR:171B	LAFMax	50.2 dB	LAF50	36.5 dB
				LAF90	34.2 dB
				LAF95	33.4 dB
				LAF99	32.2 dB

Calibration Information

7/23/2019 10:03:42 PM 0.40 dB

7/24/2019 12:03:58 AM 0.38 dB

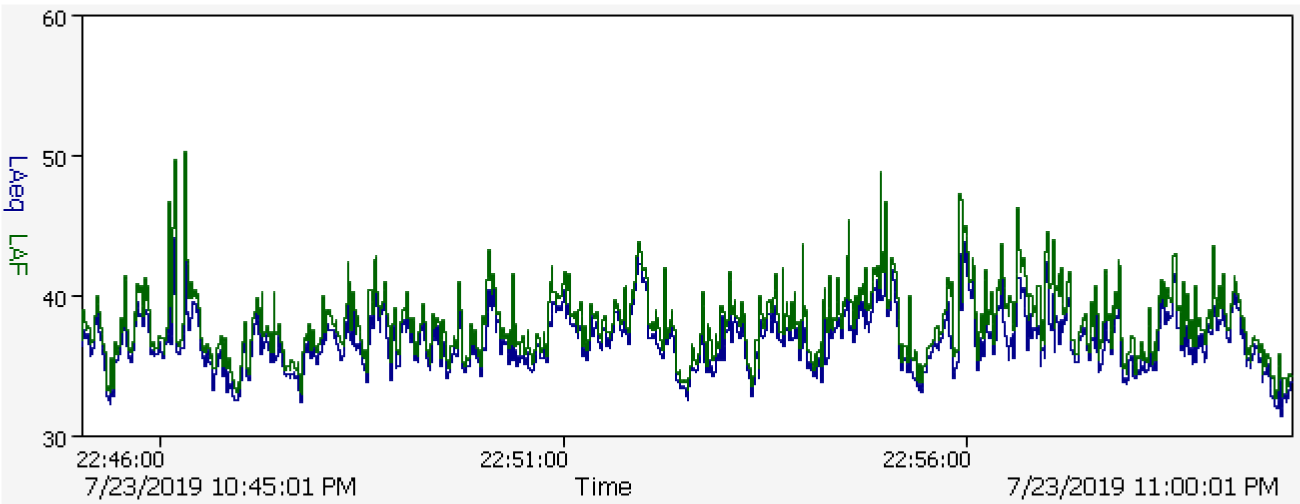
Person

Maher Siobhan

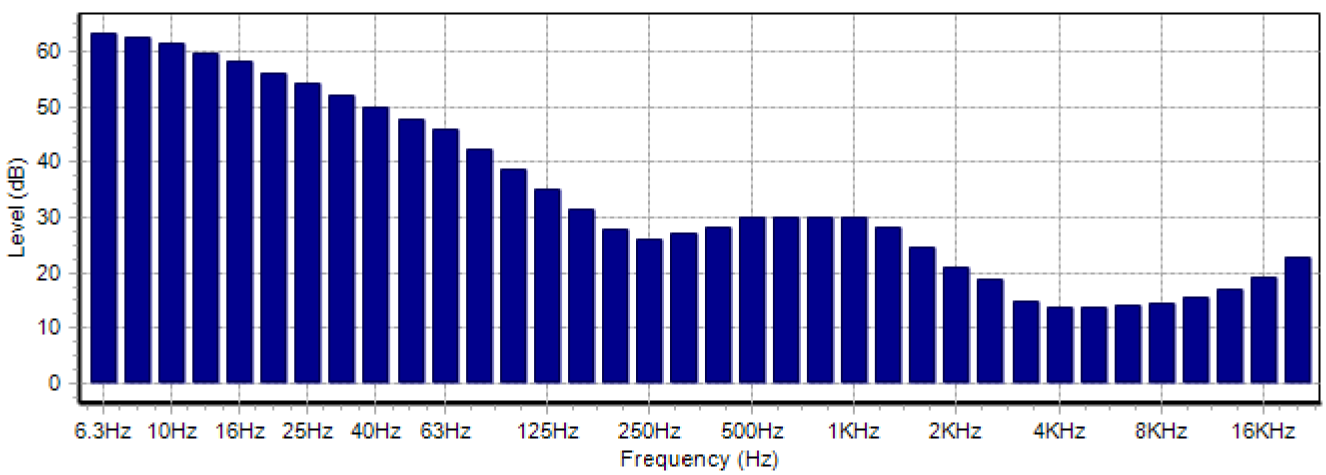
Place

Capdoo, Clane

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

Name	NMP2 Night #1
Time	7/23/2019 11:00:02 PM
Duration	00:15:00
Instrument	G056143, CR:171B

Summary

LAeq	36.7 dB
LAE	66.2 dB
LAFMax	52.1 dB

LAF1	44.5 dB
LAF5	40.4 dB
LAF10	38.9 dB
LAF50	35.2 dB
LAF90	32.3 dB
LAF95	31.6 dB
LAF99	30.8 dB

Calibration Information

7/23/2019 10:03:42 PM 0.40 dB

7/24/2019 12:03:58 AM 0.38 dB

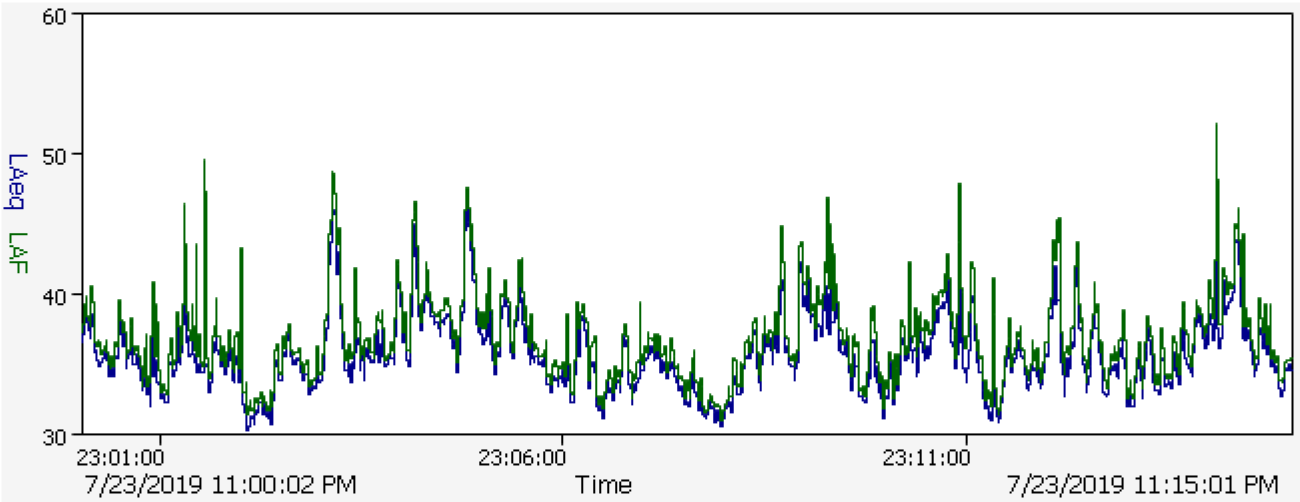
Person

Maher Siobhan

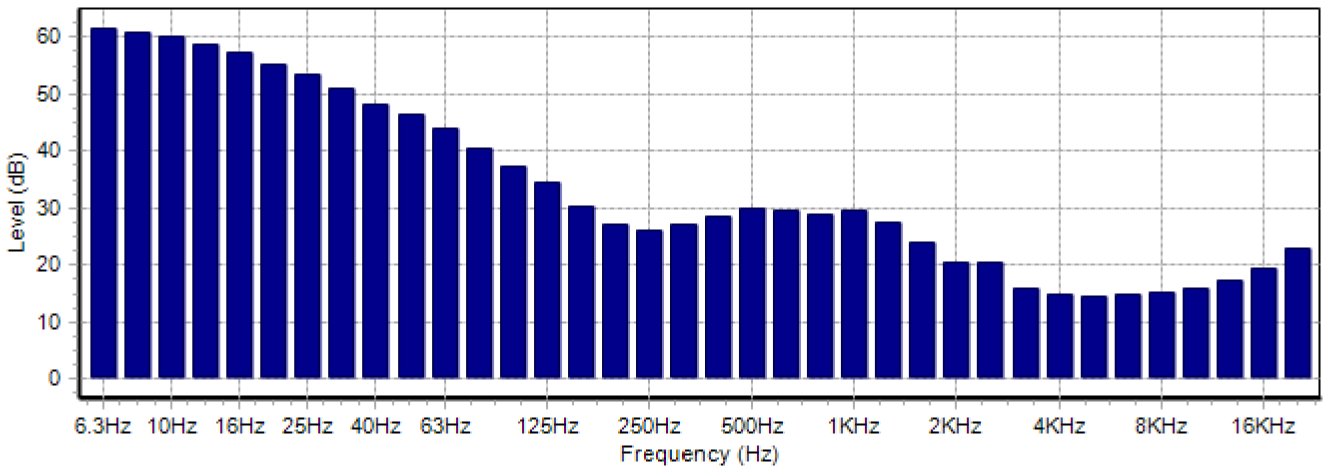
Place

Capdoo, Clane

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

Name	NMP2 Night #2	**Summary**		LAF1	43.5 dB
Time	7/23/2019 11:15:01 PM	LAeq	35.7 dB	LAF5	39.5 dB
Duration	00:15:00	LAE	65.2 dB	LAF10	38.2 dB
Instrument	G056143, CR:171B	LAFMax	52.3 dB	LAF50	34.1 dB
				LAF90	31.2 dB
				LAF95	30.3 dB
				LAF99	29.4 dB

Calibration Information

7/23/2019 10:03:42 PM 0.40 dB

7/24/2019 12:03:58 AM 0.38 dB

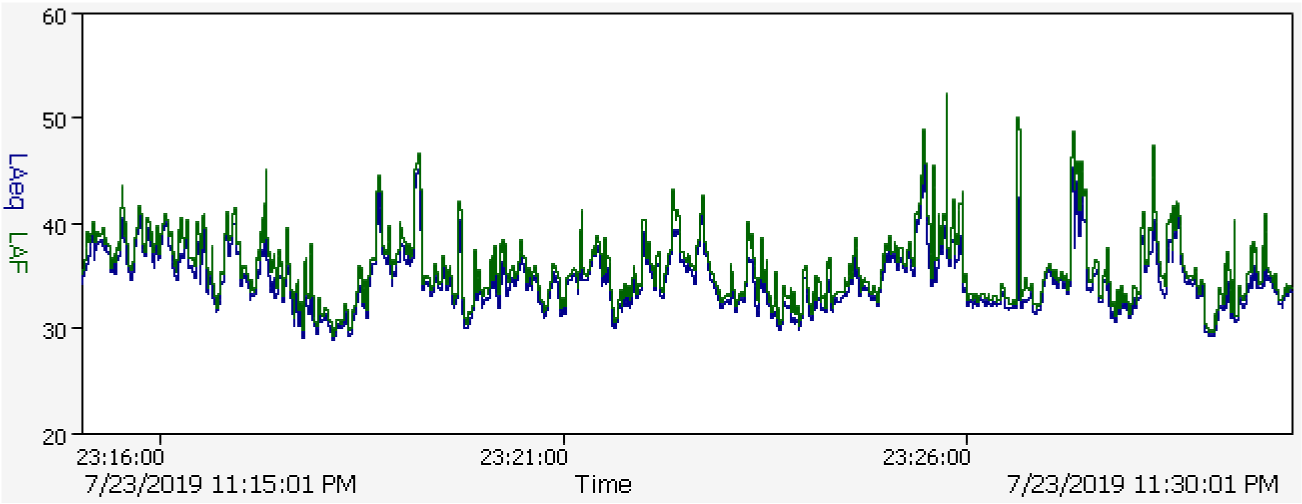
Person

Maher Siobhan

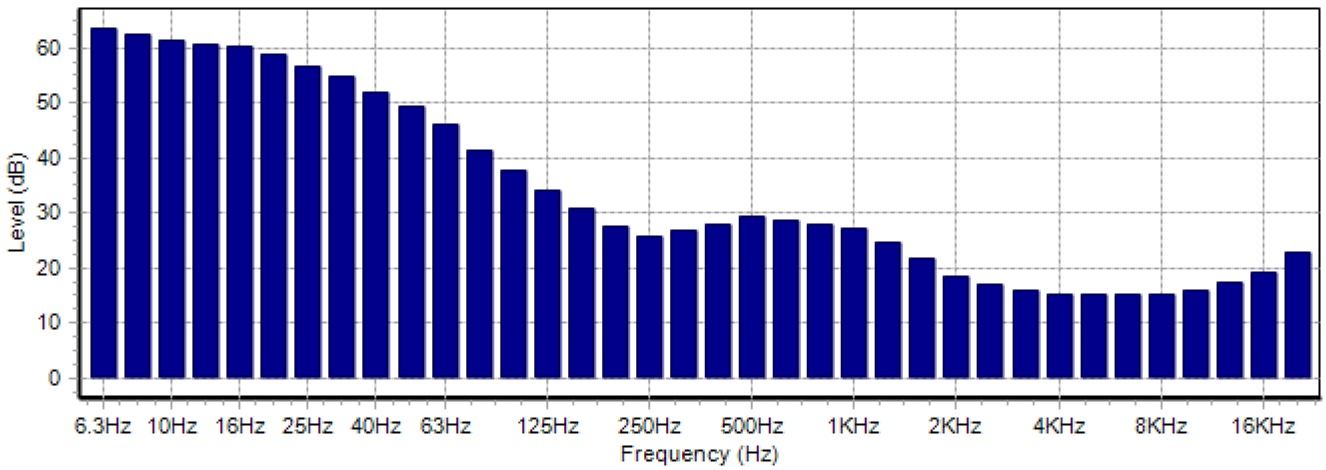
Place

Capdoo, Clane

Time History



Frequency Bands



Cirrus Research plc

Measurement Summary Report

Name	NMP2 Night #3
Time	7/23/2019 11:30:01 PM
Duration	00:15:00
Instrument	G056143, CR:171B

Summary

LAeq	36.9 dB
LAE	66.4 dB
LAFMax	54.3 dB

LAF1	45.5 dB
LAF5	41.4 dB
LAF10	39.3 dB
LAF50	34.7 dB
LAF90	31.8 dB
LAF95	31.3 dB
LAF99	30.5 dB

Calibration Information

7/23/2019 10:03:42 PM 0.40 dB

7/24/2019 12:03:58 AM 0.38 dB

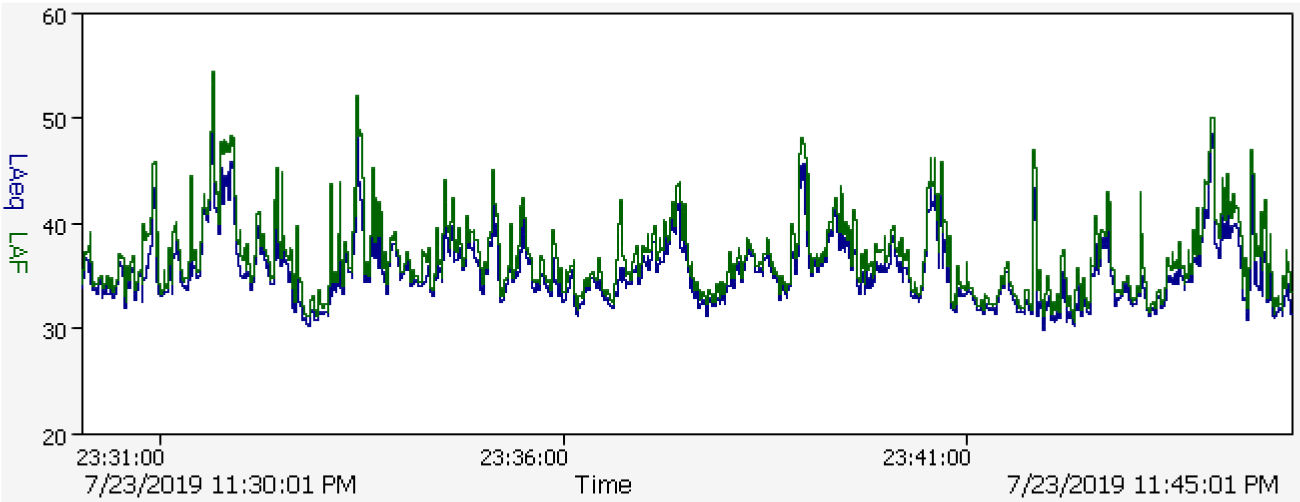
Person

Maher Siobhan

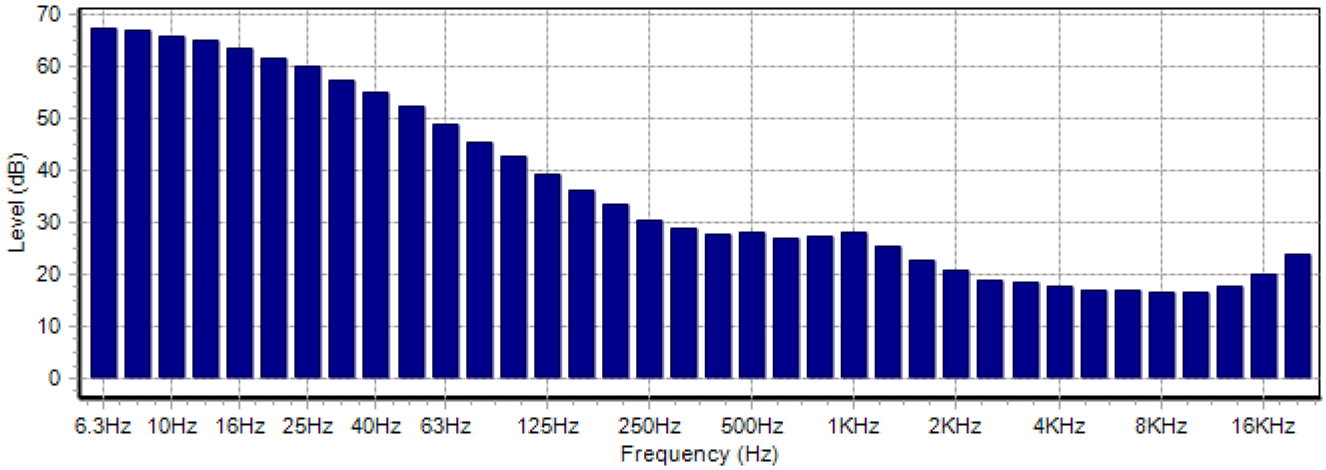
Place

Capdoo, Clane

Time History



Frequency Bands



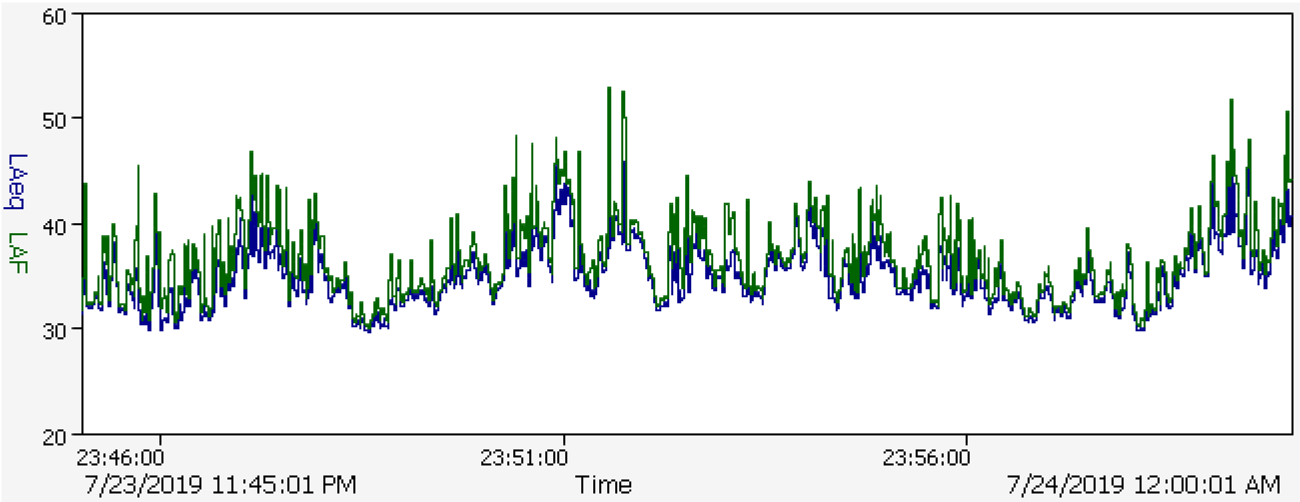
Cirrus Research plc

Measurement Summary Report

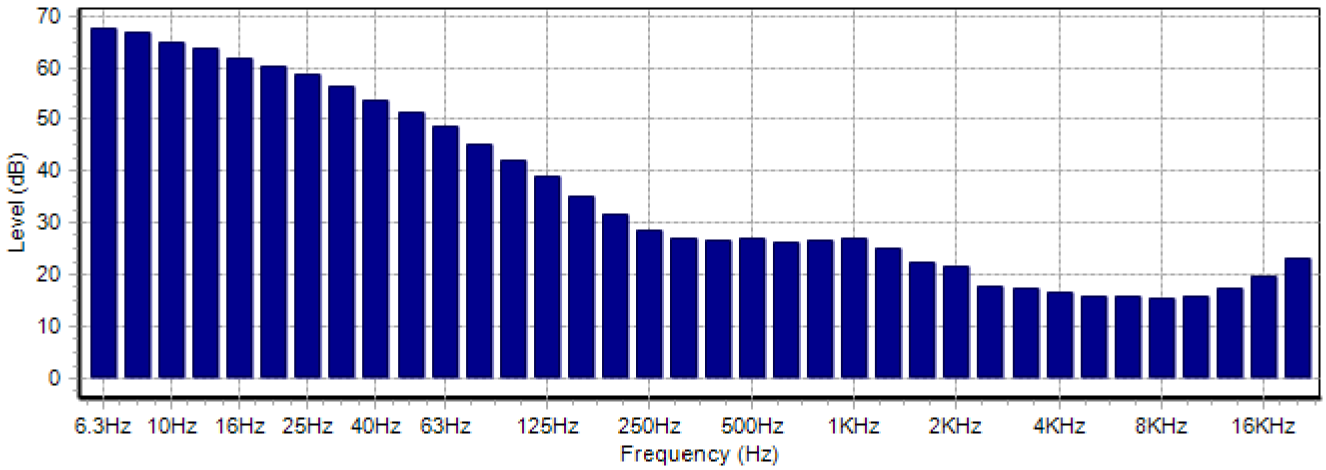
Name	NMP2 Night #4	**Summary**		LAF1	43.9 dB
Time	7/23/2019 11:45:01 PM	LAeq	36.2 dB	LAF5	40.3 dB
Duration	00:15:00	LAE	65.7 dB	LAF10	38.8 dB
Instrument	G056143, CR:171B	LAFMax	52.9 dB	LAF50	34.3 dB
				LAF90	31.3 dB
				LAF95	30.6 dB
				LAF99	29.6 dB

Calibration Information		**Person**	**Place**
7/23/2019 10:03:42 PM	0.40 dB	Maher Siobhan	Capdoo, Clane
7/24/2019 12:03:58 AM	0.38 dB		

Time History

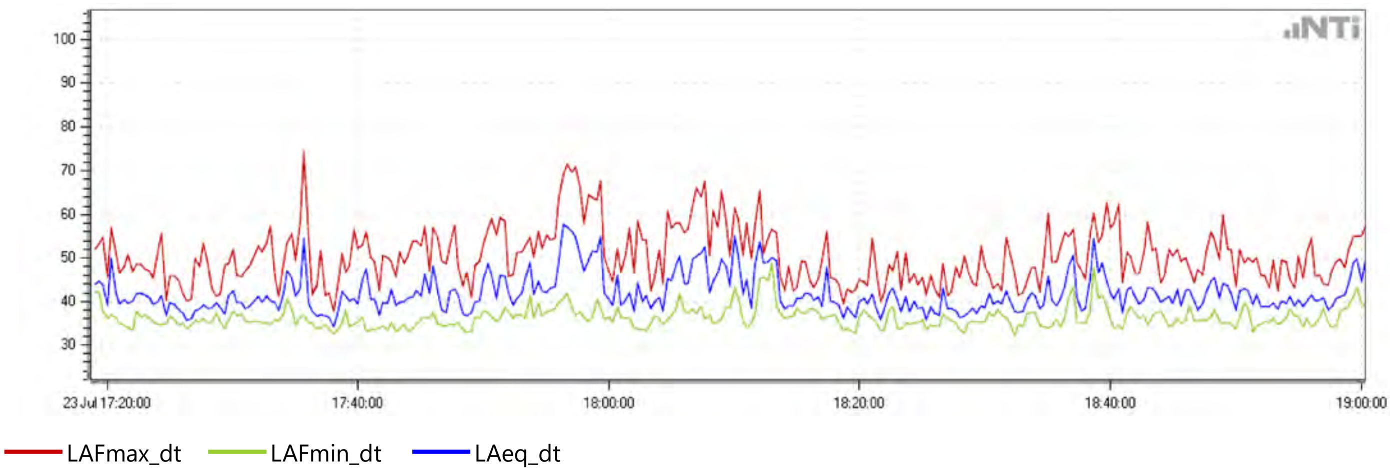


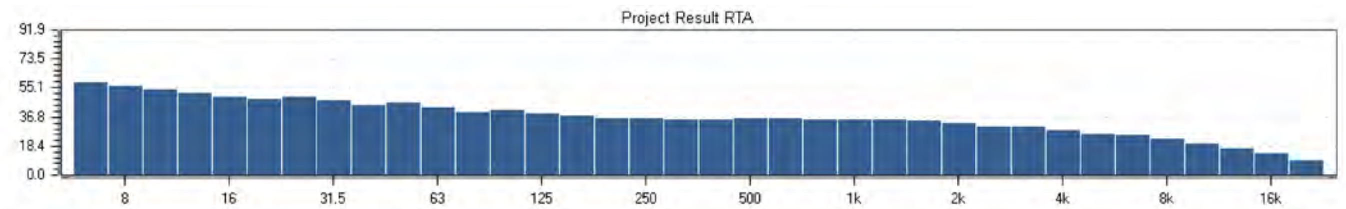
Frequency Bands



NMP3 Daytime

Start: 2019-07-23 17:18:48
End: 2019-07-23 19:00:01





Configuration

Device Info: XL2, SNo. A2A-08898-E0, FW3.11 Type Approved
Mic Type: NTi Audio M2230, SNo. 5062, User calibrated 2019-07-23 16:19
Mic Sensitivity: 43.1 mV/Pa
Range: 0 - 100 dB
Ln based on: LAeq_dt

Results

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
Recorded		**01:41:13**	**74.5**	**32.2**	**45.0**		
Project Result		**01:41:13**	**74.5**	**32.2**	**45.0**	**47.1**	**36.5**

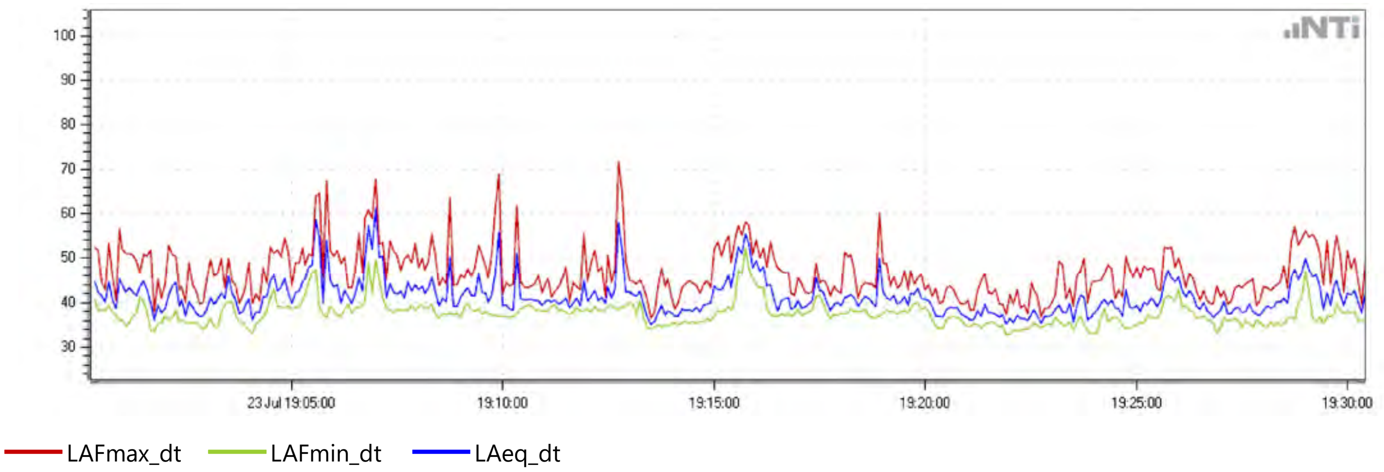
Audit Intervals

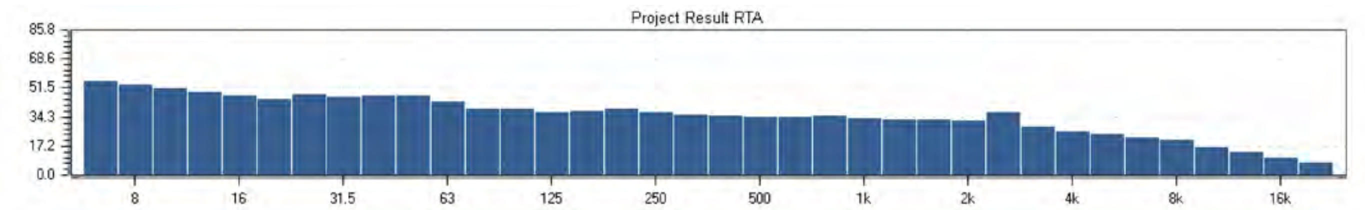
Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
15'	**2019-07-23 17:15:00**	**00:11:12**	**57.0**	**33.5**	**41.3**	**43.7**	**36.2**
15'	**2019-07-23 17:30:00**	**00:15:00**	**74.5**	**32.6**	**42.9**	**44.5**	**35.7**
15'	**2019-07-23 17:45:00**	**00:15:00**	**71.5**	**33.0**	**49.0**	**51.7**	**37.2**
15'	**2019-07-23 18:00:00**	**00:15:00**	**67.6**	**33.3**	**47.4**	**50.9**	**37.3**
15'	**2019-07-23 18:15:00**	**00:15:00**	**56.1**	**32.8**	**40.0**	**42.4**	**35.9**
15'	**2019-07-23 18:30:00**	**00:15:00**	**62.7**	**32.2**	**44.0**	**47.0**	**36.7**
15'	**2019-07-23 18:45:00**	**00:15:00**	**59.9**	**33.2**	**42.3**	**45.1**	**37.2**
15'	**2019-07-23 19:00:00**	**00:00:01**	**57.3**	**39.0**	**49.5**	**49.6**	**49.6**

NMP3 Evening

Start: 2019-07-23 19:00:16

End: 2019-07-23 19:30:25





Configuration

Device Info: XL2, SNo. A2A-08898-E0, FW3.11 Type Approved

Mic Type: NTi Audio M2230, SNo. 5062, User calibrated 2019-07-23 16:19

Mic Sensitivity: 43.1 mV/Pa

Range: 0 - 100 dB

Ln based on: LAeq_dt

Results

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
Recorded		**00:30:09**	**71.9**	**32.6**	**44.9**		
Project Result		**00:30:09**	**71.9**	**32.6**	**44.9**	**46.0**	**36.7**

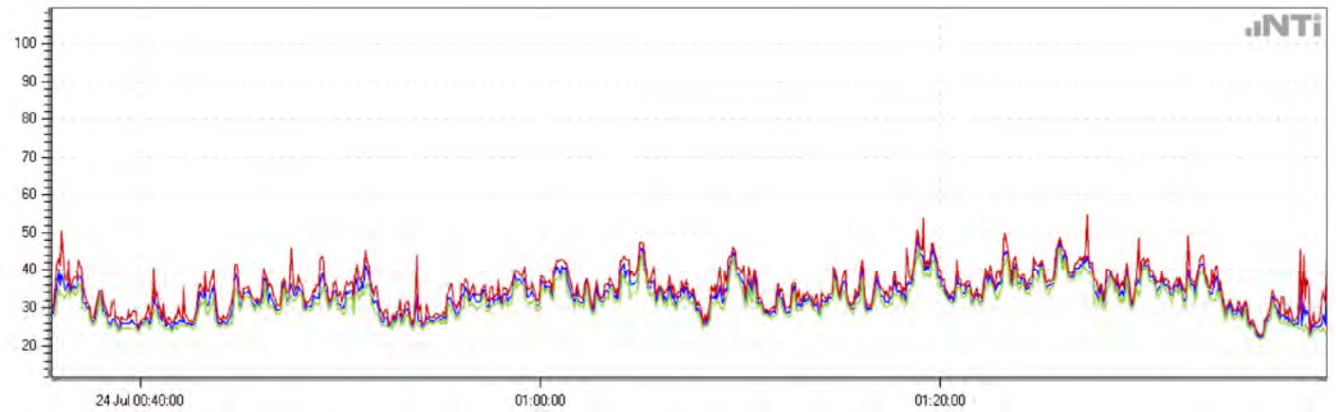
Audit Intervals

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
15'	**2019-07-23 19:00:00**	**00:14:44**	**71.9**	**33.0**	**46.3**	**46.2**	**37.3**
15'	**2019-07-23 19:15:00**	**00:15:00**	**60.2**	**32.6**	**42.8**	**45.7**	**36.3**
15'	**2019-07-23 19:30:00**	**00:00:25**	**49.9**	**35.5**	**41.2**	**44.1**	**37.5**

NMP3 Night time

Start: 2019-07-24 00:35:38

End: 2019-07-24 01:39:16



LAFmax_dt LAFmin_dt LAeq_dt

Configuration

Device Info: XL2, SNo. A2A-08898-E0, FW3.11 Type Approved

Mic Type: NTi Audio M2230, SNo. 5062, User calibrated 2019-07-24 00:03

Mic Sensitivity: 43.2 mV/Pa

Range: 0 - 100 dB

Ln based on: LAeq_dt

Results

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
Recorded		**01:03:38**	**54.8**	**21.6**	**36.0**		
Project Result		**01:03:38**	**54.8**	**21.6**	**36.0**	**39.5**	**26.2**

Audit Intervals

Type	Start Date and Time	Duration	LAFmax [dB]	LAFmin [dB]	LAeq [dB]	L 10.0 % [dB]	L 90.0 % [dB]
15'	**2019-07-24 00:30:00**	**00:09:22**	**50.4**	**23.5**	**31.9**	**35.9**	**25.3**
15'	**2019-07-24 00:45:00**	**00:15:00**	**46.0**	**24.2**	**33.2**	**36.4**	**26.8**
15'	**2019-07-24 01:00:00**	**00:15:00**	**47.5**	**24.6**	**36.1**	**39.5**	**29.2**
15'	**2019-07-24 01:15:00**	**00:15:00**	**54.8**	**28.7**	**39.0**	**42.4**	**31.7**
15'	**2019-07-24 01:30:00**	**00:09:16**	**49.1**	**21.6**	**34.5**	**38.7**	**24.7**

Appendix 10.1 Traffic Impact Assessment

20076-02-001

PROPOSED RESIDENTIAL DEVELOPMENT AT LANDS AT CAPDOO & ABBEYLANDS, CLANE, CO. KILDARE

Traffic Impact Assessment

for

Westar Investments Limited

December 2020

ROADPLAN CONSULTING

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1 INTRODUCTION

1 Introduction

1.1 INTRODUCTION

Roadplan Consulting were commissioned by Westar Investments Limited to prepare a Traffic Impact Assessment for the proposed residential development at lands at Capdoo & Abbeylands, Clane, Co. Kildare.

In preparing this report, Roadplan Consulting has made reference to:

- The Kildare County Development Plan 2017 - 2023.
- The Institute of Highways and Transportation *Guidelines on the Preparation of Traffic Impact Assessments*.
- The *TII Transport Assessment Guidelines.*
- The *TII National Traffic Model*.

1.2 OBJECTIVES

The objective of this report is to examine the traffic implications of the proposed mixed development in terms of how it can integrate with existing traffic in the area. The report will determine and quantify the extent of additional trips generated by the development, and the impact of such trips on the operational performance of the local road network and junctions, in particular the existing R403 / Brooklands / Capdoo Park crossroads and the existing R403 / Alexandra Walk / The Avenue roundabout.

1.3 STUDY METHODOLOGY

The methodology adopted for this report is summarised as follows:

- A traffic count was undertaken by Irish Traffic Surveys during a 12-hour period (07:00 to 19:00). Count information was obtained at the existing R403 / Brooklands / Capdoo Park crossroads and the existing R403 / Alexandra Walk / The Avenue roundabout.
- Existing Traffic Assessment – A spreadsheet model was created which contains the base year DO-NOTHING traffic count data described above. The traffic count data was used to develop a PICADY model of the existing R403 / Brooklands / Capdoo Park crossroads and an ARCADY model of the existing R403 / Alexandra Walk / The Avenue roundabout.

  Traffic signal poles are installed at the R403 / Brooklands / Capdoo Park crossroads junction. However, the signals are currently not operational. The traffic count data was also used to develop a TRANSYT model of the R403 / Brooklands / Capdoo Park junction to assess the operational performance of the signals.
- Future Year Assessment – The estimated future year traffic volumes on the study area road network, as a result of the increase in background traffic and the additional development related traffic was used to assess the future operational performance of the junctions both at the year of opening of the development, 5 and 15 years after opening.
- Parking Requirements – Car parking provision for the proposed development was assessed against the parking standards as set out in the Kildare County Development Plan.

1.4 STRUCTURE OF REPORT

Following this introduction, the report is set out as follows:

- Chapter 2 provides details of the proposed development;
- Chapter 3 provides an overview of the existing traffic conditions and the local road network, identifying any existing issues related to traffic flow or road infrastructure;

- Chapters 4 and 5 outline the analysis as described in the Study Methodology above. The analysis examines trip generation, distribution and resulting junction operational performance with the development in place;
- Chapter 6 establishes the parking requirements for the development using the county development plan and the design standards for new apartments and sets out how these needs are provided for;
- Chapter 7 addresses road safety, pedestrian and public transport; and
- Chapter 8 presents the conclusions and a summary of the report.

2 PROPOSED DEVELOPMENT

2 Proposed Development

2.1 SITE LOCATION

The proposed residential development is located at lands at Capdoo & Abbeylands, Clane, Co. Kildare. The development is bounded by residential dwellings to the west and south, the river Liffey to the east and agricultural lands to the north and east as shown on Figure 2.1 'Site Location Map'.

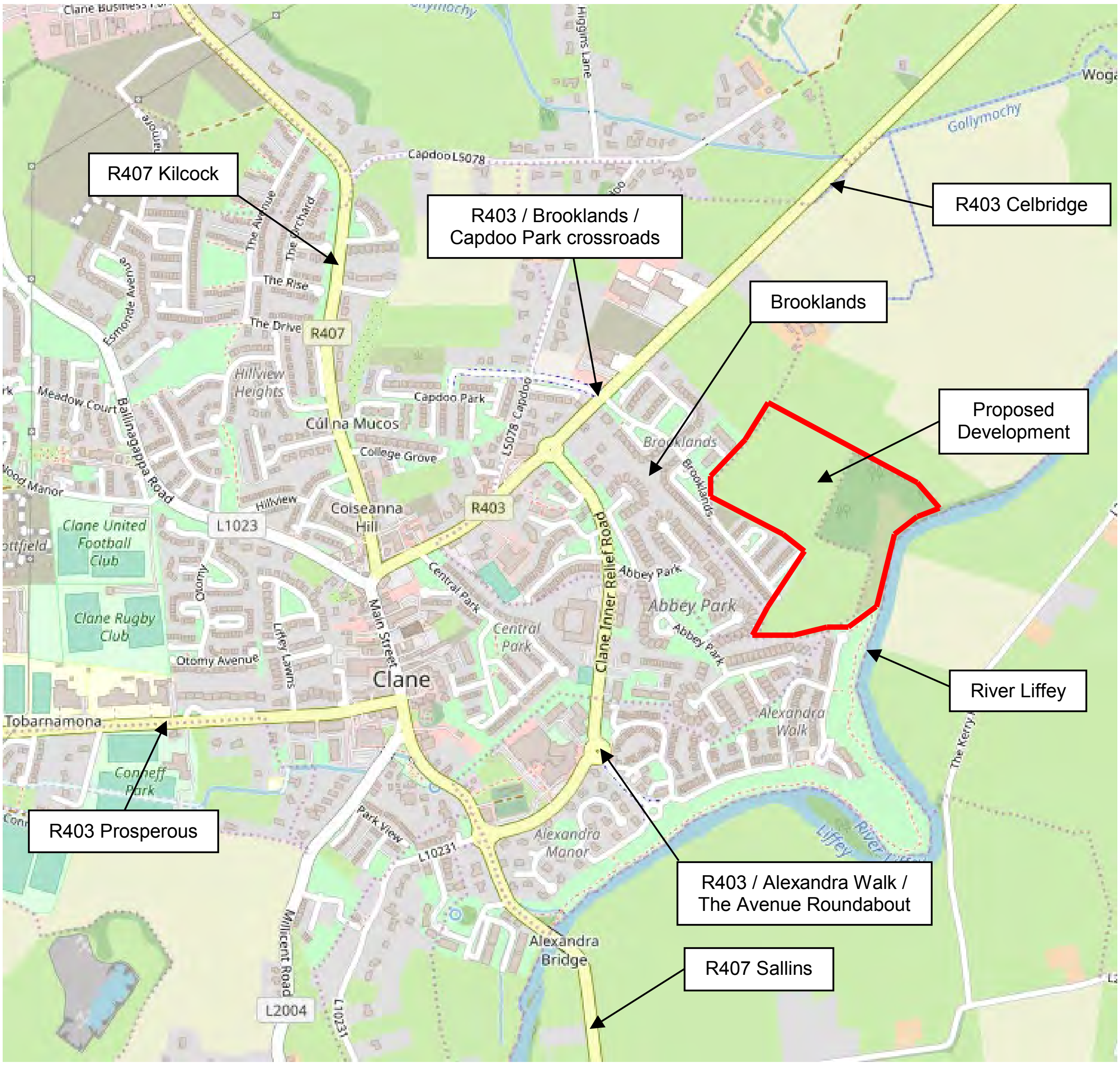


Figure 2.1: Site Location Map

2.2 EXISTING LAND USE

The existing site is currently undeveloped at present.

2.3 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development consists of residential dwellings, apartments and a crèche as shown in table 2.1 and 2.2 *Development Schedule*.

Table 2.1 – Development Schedule

Item	Unit	Quantity
Residential Dwelling	No.	121
Duplex Dwelling	No.	68
Apartments	No.	144
Crèche	Sqm	485

Access to the proposed residential development will be via the existing R403 / Brooklands / Capdoo Park crossroads and the existing R403 / Alexandra Walk / The Avenue roundabout. A layout of the proposed development and its access points are shown on the Architect's drawing which is contained in Appendix A – Drawings.

3 EXISTING AND PROPOSED TRAFFIC CONDITIONS

3 Existing and Proposed Traffic Conditions

3.1 EXISTING TRAFFIC FLOWS

A traffic count was undertaken during a 12-hour period (07:00 to 19:00). The count data is provided in Appendix B – Traffic Counts. Count information was obtained at the following junctions:

- R403 / Brooklands / Capdoo Park crossroads
- R403 / Alexandra Walk / The Avenue roundabout

The traffic flows during the AM and PM peak hours were abstracted from the surveyed data and are shown in the following tables:

R403 / Brooklands / Capdoo Park Crossroads

AM Peak Existing (07:30 – 08:30)

From / To	R403 Celbridge	Brooklands	R403 Clane	Capdoo Park	**Totals**
R403 Celbridge	0	1	285	10	**296**
Brooklands	31	0	58	1	**90**
R403 Clane	799	9	0	14	**822**
Capdoo Park	39	3	15	0	**57**
Totals	**869**	**13**	**358**	**25**	**1265**

Peak Existing (17:30 – 18:30)

From / To	R403 Celbridge	Brooklands	R403 Clane	Capdoo Park	**Totals**
R403 Celbridge	0	24	797	42	**863**
Brooklands	6	0	32	3	**41**
R403 Clane	365	43	0	36	**444**
Capdoo Park	18	0	11	0	**29**
Totals	**389**	**67**	**840**	**81**	**1377**

R403 / Alexandra Walk / The Avenue Roundabout

AM Peak Existing (07:30 – 08:30)

From / To	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	29	313	1	**343**
Alexandra Walk	72	0	85	0	**157**
R403 (west)	362	21	0	4	**387**
The Avenue	10	0	6	0	**16**
Totals	**444**	**50**	**404**	**5**	**903**

Peak Existing (17:30 – 18:30)

From / To	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	49	580	9	**638**
Alexandra Walk	31	0	31	0	**62**
R403 (west)	440	70	3	10	**523**
The Avenue	3	0	3	0	**6**
Totals	**474**	**119**	**617**	**19**	**1229**

A summary of the count data for the peak hour flows is contained in Appendix C – Traffic Flow Sheets.

3.2 EXISTING ROAD NETWORK

Brooklands road is a cul-de-sac and provides access from the R403 to a number of residential developments. It is proposed to access the development via Brooklands road. The cross-section of Brooklands road is as follows:

- 6m wide carriageway.
- 2m wide footpaths with a 1m wide grass verge are located on either side of the carriageway.
- Street lighting is provided along Brooklands road.
- The speed limit on Brooklands road is 50kph.

Alexandra Walk road is a cul-de-sac and provides access from the R403 to a number of residential developments. It is proposed to access the development via Alexandra Walk. At the access to the development Alexandra Walk access road has the following cross-section:

- 6m wide carriageway.
- 2m wide footpath located on the west side of the carriageway.
- Street lighting is provided along Alexandra Walk access road.
- The speed limit on Alexandra Walk access road is 50kph.

The R403 is a reginal road which travels in an east to west direction. To the east the R403 links Clane with Celbridge and to the M4, to the west the R403 links with other small and medium towns such as Prosperous and Allenwood. The R403 has the following characteristics at the location of the access onto Brooklands road

- 6.5m wide carriageway.
- 2m wide footpaths are located on the north and south sides of the carriageway. The footpaths provide pedestrian access to Clane and other surrounding residential developments.
- Street lighting is provided along the R403.
- The speed limit on the R403 is 50kph.

3.3 ROAD COLLISIONS

Information on road collisions was taken from the Road Safety Authority website and is provided hereunder in Figure 3.4.

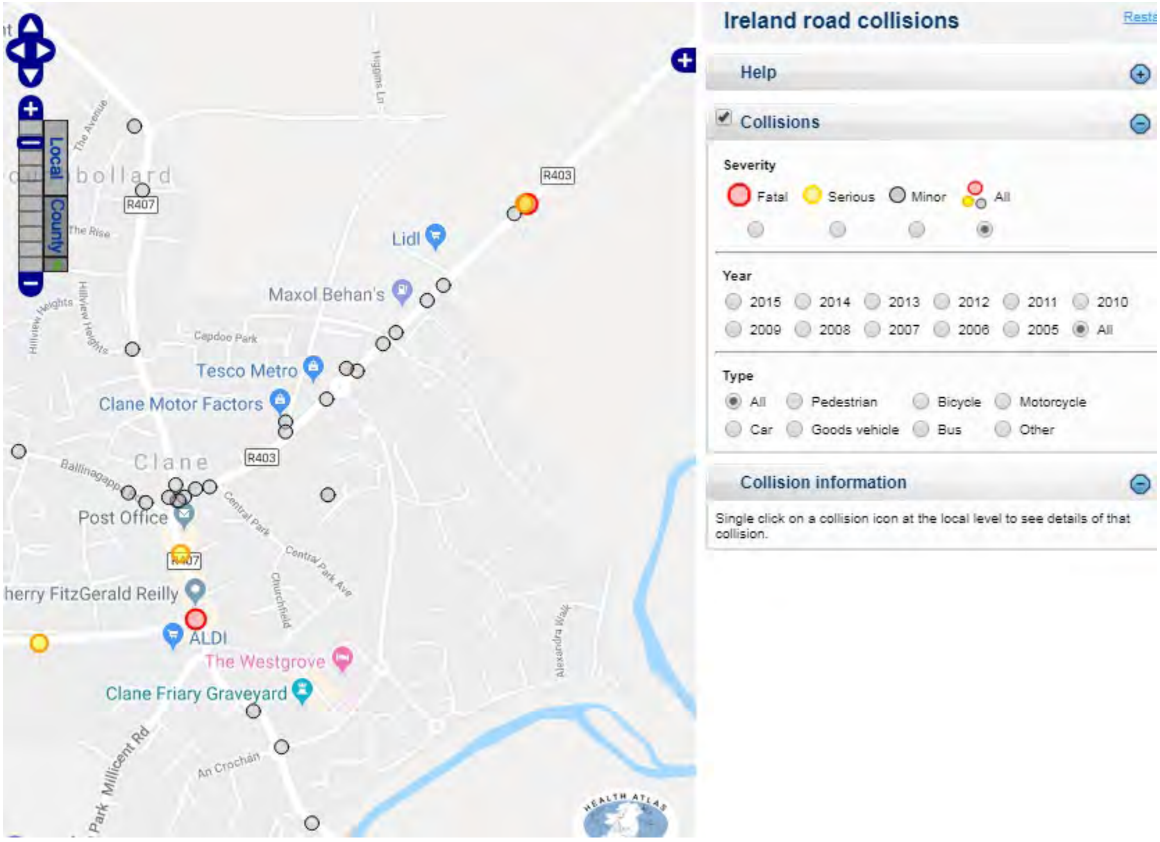


Fig 3.4: Road collisions

There have been two minor collisions at the R403 / Brooklands / Capdoo Park crossroads junction in the period of eleven years (from 2005 to 2015). There are no collisions recorded along Brooklands access road or at the existing R403 / Alexandra Walk / The Avenue roundabout.

3.4 PROPOSED ROAD NETWORK IMPROVEMENTS

The Kildare County Development Plan 2017-2023 has identified two locations along the R403 for road improvement works, *''County boundary at Backweston to Clane via Celbridge and Clane to Junction with R402 via Prosperous, Allenwood & Derrinturn''.* However, it is not expected that these improvements would have a significant bearing on the development proposal.

4 TRAFFIC GENERATION & TRIP DISTRIBUTION

4 Traffic Generation and Trip Distribution

4.1 DEVELOPMENT TRIP GENERATION

The TRICS database has been used to predict the trip generation to and from the proposed development for the AM and PM peak periods. Full details of the TRICS information used for the assessments are provided in Appendix D - TRICS information.

4.1.1 Houses / Duplex

The category of "Residential / Houses Privately Owned" has been interrogated as the most appropriate development type category for this part of the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per number of Units

	Trip rate to development	Trip rate from development
AM Peak	0.20	0.40
PM Peak	0.45	0.27

For the proposed 189 residential dwellings with access onto Brooklands road this would give the following trips to and from the proposed development:

Trip Generation – 189 Dwellings

	Trip rate to development	Trip rate from development
AM Peak	37	75
PM Peak	85	51

4.1.2 Apartments

The category of "Residential / Flats Privately Owned" has been interrogated as the most appropriate development type category for this part of the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per number of Units

	Trip rate to development	Trip rate from development
AM Peak	0.05	0.15
PM Peak	0.12	0.07

For the proposed 144 apartments with access onto Brooklands road this would give the following trips to and from the proposed development:

Trip Generation – 144 Apartments

	Trip rate to development	Trip rate from development
AM Peak	7	21
PM Peak	17	10

4.1.3 Crèche

The category of "Education / Nursery" has been interrogated as the most appropriate development type category for this part of the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per number of Units

	Trip rate to development	Trip rate from development
AM Peak	5.93	4.11
PM Peak	2.99	3.22

For the proposed Crèche of 485sqm with access onto Brooklands road this would give the following trips to and from the proposed development:

Trip Generation – 485sqm

	Trip rate to development	Trip rate from development
AM Peak	28	19
PM Peak	14	15

4.1.4 Total Development Trip Generation Summary

To summarise, the combined trips that are predicted to be generated by the proposed development are shown in the table below:

Trip Generation – Total Development

	Trip rate to development	Trip rate from development	Total
AM peak	72	115	187
PM peak	116	76	192

4.2 TRIP DISTRIBUTION

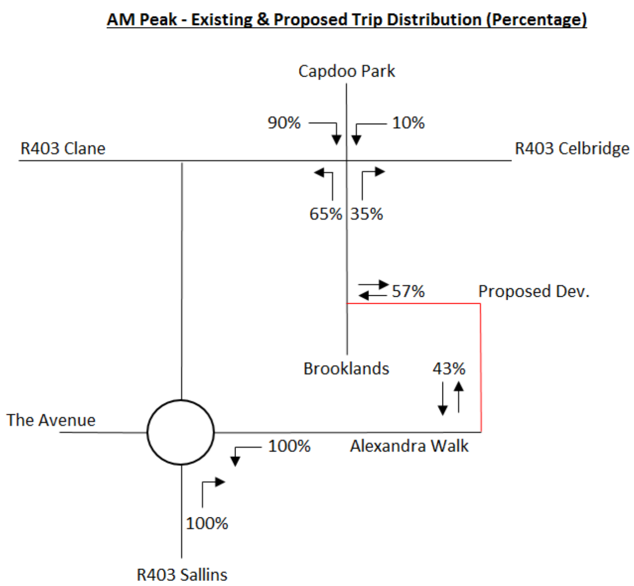
The access to the proposed development will be via the existing R403 / Brooklands / Capdoo Park crossroads and the existing R403 / Alexandra Walk / The Avenue roundabout. An origin / destination survey was carried out over a 3-day period from the 5th March 2019 to the 8th March 2019. The survey indicated that percentage of existing traffic arriving and departing to and from Clane are as follows:

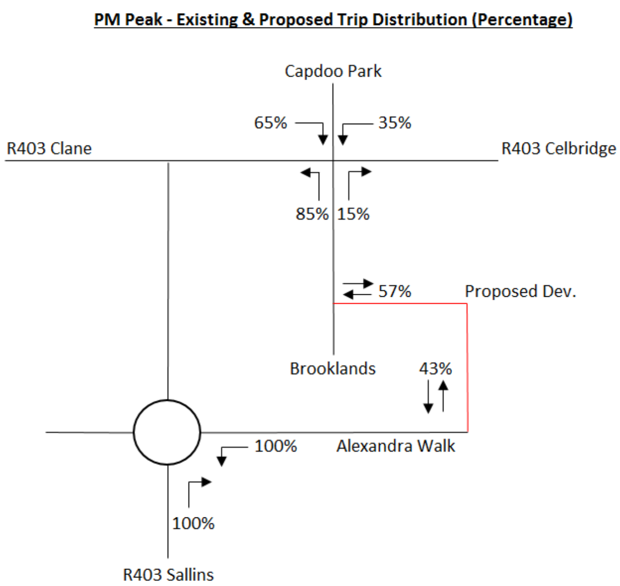
- 23% to / from the R407 Kilcock direction
- 34% to / from the R403 Celbridge direction
- 28% to / from the R407 Sallins direction
- 15% to / from the R403 Prosperous direction

Using the above data, it is assumed that the development traffic will distribute as follows:

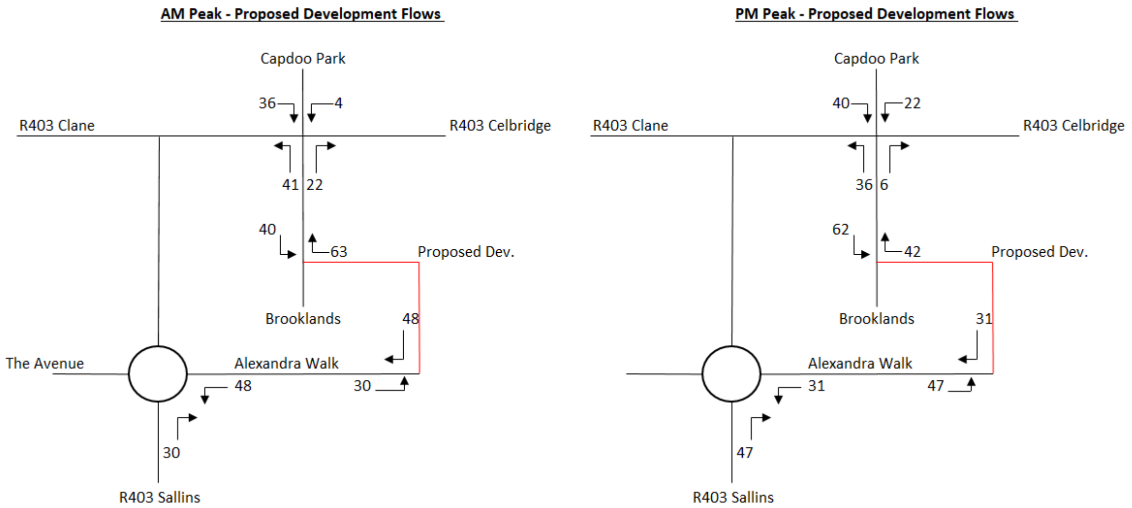
- 57% of the development traffic will arrive / depart via the R403 / Brooklands / Capdoo Park crossroads and
- 43% of the development traffic will arrive / depart via the R403 / Alexandra Walk / The Avenue roundabout.

The following diagrams show the existing and proposed traffic distribution percentage for the AM and PM peak at the existing R403 / Brooklands / Capdoo Park crossroads and the R403 / Alexandra Walk / The Avenue roundabout.





Using the proposed directional splits shown above and the trips generated by the proposed development outlined in 4.1, the following diagrams show the turning movements of predicted development traffic at the R403 / Brooklands / Capdoo Park crossroads and the existing R403 / Alexandra Walk / The Avenue roundabout during the AM and PM peak hours:

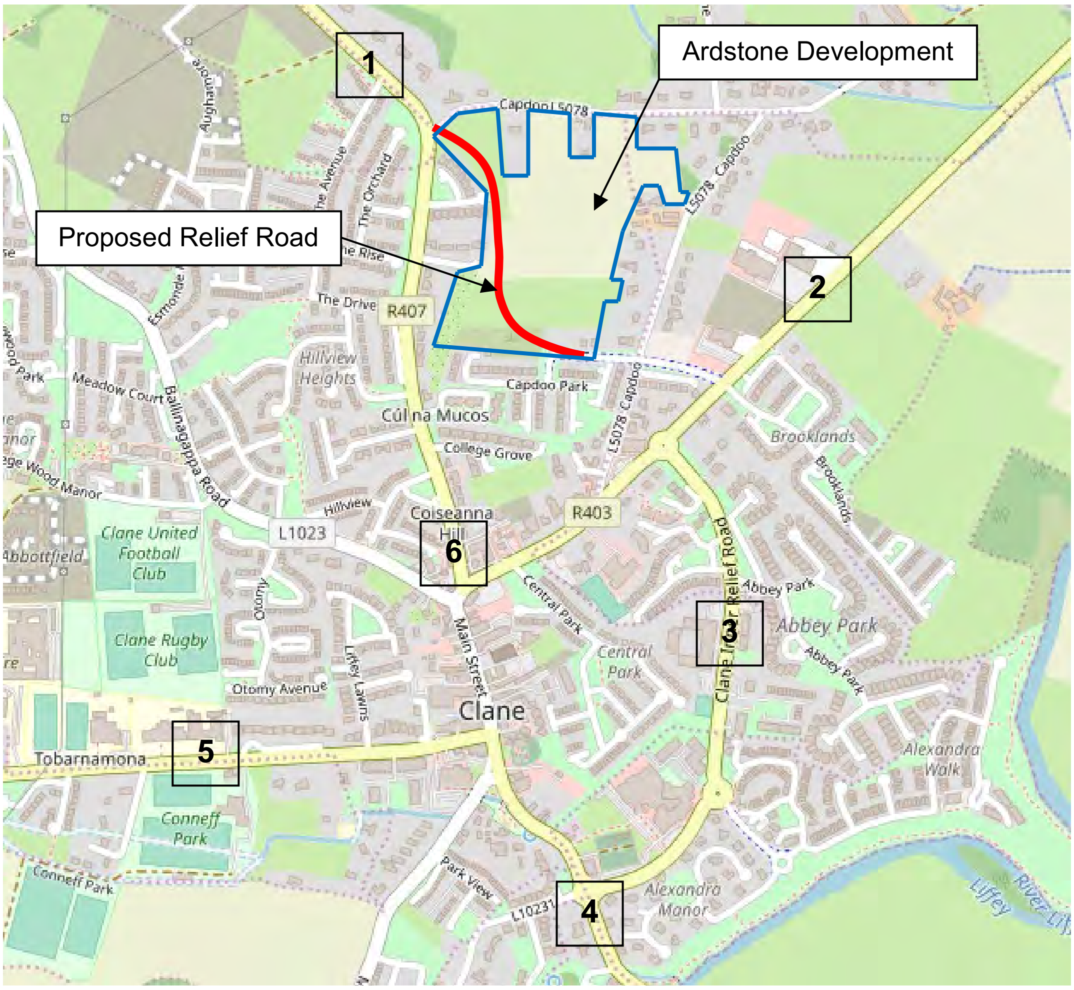


4.3 SENSITIVITY TESTING OF FUTURE DEVELOPMENT

There are lands located to the north of the proposed development which are zoned residential and are in the ownership of Ardstone Homes. Access to this potential future development would be via the existing R403 / Brooklands / Capdoo Park crossroads. For this reason, a capacity assessment has been undertaken to determine the impact that the possible future residential development will have on the existing R403 / Brooklands / Capdoo Park crossroads in the design year 2037 with the proposed residential development also operational.

As part of the Ardstone residential development it is proposed to provide a relief road through the development which will provide a connection from the R407 / L5078 priority junction to the R403 / Brooklands / Capdoo Park crossroads. The proposed relief road will have an impact on the travel pattern of traffic using the network surrounding Clane town. The alignment of the relief road and the location of Ardstone development is shown on the site map below.

In order to assess the impact that the relief road will have on the surrounding network an origin / destination survey was carried out. The origin / destination survey was carried out over a 3-day period from the 5th March 2019 to the 8th March 2019. Data was collected from 6 number origin / destination points. The location of each origin / destination point is shown on the site map below and the survey results are contained in Appendix B – Traffic Surveys. In addition to the above a 12-hour baseline traffic count was carried out at each of the 6 locations.



The origin / destination percentage splits for the 6 sites are indicated on the table below.

Origin / Destination	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6
Site 1	-	10%	9%	34%	7%	40%
Site 2	7%	-	25%	28%	23%	17%
Site 3	9%	55%	-	21%	4%	11%
Site 4	24%	42%	12%	-	10%	12%
Site 5	9%	52%	4%	22%	-	13%
Site 6	33%	26%	7%	22%	12%	-

With the relief road in place it is assumed that all vehicle trips travelling from site 1 to sites 2 and 3 will divert via the relief road and all vehicle trips travelling from sites 2 and 3 to site 1 will divert via the relief road. In addition, it is assumed that 40% of vehicles trips travelling to / from site 1 to site 4 will divert via the relief road.

Using the percentage splits shown in the table above it is assumed that 33% (10% + 9% + 14%) of the existing vehicle trips originating from site 1 will divert via the relief road and 26% (7% + 9% + 10%) of the existing vehicle trips originating from site 2, 3 and 4 will divert via the relief road.

Using the baseline traffic counts carried out at site 1 and the percentage splits shown above the predicted two-way flow of background traffic that will travel via the relief road during the AM and PM peak hours are indicated in the table below:

Proposed Relief Road - Diverted Trips

	Northbound	Southbound
AM Peak	89	88
PM Peak	97	95

The Ardstone development has been granted planning permission by An Bord Pleanala (ref no. ABP-304632-19). The development consists of 366 residential units (184 dwellings and 182 apartments).

The TRICS database has been used to predict trip generation to and from the proposed development for the AM and PM peak periods.

4.3.1 Residential Dwellings

Residential - Houses Privately Owned has been used as most appropriate category for this possible future development, and the trip rates for the AM and PM peak periods are shown below:

Residential (Houses Privately Owned) – Trip rates per House

	Arrivals to development	Departures from development
AM Peak	0.20	0.40
PM Peak	0.45	0.27

The predicted number of houses for the residential zoned land is 184. This results in the following trips to and from the proposed site:

Trip Generation – 184 No. Houses

	Trips to development	Trips from development
AM Peak	36	72
PM Peak	81	49

4.3.2 Apartments

The category of "Residential / Flats Privately Owned" has been interrogated as the most appropriate development type category for this part of the development and the trip rates for the AM and PM peak periods are shown below:

Trip rates per number of Units

	Trip rate to development	Trip rate from development
AM Peak	0.05	0.15
PM Peak	0.12	0.07

For the proposed 182 apartments with access onto Brooklands road this would give the following trips to and from the proposed development:

Trip Generation – 182 Apartments

	Trip rate to development	Trip rate from development
AM Peak	9	27
PM Peak	22	13

4.3.3 Total Development Trip Generation Summary

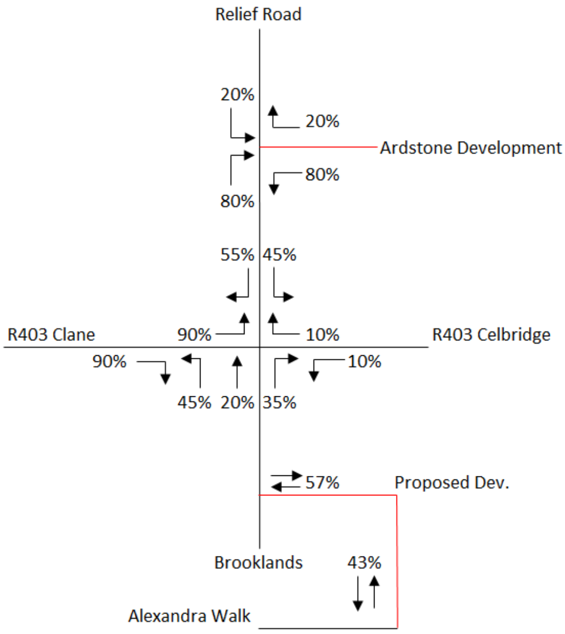
To summarise, the combined trips that are predicted to be generated by the proposed development are shown in the table below:

Trip Generation – Total Development

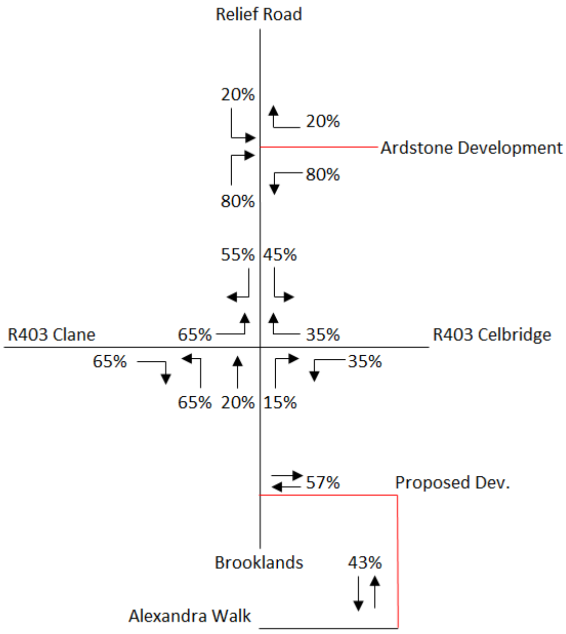
	Trip rate to development	Trip rate from development	Total
AM peak	46	101	147
PM peak	105	63	168

The construction of the proposed relief road as part of the Ardstone residential development will result in a re-distribution of the proposed residential flows associated with the Brooklands development. The following diagrams show the proposed traffic distribution percentage for the AM and PM peak at the existing R403 / Brooklands / Capdoo Park crossroads in 2037 when the proposed relief road and the Ardstone residential development is operational.

AM Peak - Proposed Trip Distribution (Percentage)

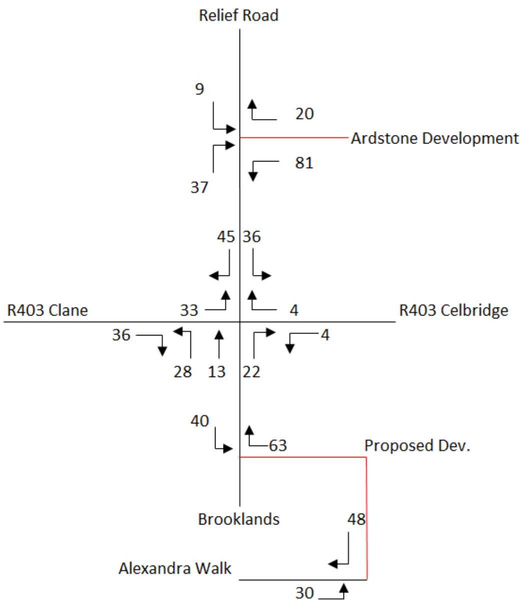


PM Peak - Proposed Trip Distribution (Percentage)

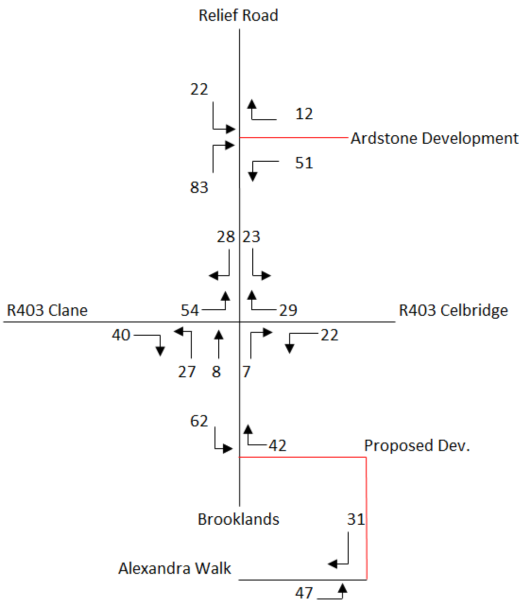


Using the proposed directional splits shown above and the trips generated by the proposed development outlined in 4.1 and the Ardstone Development outlined in 4.3, the following diagrams show the turning movements of predicted development traffic at the R403 / Brooklands / Capdoo Park crossroads during the AM and PM peak hours:

AM Peak - Proposed Development Flows



PM Peak - Proposed Development Flows



4.4 FUTURE YEAR TRAFFIC GROWTH

The TII issues a range of forecasts: low growth, medium growth and high growth. The implementation of policies relating to Smarter Travel and to public transport will act a deterrent to high growth in car-based travel. Low growth factors are however likely to be equally unrealistic at present in the Clane Area, so we have used medium growth factors in our assessment.

The zone in which the site is located is numbered 494 in the TII National Traffic Model. The growth factors are as follows:

Zone	**2019 Existing**	**2022 development completion**	**2027 5 years after dev. completion**	**2037 15 years after dev. completion**
494	1	5.88%	16.49%	27.18%

These percentages have been used to predict the increase in background traffic that will occur in future years. Full summary tables and predicted future traffic flows for 2022, 2027 and 2037 future years are included in Appendix C – Traffic Flow Sheets.

5 OPERATIONAL ASSESSMENTS

5 Operational Assessments

5.1 INTRODUCTION

Traffic generated by the proposed development will have some effect on the local road network surrounding the site. The following junction was assessed:

- R403 / Brooklands / Capdoo Park Crossroads
- R403 / Alexandra Walk / The Avenue Roundabout

5.2 R403 / BROOKLANDS / CAPDOO PARK CROSSROADS

Capacity assessments have been undertaken using the computer program PICADY for the AM and PM peak hours.

The following tables summarise the existing situation and the effects that the proposed development will have on this junction in 2022, 2027 and 2037 using the existing and predicted traffic flows shown in Appendix C – Traffic Flow Sheets. Full PICADY printouts are provided in Appendix E – PICADY Results.

The parameters shown in the tables are defined as follows:

Ratio of Flow to Capacity (RFC) is a factor indicating the flow on a junction arm relative to its capacity. An RFC of 1.0 means the junction has reached its ultimate capacity and an RFC of 0.85 means that the junction has reached its reserve capacity.

Avg. Queue is the average number of vehicles queued over the time period on the junction approach.

Queue delay is the average number of seconds delay to each vehicle in the time period.

Total Delay is the total number of vehicle hours of delay to all vehicles at the junction over the time period.

5.2.1 Existing Assessment (Base Flows)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing crossroads junction using the existing traffic flows.

AM Peak – Base Flows

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.03	0	9	0.59
Brooklands	0.26	0	13	
R403 Clane	0.02	0	7	
Capdoo Park	0.14	0	18	

PM Peak – Base Flows

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.08	0	7	0.44
Brooklands	0.18	0	14	
R403 Clane	0.10	0	8	
Capdoo Park	0.04	0	13	

The summary predictions shown in the tables above indicate that there are no queues and minimal delays at this junction at present during the AM and PM peak hours.

5.2.2 Design Year Assessments (2022 With Development)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing junction using the predicted traffic flows for 2022 including the proposed development.

AM Peak – 2022 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.02	0	9	1.24
Brooklands	0.45	1	18	
R403 Clane	0.08	0	6	
Capdoo Park	0.11	0	19	

PM Peak – 2022 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.10	0	7	0.88
Brooklands	0.35	1	18	
R403 Clane	0.20	0	9	
Capdoo Park	0.04	0	16	

The summary predictions shown in the tables above indicate that there will be minimal queues and small delays in the AM and PM peak hour at the junction in 2022, planned year of opening.

5.2.3 Design Year Assessments (2027 With Development)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing junction using the predicted traffic flows for 2027 including the proposed development.

AM Peak – 2027 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.02	0	9	1.56
Brooklands	0.51	1	21	
R403 Clane	0.08	0	6	
Capdoo Park	0.13	0	22	

PM Peak – 2027 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.11	0	7	1.10
Brooklands	0.42	1	22	
R403 Clane	0.22	0	9	
Capdoo Park	0.04	0	17	

The summary predictions shown in the tables above indicate that there will be minimal queues and small delays in the AM and PM peak hour at the junction in 2027, five years after development completion.

5.2.4 Design Year Assessments (2037 With Development)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing junction using the predicted traffic flows for 2037 including the proposed development.

AM Peak – 2037 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.03	0	10	2.05
Brooklands	0.58	1	26	
R403 Clane	0.09	0	6	
Capdoo Park	0.15	0	27	

PM Peak – 2037 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.12	0	7	1.36
Brooklands	0.48	1	28	
R403 Clane	0.25	0	10	
Capdoo Park	0.06	0	20	

The summary predictions shown in the tables above indicate that there will be minimal queues and small delays in the AM and PM peak hour at the junction in 2037, fifteen years after development completion.

5.2.5 Design Year Assessments (2037 With Development + Sensitivity Flows)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing junction using the predicted traffic flows for 2037 including the proposed development Ardstone residential development.

AM Peak – 2037 with Development + Sensitivity Flows

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.17	0	12	44.26
Brooklands	0.68	2	44	
R403 Clane	0.09	0	6	
Capdoo Park	1.53	29	569	

PM Peak – 2037 with Development + Sensitivity Flows

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 Celbridge	0.33	1	7	11.360
Brooklands	0.43	1	29	
R403 Clane	0.28	1	9	
Capdoo Park	1.02	8	181	

Sensitivity testing of the proposed development, the Ardstone residential development with the relief road open indicates that the during the AM and PM peak hour the junction will be at its ultimate capacity with queues and delays.

5.3 R403 / ALEXANDRA WALK / THE AVENUE ROUNDABOUT

Capacity assessments have been undertaken using the computer program ARCADY for the AM and PM peak hours.

The following tables summarise the existing situation and the effects that the proposed development will have on this junction in 2022, 2027 and 2037 using the existing and predicted traffic flows shown in Appendix C – Traffic Flow Sheets. Full ARCADY printouts are provided in Appendix F – ARCADY Results.

5.3.1 Existing Assessment (Base Flows)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing roundabout junction using the existing traffic flows.

AM Peak – Base Flows

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 (east)	0.21	0	2	0.73
Alexandra Walk	0.13	0	3	
R403 (west)	0.31	0	3	
The Avenue	0.02	0	5	

PM Peak – Base Flows

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 (east)	0.38	1	3	1.15
Alexandra Walk	0.05	0	3	
R403 (west)	0.38	1	4	
The Avenue	0.01	0	6	

The summary predictions shown in the tables above indicate that there are minimal queues and delays at this junction at present during the AM and PM peak hours.

5.3.2 Design Year Assessments (2022 With Development)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing junction using the predicted traffic flows for 2022 including the proposed development.

AM Peak – 2022 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 (east)	0.22	0	2	0.91
Alexandra Walk	0.18	0	3	
R403 (west)	0.34	1	4	
The Avenue	0.03	0	6	

PM Peak – 2022 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 (east)	0.41	1	3	1.40
Alexandra Walk	0.08	0	3	
R403 (west)	0.44	1	4	
The Avenue	0.01	0	6	

The summary predictions shown in the tables above indicate that there will be minimal queues and delays in the AM and PM peak at the junction in 2022, planned year of opening.

5.3.3 Design Year Assessments (2027 With Development)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing junction using the predicted traffic flows for 2027 including the proposed development.

AM Peak – 2027 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 (east)	0.25	0	3	1.04
Alexandra Walk	0.19	0	3	
R403 (west)	0.38	1	4	
The Avenue	0.03	0	6	

PM Peak – 2027 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 (east)	0.45	1	3	1.60
Alexandra Walk	0.09	0	3	
R403 (west)	0.48	1	4	
The Avenue	0.01	0	6	

The summary predictions shown in the tables above indicate that there will be minimal queues and delays in the AM and PM peak hour at the junction in 2027, five years after development completion.

5.3.4 Design Year Assessments (2037 With Development)

The following tables show the predicted RFC values (Ratio of Flow to Capacity), average queue lengths, average vehicle delay and total delays for the existing junction using the predicted traffic flows for 2037 including the proposed development.

AM Peak – 2037 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 (east)	0.27	0	3	1.19
Alexandra Walk	0.21	0	3	
R403 (west)	0.41	1	4	
The Avenue	0.03	0	6	

PM Peak – 2037 with development

Approach	Predicted RFC value	Avge Queue (vehicles)	Queue delay (secs./veh.)	Total Delay (veh.hrs.)
R403 (east)	0.50	1	4	1.94
Alexandra Walk	0.10	0	3	
R403 (west)	0.52	1	5	
The Avenue	0.01	0	7	

The summary predictions shown in the tables above indicate that there will be small queues and delays in the AM and PM peak hour at the junction in 2037, fifteen years after development completion.

5.4 R403 / BROOKLANDS / CAPDOO PARK SIGNALISED JUNCTION

Currently there are signal poles and signal heads located at the existing R403 / Brooklands / Capdoo Park crossroads junction. The traffic lights are currently not operational at present. However, a capacity assessment has been undertaken using the computer program TRANSYT for the AM and PM peak hours to determine the operational performance of the junction if it was upgraded to a signalised junction.

The following tables summarise the effects that the proposed development and the Ardstone development will have on this junction in 2037 using the existing and predicted traffic flows shown in Appendix C – Traffic Flow Sheets. Full TRANSYT printouts are provided in Appendix G – TRANSYT Results.

The parameters shown in the tables are defined as follows:

Max Degree of Saturation (%) is a ratio of demand to capacity on each approach to the junction, with a value of 100% meaning that demand and capacity are equal and no further traffic is able to progress through the junction. Values over 90% are typically regarded as suffering from traffic congestion, with queues of vehicles beginning to form.

Queue at end of Red is the number of vehicles queued on the approach arm at the end of red.

Average Delay is the average number of seconds delay to each vehicle in the time period.

Practical Reserve Capacity is the capacity available relative to a capacity of 90%. A positive PRC indicates that a junction has spare capacity and may be able to accept more traffic. A negative PRC indicates that the junction is over capacity and is suffering from traffic congestion.

R403 / Brooklands / Capdoo Park Signalised Junction

AM Peak			**2020 Base Flows**	**2022 + Dev Flows**	**2027 + Dev Flows**	**2037 + Dev. Flows**	**2037 + Dev. Flows + Sen. Flows**
R403/ Brooklands/ Capdoo Park Signalised Junction	R403 (east)	Max DoS %	35	37	44	88	97
		Mean Max Que (pcu's)	9	10	12	26	27
		Average delay (s)	15	15	19	62	77
		PRC %	157	143	103	2	-7
	Brooklands	Max DoS %	53	90	97	104	127
		Mean Max Que (pcu's)	5	11	14	17	37
		Average delay (s)	77	125	150	189	401
		PRC %	70	0	-7	-14	-29
	R403 (west)	Max DoS %	81	92	100	107	117
		Mean Max Que (pcu's)	36	50	70	91	156
		Average delay (s)	27	36	55	94	267
		PRC %	11	-2	-10	-16	-23
	Capdoo Park	Max DoS %	29	28	28	31	112
		Mean Max Que (pcu's)	3	2	2	2	25
		Average delay (s)	64	68	68	69	45
		PRC %	364	221	227	189	-20

With traffic signals activated in 2020 the signalised junction will be at capacity with queues and delays during the AM peak hour.

In 2022, 2027 and 2037 with the development in place the signalised junction will be at capacity with queues and delays during the AM peak hour.

Sensitivity testing in 2037, indicates that with the proposed residential development open, the Ardstone residential development open and the relief road open the junction will be at capacity resulting with queues and delays during the AM peak hour.

R403 / Brooklands / Capdoo Park Signalised Junction

PM Peak			2020 Base Flows	2022 + Dev Flows	2027 + Dev Flows	2037 + Dev. Flows	2037 + Dev. Flows + Sen. Flows
R403/ Brooklands/ Capdoo Park Signalised Junction	R403 (east)	Max DoS %	83	92	98	108	140
		Mean Max Que (pcu's)	36	48	64	108	316
		Average delay (s)	28	38	52	146	531
		PRC %	8	-2	-8	-17	-36
	Brooklands	Max DoS %	26	47	53	54	87
		Mean Max Que (pcu's)	3	5	5	6	7
		Average delay (s)	67	72	73	74	107
		PRC %	244	90	71	66	3
	R403 (west)	Max DoS %	87	101	106	107	101
		Mean Max Que (pcu's)	27	44	59	67	54
		Average delay (s)	66	118	149	155	81
		PRC %	4	-11	-15	-16	-11
	Capdoo Park	Max DoS %	17	19	22	26	82
		Mean Max Que (pcu's)	2	2	2	2	8
		Average delay (s)	66	65	66	67	93
		PRC %	426	386	302	242	9

With traffic signals activated in 2019 the signalised junction will be at its capacity with queues and delays during the PM peak hour.

In 2022, 2027 and 2037 with the development in place the signalised junction will be at capacity with queues and delays during the PM peak hour.

Sensitivity testing in 2037, indicates that with the proposed residential development open, the Ardstone residential development open and the relief road open the junction will be at capacity resulting with queues and delays during the PM peak hour.

5.5 CONCLUSIONS

Junction analyses to assess the effects of traffic generated by the proposed development have been undertaken for the existing R403 / Brooklands / Capdoo Park crossroads and the existing R403 / Alexandra Walk / The Avenue roundabout. The analysis shows that:

- The existing R403 / Brooklands / Capdoo Park crossroads currently operates within capacity with minimal delays and queues during the AM and PM peak hours.

- The existing R403 / Brooklands / Capdoo Park crossroads will continue to operate within capacity with small queues and delays when the proposed development is completed in 2022, year of opening, 2027, five years after opening and in 2037, fifteen years after opening.

- Sensitivity testing of the proposed development, the Ardstone residential development with the relief road open indicates that the existing R403 / Brooklands / Capdoo Park crossroads will operate at its ultimate capacity with queues and delays during the AM and PM peak period.

- The existing R403 / Alexandra Walk / The Avenue roundabout currently operates within capacity with minimal delays and queues during the AM and PM peak hours.

- The existing R403 / Alexandra Walk / The Avenue roundabout will continue to operate within capacity with small queues and delays when the proposed development is completed in 2022, year of opening, 2027, five years after opening and in 2037, fifteen years after opening.

- Upgrading of the existing R403 / Brooklands / Capdoo Park crossroads to a signalised junction will result in the junction being at capacity resulting in queues and delays at the junction during the AM and PM peak hours with the proposed residential development operational in 2022, 2027 and 2037.

- Sensitivity testing of the proposed development, the Ardstone residential development with the relief road open indicates that upgrading of the existing R403 / Brooklands / Capdoo Park crossroads to a signalised junction will result in the junction being at capacity resulting in queues and delays at the junction during the AM and PM peak hours in 2037.

6 PARKING

6 Parking

6.1 CAR PARKING PROVISION

A total of 575 parking spaces are to be provided within the proposed residential development including 18 parking spaces for the proposed creche development as shown on the architect's drawing contained in Appendix A – Drawings

6.2 CAR PARKING REQUIREMENTS FROM DEVELOPMENT PLAN

The *'Kildare County Development Plan 2017-2023'* lists standard provision for car parking and the table below sets out those requirements in relation to the proposed development.

Car parking requirements from the Kildare County Development Plan 2017 – 2023

Parking Standards for Residential Development			
Land-use	Requirements	Quantity	Parking
Residential Dwellings	2 spaces per unit	121 Dwellings	242
Apartments / Duplex	1.5 spaces per unit + 1 visitor space per 4 apartments	212 Apartments / Duplex	371
Crèche	0.5 per staff member plus 1 per 4 children	75 children + 15 staff	26
		Total	**639**

The Kildare County Development Plan indicates that the number of parking spaces required is 639 parking spaces.

The number of parking spaces required for the 200 apartments / duplex units was also assessed using the "Design Standards for New Apartments – Guidelines for Planning Authorities 2018".

the "Design Standards for New Apartments – Guidelines for Planning Authorities 2018" indicates that 1 car space per unit together with an element of visitor parking, such as 1 space for every 3-4 apartments should generally be required.

Therefore, using the above requirements, the table below sets out those requirements in relation to the proposed 212 apartments / duplex.

Car parking requirements from the Design Standards for New Apartments

Parking Standards for Residential Development			
Land-use	Requirements	Quantity	Parking
Apartments / Duplex	1 space per unit + 1 visitor space per 4 apartments	212 Apartments / Duplex	253
		Total	**253**

In summary, the Kildare County Development Plan indicates that 242 parking spaces are required for the residential dwellings and the Design Standards for New Apartments – Guidelines for Planning Authorities 2018 indicates that 253 parking spaces are required for the apartments / duplex giving a total of 495 parking spaces which is adequate to cater for the parking demand of the development.

7 ROAD SAFETY, PEDESTRIANS AND INTERNAL LAYOUT

7 Road Safety, Pedestrians and Internal Layout

7.1 ROAD SAFETY

The Design Manual for Urban Roads and Streets indicates that for a 50km/h speed limit a sightline of 45m at a 2m set-back shall be achieved in both directions.

At the proposed residential access and at the proposed creche access onto Brooklands access road a 45m sightline at a 2m set-back can be achieved in both directions. The visibility splay to the north and south of the proposed accesses is measured from a 2m set-back to the nearside kerb of the road.

7.2 PEDESTRIANS

A 2m wide footpath will be provided internally to cater for pedestrian movement within the development. The proposed internal footpaths within the development will connect to the existing footpath located on Brooklands access road and the existing footpaths located on Alexandra Walk access road.

7.3 INTERNAL LAYOUT

Within the development the spine road is 6m wide.

Parking is provided for each residential dwelling. Parking for Apartments is located adjacent to each apartment bock. Parking bays are 2.5m wide x 5m long.

HGV access to the site will be via the proposed access onto Brooklands access road and via Alexandra Walk. The types of HGV’s accessing the site would be emergency vehicles and a bin lorry. The internal layout can facilitate HGV movement within the site.

8 CONCLUSIONS AND SUMMARY

8 Conclusions

The main conclusions of this study are summarised as follows:

- The existing R403 / Brooklands / Capdoo Park crossroads currently operates within capacity with minimal delays and queues during the AM and PM peak hours.

- The existing R403 / Brooklands / Capdoo Park crossroads will operate within capacity with small queues and delays when the proposed development is completed in 2022, year of opening, 2027, five years after opening and in 2037, fifteen years after opening.

- Sensitivity testing of the proposed development, the Ardstone residential development with the relief road open indicates that the existing R403 / Brooklands / Capdoo Park crossroads will operate at its ultimate capacity with queues and delays during the AM and PM peak period.

- The existing R403 / Alexandra Walk / The Avenue roundabout currently operates within capacity with minimal delays and queues during the AM and PM peak hours.

- The existing R403 / Alexandra Walk / The Avenue roundabout will operate within capacity with small queues and delays when the proposed development is completed in 2022, year of opening, 2027, five years after opening and in 2037, fifteen years after opening.

- Upgrading of the existing R403 / Brooklands / Capdoo Park crossroads to a signalised junction will result in the junction being at capacity resulting in queues and delays at the junction during the AM and PM peak hours with the proposed residential development operational in 2022, 2027 and 2037.

- Sensitivity testing of the proposed development and the Ardstone residential development with the relief road open indicates that upgrading of the existing R403 / Brooklands / Capdoo Park crossroads to a signalised junction will result in the junction being at capacity resulting in queues and delays at the junction during the AM and PM peak hours in 2037.

- The development provides adequate car parking spaces when assessed in accordance with the Kildare county development plan and the Design Standards for New Apartments – Guidelines for Planning Authorities 2018. Facilities for pedestrians are included in the internal layout.

- Sightlines at the proposed accesses onto Brooklands road are in compliance with the Design Manual for Urban Roads & Streets.

Summary

The existing R403 / Brooklands / Capdoo Park crossroads currently operates within capacity with a maximum RFC value of 0.26 in the AM peak. The proposed development will generate an additional 187 trips in the AM peak and 192 trips in the PM peak.

As a result of increased flows generated by the proposed development and an increase in the background flows the existing R403 / Brooklands / Capdoo Park crossroads will operate within capacity with a maximum RFC value of 0.58 in the AM peak, in 2037, fifteen years after the development has been completed.

The development of the Ardstone residential site will result in the construction of a relief road that will provide a connection from the existing R403 / Brooklands / Capdoo Park crossroads to the R407 / L5078 priority junction. As a result of increase flows generated by the Ardstone residential development and with the proposed residential development operational in 2037 the existing R403 / Brooklands / Capdoo Park crossroads will operate at its ultimate capacity with a maximum RFC value of 1.53 in the AM peak.

Currently traffic signals are provided at the junction however they are not operational at present. Analysis was carried out on the signals in order to determine capacity of the junction if the traffic signals were operational.

The capacity analysis indicated that if the junction operated as a signalised junction it would result in queues and delays with and without the proposed development in place during the AM and PM peak hours.

In terms of road safety, the visibility splays at the existing access from Brooklands onto the R403 are in compliance with the Design Manual for Urban Roads and Streets. In addition, adequate pedestrian facilities are provided at the existing junction to cater for pedestrian movement.

APPENDICES

APPENDIX A – DRAWINGS

APPENDIX B – TRAFFIC COUNTS

Irish Traffic Surveys Ltd

Survey Name : ITS J192 Clane
Site : 1
Location :
Date : 24/04/2018

Irish Traffic Surveys

	A=>A							A=>B							A=>C							A=>D						
TIME	CAR	LGV	OGV1	OGV2	PSV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	PSV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	PSV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	PSV (BU	TOT	PCU
07:00	0	0	0	0	0	0	0	3	2	0	0	0	5	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
07:15	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	0	0	7	1	0	0	0	8	0	0	0	0	1	0	1	0	3	1	0	0	0	4	0
H/TOT	0	0	0	0	0	0	0	17	4	0	0	0	21	0	0	0	0	1	0	1	0	4	1	0	0	0	5	0
08:00	0	0	0	0	0	0	0	10	1	0	0	0	11	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0
08:15	0	0	0	0	0	0	0	14	0	0	0	0	14	0	1	0	0	0	1	2	0	6	0	0	0	0	6	0
08:30	0	0	0	0	0	0	0	13	0	0	0	1	14	0	1	0	0	0	0	1	0	9	0	0	0	0	9	0
08:45	0	0	0	0	0	0	0	12	0	0	0	0	12	0	1	0	0	0	0	1	0	9	0	1	0	0	10	0
H/TOT	0	0	0	0	0	0	0	49	1	0	0	1	51	0	3	0	0	0	1	4	0	29	0	1	0	0	30	0
09:00	0	0	0	0	0	0	0	6	2	0	0	0	8	0	1	0	0	0	0	1	0	3	0	0	0	0	3	0
09:15	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0
09:30	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0
09:45	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	2	0	0	1	0	3	0
H/TOT	0	0	0	0	0	0	0	13	2	0	0	0	15	0	1	0	0	0	0	1	0	9	1	0	1	0	11	0
10:00	0	0	0	0	0	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
10:15	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:30	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	1	2	0	0	0	3	0
10:45	0	0	0	0	0	0	0	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	6	1	0	0	0	7	0	1	0	0	0	0	1	0	2	2	0	0	0	4	0
11:00	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	1	0	0	0	1	0	0	1	0	0	0	1	0
11:15	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	4	0
11:45	0	0	0	0	0	0	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0
H/TOT	0	0	0	0	0	0	0	5	1	0	0	0	6	0	0	1	0	0	0	1	0	9	1	1	0	0	11	0
12:00	0	0	0	0	0	0	0	3	1	0	0	0	4	0	1	0	0	0	0	1	0	2	0	0	0	0	2	0
12:15	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
12:30	0	0	0	0	0	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
12:45	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
H/TOT	0	0	0	0	0	0	0	12	2	0	0	0	14	0	1	0	0	0	0	1	0	7	0	0	0	0	7	0
13:00	0	0	0	0	0	0	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0	2	1	0	0	0	3	0
13:15	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	3	1	0	0	0	4	0
13:30	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	1	0	0	1	0	1	0	0	0	0	1	0
13:45	0	0	0	0	0	0	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0
H/TOT	0	0	0	0	0	0	0	9	3	0	0	0	12	0	1	0	1	0	0	2	0	9	2	0	0	0	11	0
14:00	0	0	0	0	0	0	0	2	1	0	0	0	3	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
14:30	0	0	0	0	0	0	0	2	2	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
14:45	0	0	0	0	0	0	0	2	2	0	0	0	4	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	7	5	0	0	0	12	0	1	0	0	0	1	2	0	3	0	0	0	0	3	0
15:00	0	0	0	0	0	0	0	4	0	0	0	0	4	0	1	0	0	0	0	1	0	2	0	0	0	0	2	0
15:15	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0
15:30	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0
15:45	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0
H/TOT	0	0	0	0	0	0	0	12	0	0	0	0	12	0	1	0	0	0	0	1	0	9	1	0	0	0	10	0
16:00	0	0	0	0	0	0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0	2	0	1	0	0	3	0
16:15	0	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0
16:30	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
H/TOT	0	0	0	0	0	0	0	12	1	0	0	0	13	0	0	0	0	0	0	0	0	3	1	1	0	0	5	0
17:00	0	0	0	0	0	0	0	3	0	0	0	0	3	0	1	0	0	0	0	1	0	3	0	0	0	0	3	0
17:15	0	0	0	0	0	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0
17:30	0	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
17:45	0	0	0	0	0	0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0
H/TOT	0	0	0	0	0	0	0	18	1	0	0	0	19	0	1	0	0	0	0	1	0	15	0	0	0	0	15	0
18:00	0	0	0	0	0	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0
18:15	0	0	0	0	0	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
18:30	0	0	0	0	0	0	0	2	0	1	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
18:45	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0
H/TOT	0	0	0	0	0	0	0	9	2	1	0	0	12	0	0	0	0	0	0	0	0	7	0	0	0	0	7	0
PK TOT	0	0	0	0	0	0	0	169	23	1	0	1	194	0	10	1	1	1	2	15	0	106	9	3	1	0	119	0

B=>A							B=>B							B=>C							B=>D						
CAR	LGV	OGV1	OGV2	PSV (BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	PSV (BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	PSV (BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	PSV (BUS	TOT	PCU
0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	38	6	2	1	0	47	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	6	3	3	1	50	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	2	0	2	3	49	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	61	6	1	3	0	71	0
7	1	0	0	0	8	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	178	20	6	9	4	217	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	62	8	2	2	0	74	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82	5	3	1	0	91	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	54	4	2	1	1	62	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	78	7	0	1	0	86	0
11	0	0	0	0	11	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	276	24	7	5	1	313	0
3	1	0	0	0	4	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	65	10	2	4	0	81	0
1	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	85	15	3	2	1	106	0
1	3	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	61	8	5	1	0	75	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	67	14	3	2	0	86	0
8	5	0	0	0	13	0	0	0	0	0	0	0	0	5	1	0	0	0	6	0	278	47	13	9	1	348	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	56	9	5	3	3	76	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	69	7	7	4	2	89	0
3	1	0	0	0	4	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	72	8	4	2	0	86	0
3	1	0	0	0	4	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	64	10	0	1	1	76	0
9	2	0	0	0	11	0	0	0	0	0	0	0	0	5	1	0	0	0	6	0	261	34	16	10	6	327	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	56	2	5	1	0	64	0
2	0	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	75	18	3	0	1	97	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	66	6	3	1	0	76	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	92	7	0	6	1	106	0
7	0	0	0	0	7	0	0	0	0	0	0	0	0	8	1	0	0	0	9	0	289	33	11	8	2	343	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	1	1	0	0	0	2	0	83	10	2	4	0	99	0
3	1	0	0	0	4	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	66	8	3	0	1	78	0
0	2	0	0	0	2	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	80	16	7	3	0	106	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	82	9	5	6	1	103	0
9	3	0	0	0	12	0	0	0	0	0	0	0	0	8	1	0	0	0	9	0	311	43	17	13	2	386	0
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11	0	0	0	0	11	0	0	0	0	0	0	0	0	10	0	0	0	0	10	0	356	59	13	10	1	439	0
8	0	0	0	0	8	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	99	12	1	2	0	114	0
3	0	0	0	0	3	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	104	19	4	1	1	129	0
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4	2	0	0	0	6	0	0	0	0	0	0	0	0	7	0	0	0	0	7	0	108	17	5	0	0	130	0
18	3	0	0	0	21	0	0	0	0	0	0	0	0	24	2	0	0	0	26	0	384	57	15	5	2	463	0
3	2	0	0	0	5	0	0	0	0	0	0	0	0	5	1	0	0	0	6	0	109	14	3	2	0	128	0
7	0	0	0	0	7	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	144	16	6	2	2	170	0
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5	0	0	0	0	5	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	140	30	4	1	0	175	0
19	3	0	0	0	22	0	0	0	0	0	0	0	0	14	2	0	0	0	16	0	539	78	15	6	2	640	0
6	1	0	0	0	7	0	0	0	0	0	0	0	0	5	1	0	0	0	6	0	160	23	1	0	1	185	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	5	0	123	16	2	0	0	141	0
10	0	1	0	0	11	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	168	30	2	2	1	203	0
11	0	0	0	0	11	0	0	0	0	0	0	0	0	8	0	0	0	0	8	0	178	23	2	1	0	204	0
27	1	1	0	0	29	0	0	0	0	0	0	0	0	24	3	0	0	0	27	0	629	92	7	3	2	733	0
9	2	0	0	0	11	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	191	17	3	2	1	214	0
8	1	0	0	0	9	0	0	0	0	0	0	0	0	3	1	0	0	0	4	0	155	19	1	1	0	176	0
3	1	0	0	0	4	0	0	0	0	0	0	0	0	6	1	0	0	0	7	0	127	10	0	0	0	137	0
6	0	0	0	0	6	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	124	14	0	1	3	142	0
26	4	0	0	0	30	0	0	0	0	0	0	0	0	17	2	0	0	0	19	0	597	60	4	4	4	669	0
165	24	1	0	0	190	0	0	0	0	0	0	0	0	125	14	1	0	0	140	0	4433	592	136	89	29	5279	0

C=>A							C=>B							C=>C							C=>D						
CAR	LGV	OGV1	OGV2	SV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	SV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	SV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	SV (BU	TOT	PCU
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0	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	3	1	0	0	0	4	0
0	0	0	0	0	0	0	7	2	0	0	0	9	0	0	0	0	0	0	0	0	11	1	0	0	0	12	0
0	0	0	0	0	0	0	9	0	0	0	0	9	0	0	0	0	0	0	0	0	10	0	0	0	0	10	0
0	0	0	0	0	0	0	30	2	0	0	0	32	0	0	0	0	0	0	0	0	29	2	0	0	0	31	0
0	0	0	0	0	0	0	9	0	0	0	0	9	0	0	0	0	0	0	0	0	13	2	0	0	0	15	0
1	0	0	0	0	1	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	16	3	0	1	1	21	0
3	0	0	0	0	3	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	16	5	0	1	0	22	0
0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	9	4	0	0	0	13	0
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0	0	0	0	0	0	0	1	0	1	0	0	2	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0
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4	1	0	0	0	5	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	27	3	0	0	0	30	0
0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0
0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	6	1	1	0	0	8	0
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0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	11	1	0	0	0	12	0
0	1	0	0	0	1	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0	30	2	1	0	0	33	0
16	4	0	1	0	21	0	128	9	1	1	0	139	0	0	0	0	0	0	0	0	274	36	6	2	2	320	0

D=>A							D=>B							D=>C							D=>D						
CAR	LGV	OGV1	OGV2	SV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	SV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	SV (BU	TOT	PCU	CAR	LGV	OGV1	OGV2	SV (BU	TOT	PCU
2	0	0	0	0	2	0	142	27	1	1	1	172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	0	182	38	6	4	2	232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	192	26	4	4	2	228	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
2	0	0	0	0	2	0	189	28	5	4	1	227	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
5	0	0	0	0	5	0	705	119	16	13	6	859	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
2	0	0	0	0	2	0	160	20	6	2	0	188	0	0	1	1	0	0	2	0	0	0	0	0	0	0	0
10	0	0	0	0	10	0	138	14	0	3	1	156	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
15	0	0	0	0	15	0	116	6	1	2	2	127	0	4	0	1	0	0	5	0	0	0	0	0	0	0	0
4	0	0	0	0	4	0	119	22	4	0	0	145	0	13	2	0	0	0	15	0	0	0	0	0	0	0	0
31	0	0	0	0	31	0	533	62	11	7	3	616	0	19	3	2	0	0	24	0	0	0	0	0	0	0	0
6	0	0	0	0	6	0	118	12	3	2	0	135	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0
2	0	0	0	0	2	0	113	12	1	2	0	128	0	4	0	0	1	0	5	0	0	0	0	0	0	0	0
2	0	0	0	0	2	0	105	12	6	1	1	125	0	2	0	1	0	0	3	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	79	10	8	1	0	98	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
10	1	0	0	0	11	0	415	46	18	6	1	486	0	15	1	1	1	0	18	0	0	0	0	0	0	0	0
3	0	0	0	0	3	0	84	18	3	3	1	109	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
1	1	0	0	0	2	0	63	14	1	1	0	79	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	79	7	0	3	2	91	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	87	9	7	2	0	105	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
4	3	0	0	0	7	0	313	48	11	9	3	384	0	10	1	0	0	0	11	0	0	0	0	0	0	0	0
3	0	0	0	0	3	0	82	8	3	4	1	98	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0
1	0	1	0	0	2	0	63	6	3	1	2	75	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
6	1	0	0	0	7	0	58	7	1	1	1	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	0	0	0	4	0	94	14	1	3	0	112	0	7	1	0	0	0	8	0	0	0	0	0	0	0	0
13	2	1	0	0	16	0	297	35	8	9	4	353	0	16	2	0	0	0	18	0	0	0	0	0	0	0	0
3	0	0	0	0	3	0	87	11	1	3	0	102	0	6	1	0	0	0	7	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	75	8	5	2	1	91	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0
5	0	0	0	0	5	0	66	10	3	0	1	80	0	7	1	1	0	0	9	0	0	0	0	0	0	0	0
4	0	0	1	0	5	0	64	12	1	1	0	78	0	5	1	0	0	0	6	0	0	1	0	0	0	1	0
12	0	0	1	0	13	0	292	41	10	6	2	351	0	21	4	1	0	0	26	0	0	1	0	0	0	1	0
3	0	0	0	0	3	0	93	6	1	1	2	103	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0
3	1	0	0	0	4	0	80	9	6	0	1	96	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
2	0	0	0	0	2	0	79	11	3	3	1	97	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
3	2	0	0	0	5	0	93	15	1	1	0	110	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0
11	3	0	0	0	14	0	345	41	11	5	4	406	0	19	2	0	0	0	21	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	66	8	3	1	0	78	0	4	2	0	0	0	6	0	0	0	0	0	0	0	0
3	1	0	0	0	4	0	87	8	6	3	1	105	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0
5	1	0	0	0	6	0	70	6	3	1	1	81	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
4	1	0	0	0	5	0	74	9	2	0	0	85	0	11	2	1	0	0	14	0	0	0	0	0	0	0	0
12	3	0	0	0	15	0	297	31	14	5	2	349	0	21	4	1	0	0	26	0	1	0	0	0	0	1	0
3	0	0	0	0	3	0	69	7	1	2	2	81	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0
1	1	0	0	0	2	0	62	4	1	2	0	69	0	5	0	0	1	0	6	0	0	0	0	0	0	0	0
3	0	0	0	0	3	0	78	12	1	0	0	91	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0
6	0	0	0	0	6	0	65	8	1	2	1	77	0	14	0	0	0	0	14	0	0	0	0	0	0	0	0
13	1	0	0	0	14	0	274	31	4	6	3	318	0	29	2	0	1	0	32	0	0	0	0	0	0	0	0
2	0	0	0	0	2	0	69	10	2	0	0	81	0	6	0	1	0	0	7	0	0	0	0	0	0	0	0
3	0	0	0	0	3	0	84	12	2	1	2	101	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0
2	1	0	0	1	4	0	78	9	0	1	5	93	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0
4	0	0	0	0	4	0	73	12	2	1	2	90	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0
11	1	0	0	1	13	0	304	43	6	3	9	365	0	18	3	1	0	0	22	0	0	0	0	0	0	0	0
11	0	0	0	0	11	0	72	10	0	1	1	84	0	9	2	0	0	0	11	0	0	0	0	0	0	0	0
7	0	0	0	0	7	0	74	12	2	0	0	88	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0
8	2	0	0	0	10	0	70	6	1	1	1	79	0	11	0	0	0	0	11	0	0	0	0	0	0	0	0
10	1	0	0	0	11	0	78	6	1	0	0	85	0	10	2	0	0	0	12	0	0	0	0	0	0	0	0
36	3	0	0	0	39	0	294	34	4	2	2	336	0	42	4	0	0	0	46	0	0	0	0	0	0	0	0
7	0	0	0	0	7	0	79	8	1	0	0	88	0	11	1	0	0	0	12	0	0	0	0	0	0	0	0
8	0	0	0	0	8	0	102	8	0	2	1	113	0	7	1	0	0	0	8	0	0	0	0	0	0	0	0
7	0	0	0	0	7	0	93	5	2	0	0	100	0	11	0	1	0	0	12	0	0	0	0	0	0	0	0
5	0	0	0	0	5	0	73	9	0	1	0	83	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
27	0	0	0	0	27	0	347	30	3	3	1	384	0	34	2	1	0	0	37	0	0	0	0	0	0	0	0
185	17	1	1	1	205	0	4416	561	116	74	40	5207	0	249	28	7	2	0	286	0	1	1	0	0	0	2	0

Irish Traffic Surveys Ltd

Survey Name : *ITS J285 Site G*
Site: Site G
Date: 05/03/2019(07:00-19:00)
Location: Clane, Co. Kildare

	A => A								A => B							
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
07:15	0	0	0	0	0	0	0	0	0	0	4	0	0	0	1	5
07:30	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	6
07:45	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	6
H/TOT	0	0	0	0	0	0	0	0	0	0	15	3	0	0	1	19
08:00	0	0	0	0	0	0	0	0	0	0	12	1	0	0	1	14
08:15	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
08:30	0	0	0	1	0	0	0	1	0	0	3	0	1	0	0	4
08:45	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8
H/TOT	0	0	0	1	0	0	0	1	0	0	26	1	1	0	1	29
09:00	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7
09:15	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7
09:30	0	0	1	1	0	0	0	2	0	0	3	0	0	0	0	3
09:45	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
H/TOT	0	0	2	1	0	0	0	3	0	0	17	0	0	0	0	17
10:00	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
10:15	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
10:30	0	0	1	0	0	0	0	1	0	0	3	1	0	0	0	4
10:45	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	3
H/TOT	0	0	1	0	0	0	0	1	0	0	8	1	2	0	0	11
11:00	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
11:15	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
11:30	0	0	1	0	0	0	0	1	0	0	4	0	0	0	0	4
11:45	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8
H/TOT	0	0	1	0	0	0	0	1	0	0	18	1	0	0	0	19
12:00	0	0	0	0	0	1	0	1	0	0	5	0	0	0	0	5
12:15	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
12:30	0	0	0	0	0	0	0	0	0	1	9	0	0	0	0	10
12:45	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
H/TOT	0	0	0	0	0	1	0	1	0	1	18	0	0	0	0	19
13:00	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	6
13:15	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
13:30	0	0	0	0	0	0	0	0	0	0	8	2	0	0	0	10
13:45	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3
H/TOT	0	0	0	0	0	0	0	0	0	0	16	4	0	0	0	20
14:00	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	9
14:15	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
14:30	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	5
14:45	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6
H/TOT	0	0	0	0	0	0	0	0	0	0	23	2	0	0	0	25
15:00	0	0	1	0	0	0	0	1	0	0	8	0	0	0	1	9
15:15	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	9
15:30	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
15:45	0	0	0	0	0	0	0	0	1	0	8	0	0	0	0	9
H/TOT	0	0	1	0	0	0	0	1	1	0	29	0	0	0	1	31
16:00	0	0	1	0	0	0	0	1	0	0	15	1	0	0	0	16
16:15	0	0	1	0	0	0	0	1	0	0	13	1	0	0	0	14
16:30	0	0	0	0	0	0	0	0	0	0	17	0	0	0	0	17
16:45	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	12
H/TOT	0	0	2	0	0	0	0	2	0	0	55	4	0	0	0	59
17:00	0	0	0	0	0	0	0	0	0	0	9	1	0	0	0	10
17:15	0	0	0	0	0	0	0	0	0	0	15	1	0	0	0	16
17:30	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	12
17:45	0	0	0	0	0	0	0	0	0	0	7	1	0	0	0	8
H/TOT	0	0	0	0	0	0	0	0	0	0	41	5	0	0	0	46
18:00	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	11
18:15	0	0	0	0	0	0	0	0	0	0	16	2	0	0	0	18
18:30	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	9
18:45	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	15
H/TOT	0	0	0	0	0	0	0	0	0	0	50	3	0	0	0	53
12 TOT	0	0	7	2	0	1	0	10	1	1	316	24	3	0	3	348
	A => A								A => B							
	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

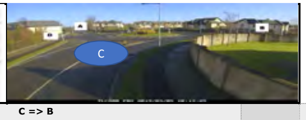
	A => C								A => D							
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	0	0	43	5	1	1	0	50	0	0	0	0	0	0	0	0
07:15	0	0	42	6	1	0	0	49	0	0	0	0	0	0	0	0
07:30	0	0	59	2	1	1	1	64	0	0	1	0	0	0	0	1
07:45	0	0	63	8	1	1	0	73	0	0	0	0	0	0	0	0
H/TOT	0	0	207	21	4	3	1	236	0	0	1	0	0	0	0	1
08:00	0	1	71	6	1	1	0	80	0	0	0	0	0	0	0	0
08:15	0	0	88	7	0	1	0	96	0	0	0	0	0	0	0	0
08:30	0	0	123	9	1	1	0	134	0	0	0	1	0	0	0	1
08:45	0	0	77	8	1	0	0	86	0	0	0	0	0	0	0	0
H/TOT	0	1	359	30	3	3	0	396	0	0	0	1	0	0	0	1
09:00	0	0	49	4	2	1	1	57	0	0	1	1	0	0	0	2
09:15	0	0	71	8	2	0	0	81	0	0	0	0	0	0	0	0
09:30	0	0	59	4	1	1	0	65	0	0	1	0	0	0	0	1
09:45	0	0	56	7	0	2	0	65	0	0	1	0	0	0	0	1
H/TOT	0	0	235	23	5	4	1	268	0	0	3	1	0	0	0	4
10:00	0	0	49	4	4	0	0	57	0	0	0	0	0	0	0	0
10:15	0	0	47	7	3	3	0	60	0	0	0	0	0	0	0	0
10:30	0	0	53	6	3	1	0	63	0	0	1	0	0	0	0	1
10:45	0	0	60	5	3	1	0	69	0	0	0	0	0	0	0	0
H/TOT	0	0	209	22	13	5	0	249	0	0	1	0	0	0	0	1
11:00	0	0	55	7	1	0	0	63	0	0	0	0	0	0	0	0
11:15	0	0	62	8	0	1	0	71	0	0	0	0	0	0	0	0
11:30	0	0	51	5	2	2	0	60	0	0	1	0	0	0	0	1
11:45	0	0	45	5	0	2	0	52	0	0	0	0	0	0	0	0
H/TOT	0	0	213	25	3	5	0	246	0	0	1	0	0	0	0	1
12:00	0	0	51	14	1	2	0	68	0	0	0	0	0	0	0	0
12:15	0	0	43	5	3	3	0	54	0	0	3	0	0	0	0	3
12:30	0	0	56	6	2	0	0	64	0	0	0	0	0	0	0	0
12:45	0	0	35	4	2	1	0	42	0	0	0	1	0	0	0	1
H/TOT	0	0	185	29	8	6	0	228	0	0	3	1	0	0	0	4
13:00	0	0	59	5	5	3	0	72	0	0	0	0	0	0	0	0
13:15	0	0	66	9	1	3	0	79	0	0	1	0	0	0	0	1
13:30	0	0	79	3	1	1	0	84	0	0	0	0	0	0	0	0
13:45	0	0	57	8	1	1	0	67	0	0	1	0	0	0	0	1
H/TOT	0	0	261	25	8	8	0	302	0	0	2	0	0	0	0	2
14:00	0	1	64	10	1	0	0	76	0	0	0	0	0	0	0	0
14:15	0	0	72	12	2	2	0	88	0	0	1	0	0	0	0	1
14:30	0	0	60	6	1	1	0	68	0	0	2	0	0	0	0	2
14:45	0	0	64	14	3	0	1	82	0	0	0	0	0	0	0	0
H/TOT	0	1	260	42	7	3	1	314	0	0	3	0	0	0	0	3
15:00	0	0	63	5	4	2	1	75	0	0	0	0	0	0	0	0
15:15	1	0	90	19	6	2	1	119	0	0	0	0	0	0	0	0
15:30	0	0	82	10	3	1	0	96	0	0	0	1	0	0	0	1
15:45	0	0	74	8	1	1	0	84	0	0	2	0	0	0	0	2
H/TOT	1	0	309	42	14	6	2	374	0	0	2	1	0	0	0	3
16:00	0	0	67	18	4	1	0	90	0	0	0	0	0	0	0	0
16:15	0	0	83	13	0	0	0	96	0	0	2	0	0	0	0	2
16:30	0	0	105	22	1	1	0	129	0	0	3	0	0	0	0	3
16:45	0	0	127	19	6	1	0	153	0	0	0	0	0	0	0	0
H/TOT	0	0	382	72	11	3	0	468	0	0	5	0	0	0	0	5
17:00	0	0	123	23	1	0	0	147	0	0	1	0	0	0	0	1
17:15	0	0	126	16	2	3	0	147	0	0	2	1	0	0	0	3
17:30	1	0	140	21	2	0	0	164	0	0	1	0	0	0	0	1
17:45	0	0	134	16	2	2	0	154	0	0	2	0	0	0	0	2
H/TOT	1	0	523	76	7	5	0	612	0	0	6	1	0	0	0	7
18:00	0	2	116	12	0	0	1	131	0	0	2	0	0	0	0	2
18:15	0	0	117	12	1	0	1	131	0	0	4	0	0	0	0	4
18:30	0	0	100	9	0	2	0	111	0	0	1	0	0	0	0	1
18:45	0	0	86	6	3	0	0	95	0	0	0	0	0	0	0	0
H/TOT	0	2	419	39	4	2	2	468	0	0	7	0	0	0	0	7
12 TOT	2	4	3562	446	87	53	7	4161	0	0	34	5	0	0	0	39
	A => C								A => D							
	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys

B => A								B => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
1	0	6	2	0	0	0	9	0	0	0	0	0	0	0	0
0	0	21	1	0	0	1	23	0	0	0	0	0	0	0	0
0	0	14	1	0	0	0	15	0	0	1	0	0	0	0	1
0	0	15	1	1	0	0	17	0	0	0	0	0	0	0	0
1	0	56	5	1	0	1	64	0	0	1	0	0	0	0	1
0	0	21	0	0	0	1	22	0	0	0	0	0	0	0	0
0	0	15	3	0	0	0	18	0	0	0	0	0	0	0	0
0	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	51	3	0	0	1	55	0	0	0	0	0	0	0	0
0	0	10	1	1	0	0	12	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	28	1	1	0	0	30	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0
0	0	6	0	1	0	0	7	0	0	0	0	0	0	0	0
0	0	20	0	1	0	0	21	0	0	0	0	0	0	0	0
0	0	4	0	1	0	0	5	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	14	1	1	0	0	16	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	17	1	0	0	0	18	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	15	1	0	0	0	16	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0
0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	17	1	0	0	0	18	0	0	0	0	0	0	0	0
0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	18	0	0	0	0	18	0	0	0	0	0	0	0	0
0	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0
0	0	7	2	0	0	0	9	0	0	0	0	0	0	0	0
0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	30	3	0	0	0	33	0	0	0	0	0	0	0	0
0	0	8	1	0	0	0	9	0	0	0	0	0	0	0	0
0	0	10	1	0	0	0	11	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	11	0	0	0	0	11	0	0	0	0	0	0	0	0
0	0	36	2	0	0	0	38	0	0	0	0	0	0	0	0
0	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0
0	0	6	1	0	0	0	7	0	0	0	0	0	0	0	0
0	0	26	2	0	0	0	28	0	0	0	0	0	0	0	0
1	0	328	20	4	0	2	355	0	0	1	0	0	0	0	1
B => A								B => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

B => C								B => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0
0	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0
0	0	14	5	0	0	0	19	0	0	0	0	0	0	0	0
0	0	16	0	0	0	0	16	0	0	0	0	0	0	0	0
0	0	43	7	0	0	0	50	0	0	0	0	0	0	0	0
0	0	20	0	0	0	0	20	0	0	0	0	0	0	0	0
0	0	29	1	0	0	0	30	0	0	0	0	0	0	0	0
0	0	32	0	0	0	1	33	0	0	0	0	0	0	0	0
0	0	16	1	0	0	0	17	0	0	0	0	0	0	0	0
0	0	97	2	0	0	1	100	0	0	0	0	0	0	0	0
0	0	7	0	0	0	1	8	0	0	0	0	0	0	0	0
0	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	4	1	0	0	0	5	0	0	0	1	0	0	0	1
0	0	24	2	0	0	1	27	0	0	0	1	0	0	0	1
0	0	4	0	1	0	0	5	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	16	1	1	0	0	18	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	1	0	0	0	0	1
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	8	1	0	0	0	9	0	0	0	0	0	0	0	0
0	0	4	0	1	0	0	5	0	0	0	0	0	0	0	0
0	0	20	1	1	0	0	22	0	0	1	0	0	0	0	1
0	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0
0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	20	1	0	0	0	21	0	0	0	0	0	0	0	0
0	0	7	3	0	0	0	10	0	0	0	0	0	0	0	0
0	0	8	1	0	0	1	10	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0
0	0	20	5	0	0	1	26	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0
0	0	13	1	0	0	1	15	0	0	0	0	0	0	0	0
0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0
0	0	6	1	0	0	0	7	0	0	0	0	0	0	0	0
0	0	35	2	0	0	1	38	0	0	0	0	0	0	0	0
0	0	6	0	0	0	2	8	0	0	0	0	0	0	0	0
0	0	6	1	0	0	0	7	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	5	2	0	0	0	7	0	0	0	0	0	0	0	0
0	0	21	3	0	0	2	26	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	12	0	0	0	0	12	0	0	1	0	0	0	0	1
0	0	8	1	0	0	0	9	0	0	0	0	0	0	0	0
0	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0
0	0	33	2	0	0	0	35	0	0	1	0	0	0	0	1
0	0	9	0	0	0	0	9	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0
0	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0
0	0	35	1	0	0	0	36	0	0	0	0	0	0	0	0
0	0	6	1	0	0	0	7	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0
0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0
0	0	21	3	0	0	0	24	0	0	0	0	0	0	0	0
0	0	385	30	2	0	6	423	0	0	2	1	0	0	0	3
B => C								B => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys



C => A								C => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	60	9	1	3	0	73	0	0	2	1	0	0	0	3
0	0	75	15	2	2	2	96	0	0	2	0	0	0	0	2
0	0	66	12	1	1	0	80	0	0	2	0	1	0	0	3
0	0	83	9	1	1	0	94	0	0	8	2	0	0	0	10
0	0	284	45	5	7	2	343	0	0	14	3	1	0	0	18
0	0	69	6	1	1	1	78	0	0	5	0	0	0	0	5
1	0	94	10	1	4	0	110	0	0	2	0	0	0	1	3
1	0	83	9	1	2	0	96	0	0	9	0	0	0	0	9
0	0	98	16	2	3	1	120	0	0	11	0	0	0	0	11
2	0	344	41	5	10	2	404	0	0	27	0	0	0	1	28
0	0	92	7	0	2	0	101	0	0	13	1	0	0	1	15
0	0	69	3	2	2	0	76	0	0	5	0	0	0	0	5
0	0	46	7	1	0	0	54	0	0	3	1	0	0	0	4
0	0	41	7	3	1	1	53	0	0	4	0	1	0	0	5
0	0	248	24	6	5	1	284	0	0	25	2	1	0	1	29
0	0	59	4	2	3	0	68	0	0	7	0	0	0	0	7
0	0	47	12	4	1	0	64	0	0	5	0	0	0	0	5
0	1	49	7	2	1	0	60	0	0	3	0	0	0	0	3
0	0	41	5	3	2	1	52	0	0	3	0	0	0	0	3
0	1	196	28	11	7	1	244	0	0	18	0	0	0	0	18
0	0	49	0	1	0	0	50	0	0	7	0	0	0	0	7
0	0	56	6	0	2	0	64	0	0	6	1	0	0	0	7
0	0	51	7	3	3	0	64	0	0	2	1	0	0	0	3
0	0	50	11	0	0	1	62	0	0	4	0	1	0	0	5
0	0	206	24	4	5	1	240	0	0	19	2	1	0	0	22
0	0	72	3	2	2	0	79	0	0	9	3	0	0	0	12
1	0	55	5	2	1	0	64	0	0	2	1	0	0	0	3
0	0	57	6	1	0	0	64	0	0	3	1	0	0	0	4
0	0	69	3	0	1	0	73	0	0	5	0	0	0	0	5
1	0	253	17	5	4	0	280	0	0	19	5	0	0	0	24
0	0	52	10	2	3	1	68	0	0	2	0	0	0	0	2
0	0	52	8	2	2	0	64	0	0	5	0	0	0	1	6
1	0	55	9	3	2	0	70	0	0	5	2	0	0	0	7
0	0	55	5	0	0	2	62	0	0	13	1	0	0	0	14
1	0	214	32	7	7	3	264	0	0	25	3	0	0	1	29
0	0	47	4	1	0	1	53	0	0	5	0	0	0	1	6
0	0	44	5	4	2	0	55	0	0	3	0	0	0	0	3
0	0	62	7	3	1	0	73	0	0	1	0	0	0	0	1
1	0	69	2	4	1	0	77	1	0	21	0	0	0	0	22
1	0	222	18	12	4	1	258	1	0	30	0	0	0	1	32
0	1	62	4	2	1	1	71	0	0	9	1	0	0	1	11
0	0	64	5	0	0	0	69	0	0	2	1	0	0	0	3
0	0	60	8	2	2	0	72	0	0	7	1	0	0	0	8
0	0	70	4	0	1	1	76	0	0	10	1	0	0	0	11
0	1	256	21	4	4	2	288	0	0	28	4	0	0	1	33
0	0	80	11	1	2	0	94	0	0	11	0	0	0	0	11
0	0	79	7	0	2	0	88	0	0	8	0	0	0	0	8
1	0	82	6	0	0	2	91	0	0	9	1	0	0	0	10
0	1	78	8	0	1	1	89	0	0	13	0	0	0	0	13
1	1	319	32	1	5	3	362	0	0	41	1	0	0	0	42
0	0	80	6	0	1	0	87	0	0	16	0	0	0	0	16
0	0	88	7	0	2	0	97	0	0	17	1	0	0	0	18
0	0	111	8	2	0	0	121	0	0	20	2	0	0	0	22
0	0	91	7	0	0	0	98	0	0	18	0	0	0	0	18
0	0	370	28	2	3	0	403	0	0	71	3	0	0	0	74
0	0	108	6	0	0	1	115	0	0	12	1	0	0	0	13
0	2	95	7	1	1	0	106	0	0	16	1	0	0	0	17
0	0	69	5	0	0	0	74	0	0	7	0	0	0	0	7
0	0	66	3	0	0	0	69	0	0	13	1	0	0	0	14
0	2	338	21	1	1	1	364	0	0	48	3	0	0	0	51
6	5	3250	331	63	62	17	3734	1	0	365	26	3	0	5	400
C => A								C => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

C => C								C => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	1	1	0	0	1	1	0	0	0	2
0	0	0	0	0	0	1	1	0	0	2	1	0	0	0	3
0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1
0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	1	0	0	0	0	1
0	0	2	1	0	0	1	4	0	0	2	0	0	0	0	2
0	0	3	0	0	0	0	3	0	0	1	0	0	0	0	1
0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	6	0	0	0	0	6	0	0	3	0	0	0	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1	0	0	1	1	0	0	0	2
0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1
0	0	0	3	0	0	0	3	0	0	4	1	0	0	0	5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	3	0	0	0	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1
0	0	1	0	0	0	0	1	0	0	1	1	0	0	0	2
0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1
0	0	2	0	0	0	1	3	0	0	2	0	0	0	0	2
0	0	6	0	0	0	1	7	0	0	3	1	0	0	0	4
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	1
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0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	6	0	0	0	0	6	0	0	8	0	0	0	0	8
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
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0	0	1	0	0	0	0	1	0	0	5	0	0	0	0	5
0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1
0	0	1	1	0	0	0	2	0	0	10	0	0	0	0	10
0	0	29	5	0	0	4	38	0	0	48	4	0	0	0	52
C => C								C => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

D => A								D => B								D => C								D => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	9	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
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0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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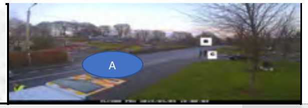
0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	39	4	1	0	0	44	0	0	1	1	0	0	0	2	0	0	46	3	0	0	0	49	0	0	0	0	0	0	0	0
D => A								D => B								D => C								D => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys Ltd

Survey Name : *ITS J285 Site A*
Site: Site A
Date: 05/03/2019(07:00-19:00)
Location: Clane, Co Kildare

Irish Traffic Surveys



Video end on -18:40:38

	A => A								A => B								A => C							
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	0	0	0	0	0	0	0	0	0	0	37	20	5	2	0	64	0	0	0	0	0	0	0	0
07:15	0	0	0	0	0	0	0	0	0	0	42	15	3	8	1	69	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	58	16	6	6	0	86	0	0	1	1	0	0	0	2
07:45	0	0	0	0	0	0	0	0	0	0	59	12	4	2	1	78	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	196	63	18	18	2	297	0	0	1	1	0	0	0	2
08:00	0	0	0	0	0	0	0	0	0	0	62	8	2	1	0	73	0	0	0	0	0	0	0	0
08:15	0	0	0	0	0	0	0	0	0	0	62	18	2	2	0	84	0	0	0	0	1	1	0	2
08:30	0	0	0	0	0	0	0	0	0	0	54	5	3	1	1	64	0	0	2	0	0	0	0	2
08:45	0	0	0	0	0	0	0	0	0	0	59	6	4	3	0	72	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	237	37	11	7	1	293	0	0	2	0	1	1	0	4
09:00	0	0	0	0	0	0	0	0	0	0	66	9	3	2	0	80	0	0	1	0	0	0	0	1
09:15	0	0	0	0	0	0	0	0	0	0	64	13	6	6	0	89	0	0	1	0	1	0	0	2
09:30	0	0	0	0	0	0	0	0	0	0	69	11	3	2	0	85	0	0	0	0	0	0	0	0
09:45	0	0	0	0	0	0	0	0	0	0	57	12	5	2	0	76	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	256	45	17	12	0	330	0	0	2	0	1	0	0	3
10:00	0	0	0	0	0	0	0	0	0	0	63	12	4	4	2	85	0	0	0	0	0	0	0	0
10:15	0	0	0	0	0	0	0	0	0	0	35	11	4	5	1	56	0	0	2	0	0	0	0	2
10:30	0	0	0	0	0	0	0	0	0	0	46	10	6	1	0	63	0	0	0	0	0	0	0	0
10:45	0	0	0	0	0	0	0	0	1	0	51	9	9	2	0	72	0	0	2	0	0	0	0	2
H/TOT	0	0	0	0	0	0	0	0	1	0	195	42	23	12	3	276	0	0	4	0	0	0	0	4
11:00	0	0	0	0	0	0	0	0	0	0	35	11	3	0	0	49	0	0	1	0	0	0	0	1
11:15	0	0	0	0	0	0	0	0	0	0	51	9	3	2	0	65	0	0	0	1	0	0	0	1
11:30	0	0	0	0	0	0	0	0	0	0	50	10	4	3	0	67	0	0	0	0	0	0	0	0
11:45	0	0	0	0	0	0	0	0	0	0	50	12	1	8	0	71	0	0	2	1	0	0	0	3
H/TOT	0	0	0	0	0	0	0	0	0	0	186	42	11	13	0	252	0	0	3	2	0	0	0	5
12:00	0	0	0	0	0	0	0	0	0	0	58	11	1	6	2	78	0	0	1	0	0	0	0	1
12:15	0	0	0	0	0	0	0	0	0	1	40	7	4	2	0	54	0	0	5	0	0	0	0	5
12:30	0	0	0	0	0	0	0	0	0	1	52	7	3	2	0	65	0	0	0	0	0	0	0	0
12:45	0	0	1	0	0	0	0	1	0	0	58	6	4	5	0	73	0	0	1	0	1	0	0	2
H/TOT	0	0	1	0	0	0	0	1	0	2	208	31	12	15	2	270	0	0	7	0	1	0	0	8
13:00	0	0	0	0	0	0	0	0	0	0	60	11	3	5	0	79	0	0	0	0	0	0	0	0
13:15	0	0	0	0	0	0	0	0	0	0	55	11	2	3	2	73	0	0	0	0	0	0	0	0
13:30	0	0	0	0	0	0	0	0	0	0	62	4	3	2	6	77	0	0	3	0	0	0	0	3
13:45	0	0	0	0	0	0	0	0	0	0	52	10	0	3	1	66	0	0	0	0	0	0	0	0
H/TOT	0	0	0	0	0	0	0	0	0	0	229	36	8	13	9	295	0	0	3	0	0	0	0	3
14:00	0	0	0	0	0	0	0	0	0	0	52	11	3	4	0	70	0	0	0	0	0	0	0	0
14:15	0	0	0	0	0	0	0	0	0	0	55	11	2	6	0	74	1	0	0	0	0	0	0	1
14:30	0	0	0	0	0	0	0	0	0	0	43	9	3	2	0	57	0	0	1	0	0	0	0	1
14:45	0	0	0	0	0	0	0	0	0	0	52	13	8	1	0	74	0	0	1	0	0	0	0	1
H/TOT	0	0	0	0	0	0	0	0	0	0	202	44	16	13	0	275	1	0	2	0	0	0	0	3
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15:15	0	0	0	0	0	0	0	0	0	0	56	9	4	3	1	73	0	0	1	0	0	0	0	1
15:30	0	0	0	0	0	0	0	0	0	0	52	10	3	2	1	68	0	0	3	0	0	0	0	3
15:45	0	0	0	0	0	0	0	0	1	0	60	8	1	1	1	72	0	0	1	0	0	0	0	1
H/TOT	0	0	0	0	0	0	0	0	1	0	228	32	9	6	4	280	0	0	9	0	0	0	0	9
16:00	0	0	0	0	0	0	0	0	0	0	54	13	4	4	1	76	0	0	1	2	0	0	0	3
16:15	0	0	0	0	0	0	0	0	0	0	74	14	2	0	0	90	0	0	4	0	0	0	0	4
16:30	0	0	0	0	0	0	0	0	0	0	68	14	1	2	0	85	0	0	0	1	0	0	0	1
16:45	0	0	0	0	0	0	0	0	0	0	64	9	3	0	0	76	0	0	2	0	0	0	0	2
H/TOT	0	0	0	0	0	0	0	0	0	0	260	50	10	6	1	327	0	0	7	3	0	0	0	10
17:00	0	0	0	0	0	0	0	0	0	0	74	13	1	1	0	89	0	0	1	1	1	0	0	3
17:15	0	0	0	0	0	0	0	0	1	0	67	15	2	9	0	94	1	0	1	0	0	0	0	2
17:30	0	0	0	0	0	0	0	0	0	0	77	10	1	0	0	88	0	0	1	1	0	0	0	2
17:45	0	0	0	0	0	0	0	0	0	0	65	12	0	6	0	83	0	0	1	1	0	0	0	2
H/TOT	0	0	0	0	0	0	0	0	1	0	283	50	4	16	0	354	1	0	4	3	1	0	0	9
18:00	0	0	0	0	0	0	0	0	0	0	63	8	1	2	2	76	0	0	2	0	0	0	0	2
18:15	0	0	0	0	0	0	0	0	1	0	62	5	0	7	7	82	0	0	2	0	0	0	0	2
18:30	0	0	0	0	0	0	0	0	0	0	53	3	1	1	0	58	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	0	0	0
H/TOT	0	0	0	0	0	0	0	0	1	0	178	16	2	10	9	216	0	0	4	0	0	0	0	4
12 TOT	0	0	1	0	0	0	0	1	4	2	2658	488	141	141	31	3465	2	0	48	9	4	1	0	64
	A => A								A => B								A => C							
	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

			B => A								B => B								B => C				
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	43	15	1	2	0	61	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
1	0	35	19	2	4	1	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	53	12	2	7	1	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	82	16	0	2	0	100	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
2	0	213	62	5	15	2	299	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
0	0	85	10	6	3	1	105	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	4
0	0	87	9	3	3	3	105	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	90	10	1	5	2	108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	86	13	5	7	0	111	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	348	42	15	18	6	429	0	0	0	0	0	0	0	0	0	0	5	0	0	0	1	6
0	0	57	9	1	0	0	67	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
0	0	64	11	6	4	0	85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	51	7	5	3	1	67	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	47	11	0	2	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	219	38	12	9	1	279	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
0	0	36	13	2	2	0	53	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
0	0	47	12	2	9	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	37	3	5	3	0	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	43	11	3	5	0	63	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
1	0	163	39	12	19	0	234	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
1	0	43	8	2	3	1	58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	36	11	2	5	2	58	0	0	0	0	0	0	0	0	1	0	2	0	0	0	0	3
0	0	42	9	3	5	2	61	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
0	0	70	13	3	1	0	87	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
3	0	191	41	10	14	5	264	0	0	0	0	0	0	0	0	1	0	7	0	0	0	0	8
0	0	63	8	2	3	0	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	56	9	4	3	0	72	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4
0	0	37	8	1	2	0	48	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	50	7	3	6	4	70	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
0	0	206	32	10	14	4	266	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	9
0	0	51	7	10	5	1	74	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
0	0	48	7	2	3	2	62	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	51	12	1	3	0	67	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	71	6	2	1	0	80	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	221	32	15	12	3	283	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
0	0	47	12	3	6	0	68	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	35	8	6	5	0	54	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	62	6	8	6	0	82	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	40	4	3	2	0	49	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	184	30	20	19	0	253	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4
0	0	64	6	1	2	0	73	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
0	0	48	11	5	1	0	65	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
0	0	59	14	4	5	1	83	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	59	9	6	6	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	230	40	16	14	1	301	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	7
0	0	60	13	5	7	1	86	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
0	0	54	11	1	2	0	68	0	0	0	0	0	0	0	0	1	0	4	0	0	0	0	5
0	0	60	12	3	0	1	76	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
0	0	60	10	4	2	0	76	0	0	0	0	0	0	0	0	0	0	2	1	0	0	0	3
0	0	234	46	13	11	2	306	0	0	0	0	0	0	0	0	1	0	8	3	0	0	0	12
0	1	65	16	1	3	0	86	0	0	0	0	0	0	0	0	0	0	4	3	0	0	0	7
0	0	79	14	0	1	0	94	0	0	0	0	0	0	0	0	2	0	3	0	0	0	0	5
0	0	84	12	3	1	1	101	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	5
0	0	76	14	1	1	1	93	0	0	0	0	0	0	0	0	1	0	3	1	0	0	0	5
0	1	304	56	5	6	2	374	0	0	0	0	0	0	0	0	3	0	13	6	0	0	0	22
0	0	84	13	1	1	3	102	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
0	0	92	12	1	4	1	110	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6
0	0	41	10	0	1	0	52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	217	35	2	6	4	264	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	10
6	1	2730	493	135	157	30	3552	0	0	0	0	0	0	0	0	5	0	74	12	0	0	1	92
			B => A								B => B								B => C				
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

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C => A								C => B								C => C							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	1	0	1	2	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	2	0	0	0	0	5	0	0	3	2	0	0	0	5	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	9	0	1	2	0	15	0	0	5	2	0	0	0	7	0	0	0	0	0	0	0	0
0	0	2	0	1	0	0	3	0	0	8	1	0	0	1	10	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	1	0	6	0	0	0	0	7	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	7	0	1	0	0	8	1	0	21	1	0	0	1	24	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	9	0	0	0	0	9	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	2	0	1	0	0	3	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	2	0	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0
0	0	3	1	1	0	0	5	0	0	6	1	0	0	0	7	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	3	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0
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0	0	3	0	0	0	0	3	1	1	5	3	0	0	0	10	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	1	0	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	6	0	0	1	0	7	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	2	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	5	2	0	0	0	7	0	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
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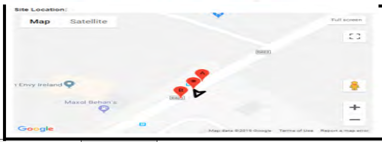
0	0	3	0	0	0	0	3	0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	2	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1	0	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	0	2	0	0	0	2	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	1	4	0	0	0	5	0	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	2	2	0	0	0	4	0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	4	1	0	0	0	5	0	0	4	2	0	0	0	6	0	0	0	0	0	0	0	0
0	0	3	1	0	0	0	4	0	0	2	2	0	0	0	4	0	0	0	0	0	0	0	0
0	0	2	1	0	0	0	3	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	2	1	0	0	0	3	0	0	5	0	0	0	0	5	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	8	3	0	0	0	11	0	0	8	2	0	0	0	10	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	1	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0
3	0	58	11	3	3	0	78	3	1	86	12	0	0	1	103	0	0	0	0	0	0	0	0
C => A								C => B								C => C							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys Ltd

Survey Name : *ITS J285 Site B*
Site: Site B
Date: 05/03/2019(07:00-19:00)
Location: Clane, Co.Kildare

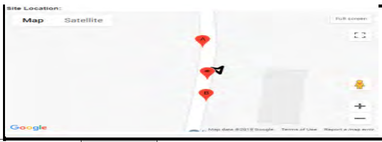


	A => B								B => A							
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	0	0	48	7	3	2	0	60	0	2	163	32	6	2	2	207
07:15	0	0	38	6	3	1	0	48	0	0	162	30	5	4	1	202
07:30	0	0	52	4	2	0	3	61	0	2	182	31	3	2	2	222
07:45	0	0	58	11	1	2	0	72	0	0	171	25	2	4	1	203
H/TOT	0	0	196	28	9	5	3	241	0	4	678	118	16	12	6	834
08:00	0	0	64	5	4	4	0	77	1	0	171	20	4	0	1	197
08:15	0	1	66	9	4	4	1	85	1	1	174	15	1	2	0	194
08:30	0	0	58	4	0	3	0	65	1	0	145	20	2	2	2	172
08:45	0	0	66	8	2	2	0	78	0	0	135	14	0	3	2	154
H/TOT	0	1	254	26	10	13	1	305	3	1	625	69	7	7	5	717
09:00	0	0	61	9	0	2	0	72	0	0	127	16	1	1	0	145
09:15	0	0	90	7	1	1	2	101	0	0	119	8	1	4	1	133
09:30	0	0	72	4	1	2	0	79	0	0	89	7	2	0	1	99
09:45	0	0	62	9	2	3	1	77	0	0	86	12	4	2	0	104
H/TOT	0	0	285	29	4	8	3	329	0	0	421	43	8	7	2	481
10:00	0	0	65	6	6	2	0	79	0	0	71	11	2	3	0	87
10:15	0	0	53	13	6	2	1	75	0	0	91	15	2	4	4	116
10:30	0	0	71	11	5	2	1	90	0	0	75	16	4	1	1	97
10:45	0	0	83	11	2	2	0	98	0	1	70	11	3	4	0	89
H/TOT	0	0	272	41	19	8	2	342	0	1	307	53	11	12	5	389
11:00	0	0	60	10	1	1	0	72	0	0	73	9	4	1	0	87
11:15	1	0	58	9	1	3	2	74	0	2	74	11	2	1	0	90
11:30	0	0	71	10	3	4	2	90	0	1	94	6	4	5	1	111
11:45	0	0	72	9	3	1	1	86	0	0	70	16	2	2	0	90
H/TOT	1	0	261	38	8	9	5	322	0	3	311	42	12	9	1	378
12:00	0	0	60	10	3	3	0	76	0	0	93	5	2	4	1	105
12:15	0	0	76	10	4	1	1	92	0	0	80	7	2	3	2	94
12:30	1	1	94	10	3	1	0	110	1	0	73	8	2	1	1	86
12:45	0	0	73	8	2	3	2	88	0	0	93	8	2	3	0	106
H/TOT	1	1	303	38	12	8	3	366	1	0	339	28	8	11	4	391
13:00	0	0	78	13	3	4	4	102	0	0	88	6	4	2	0	100
13:15	0	1	98	15	0	2	1	117	0	0	77	15	2	1	1	96
13:30	0	0	95	6	3	2	1	107	0	0	79	5	5	2	6	97
13:45	0	0	83	9	1	2	1	96	1	0	74	8	2	3	2	90
H/TOT	0	1	354	43	7	10	7	422	1	0	318	34	13	8	9	383
14:00	1	0	62	10	3	3	0	79	0	0	77	16	1	3	0	97
14:15	0	1	95	11	3	3	2	115	0	0	77	6	1	4	1	89
14:30	0	0	97	8	1	2	0	108	0	0	64	15	1	3	1	84
14:45	0	0	73	11	4	2	1	91	0	0	89	11	3	1	0	104
H/TOT	1	1	327	40	11	10	3	393	0	0	307	48	6	11	2	374
15:00	0	0	117	14	6	3	1	141	1	0	79	4	4	0	0	88
15:15	1	0	118	25	11	4	1	160	0	1	75	6	3	1	2	88
15:30	0	0	117	18	4	0	0	139	0	1	72	9	4	0	0	86
15:45	0	0	112	17	5	1	2	137	0	0	98	11	2	2	2	115
H/TOT	1	0	464	74	26	8	4	577	1	2	324	30	13	3	4	377
16:00	0	0	129	30	2	1	0	162	0	0	71	11	2	1	0	85
16:15	0	0	143	23	4	1	0	171	0	0	89	14	1	2	0	106
16:30	0	0	170	29	2	1	1	203	1	0	96	8	1	1	4	111
16:45	1	1	183	31	6	0	0	222	0	0	73	10	1	1	1	86
H/TOT	1	1	625	113	14	3	1	758	1	0	329	43	5	5	5	388
17:00	0	2	177	25	4	1	1	210	0	0	104	12	1	1	0	118
17:15	0	0	196	33	1	1	0	231	1	0	89	7	0	2	1	100
17:30	1	1	203	18	1	2	1	227	1	0	104	9	1	0	0	115
17:45	1	0	180	28	2	1	1	213	0	0	77	6	0	0	0	83
H/TOT	2	3	756	104	8	5	3	881	2	0	374	34	2	3	1	416
18:00	0	1	175	18	0	1	4	199	0	0	66	11	0	0	0	77
18:15	0	0	176	23	2	0	0	201	0	0	84	4	0	1	4	93
18:30	0	0	171	11	0	1	2	185	0	1	85	6	0	0	1	93
18:45	0	1	130	8	4	0	1	144	1	0	66	8	0	1	0	76
H/TOT	0	2	652	60	6	2	7	729	1	1	301	29	0	2	5	339
12 TOT	7	10	4749	634	134	89	42	5665	10	12	4634	571	101	90	49	5467
	A => B								B => A							
	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys Ltd

Survey Name : *ITS J285 Site C*
Site: Site C
Date: 05/03/2019(07:00-19:00)
Location: Clane, Co. Kildare

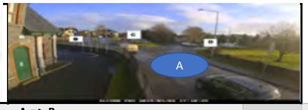
Irish Traffic Surveys



	A => B								B => A							
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	0	0	44	6	2	0	0	52	0	0	68	14	3	0	0	85
07:15	0	0	38	7	1	0	1	47	0	0	101	16	2	2	3	124
07:30	0	0	58	3	1	1	1	64	0	0	85	10	2	2	0	99
07:45	0	0	63	10	1	1	0	75	0	0	106	11	2	1	0	120
H/TOT	0	0	203	26	5	2	2	238	0	0	360	51	9	5	3	428
08:00	0	0	78	7	1	1	1	88	0	0	99	8	0	0	1	108
08:15	0	0	86	7	0	1	0	94	1	0	115	12	2	2	1	133
08:30	1	0	97	9	1	5	0	113	0	0	113	10	1	2	0	126
08:45	0	0	84	9	1	0	0	94	0	0	102	17	2	3	1	125
H/TOT	1	0	345	32	3	7	1	389	1	0	429	47	5	7	3	492
09:00	0	0	53	4	2	1	1	61	0	0	105	6	0	3	0	114
09:15	0	0	78	9	1	1	0	89	0	0	83	4	1	1	0	89
09:30	0	0	63	3	1	1	0	68	0	0	54	6	1	1	0	62
09:45	0	0	55	9	0	2	0	66	0	0	48	9	3	1	1	62
H/TOT	0	0	249	25	4	5	1	284	0	0	290	25	5	6	1	327
10:00	0	0	52	3	3	0	0	58	0	0	60	4	2	2	0	68
10:15	0	0	52	6	4	3	0	65	0	0	68	10	3	2	0	83
10:30	0	0	56	6	3	1	0	66	0	1	60	8	4	1	0	74
10:45	0	0	60	5	6	1	0	72	0	0	40	4	4	2	1	51
H/TOT	0	0	220	20	16	5	0	261	0	1	228	26	13	7	1	276
11:00	0	0	64	4	0	0	0	68	1	0	49	1	1	0	0	52
11:15	0	0	63	9	1	1	0	74	0	0	64	7	1	2	0	74
11:30	0	0	56	7	1	2	0	66	0	0	61	7	3	3	0	74
11:45	0	0	56	5	1	2	0	64	0	0	56	12	0	0	1	69
H/TOT	0	0	239	25	3	5	0	272	1	0	230	27	5	5	1	269
12:00	0	0	59	13	1	3	0	76	0	0	78	4	0	4	0	86
12:15	0	0	45	6	2	3	0	56	1	0	55	7	2	1	0	66
12:30	0	0	65	4	3	0	0	72	0	0	56	8	2	0	0	66
12:45	0	1	39	5	2	1	0	48	0	0	76	3	0	1	0	80
H/TOT	0	1	208	28	8	7	0	252	1	0	265	22	4	6	0	298
13:00	0	0	65	6	5	3	0	79	2	0	64	7	2	3	1	79
13:15	0	0	62	11	1	3	0	77	0	0	54	11	2	2	0	69
13:30	0	0	88	5	1	1	0	95	0	0	58	10	3	2	0	73
13:45	0	0	62	8	1	1	0	72	0	0	56	5	0	0	2	63
H/TOT	0	0	277	30	8	8	0	323	2	0	232	33	7	7	3	284
14:00	0	0	67	15	0	1	0	83	0	0	49	6	1	0	1	57
14:15	0	1	73	13	2	2	0	91	0	0	51	7	4	1	0	63
14:30	0	0	64	7	0	2	0	73	0	0	63	10	4	1	0	78
14:45	0	0	65	15	3	0	1	84	0	0	60	3	4	1	0	68
H/TOT	0	1	269	50	5	5	1	331	0	0	223	26	13	3	1	266
15:00	0	0	72	7	4	2	1	86	0	0	73	3	0	0	1	77
15:15	1	0	97	18	6	2	2	126	0	1	69	5	2	0	0	77
15:30	0	0	86	9	3	1	0	99	0	0	65	11	2	1	0	79
15:45	0	0	85	8	0	2	0	95	1	0	74	4	0	1	1	81
H/TOT	1	0	340	42	13	7	3	406	1	1	281	23	4	2	2	314
16:00	0	0	84	17	4	1	0	106	0	0	89	10	1	1	0	101
16:15	0	0	98	15	0	0	0	113	1	0	85	11	0	3	0	100
16:30	0	0	122	24	1	1	0	148	1	0	76	8	0	0	2	87
16:45	0	0	142	19	6	1	0	168	0	1	85	8	0	1	1	96
H/TOT	0	0	446	75	11	3	0	535	2	1	335	37	1	5	3	384
17:00	0	0	127	22	1	0	0	150	0	0	86	7	0	1	0	94
17:15	0	0	142	21	2	3	0	168	0	0	102	10	0	2	0	114
17:30	1	0	163	20	2	0	0	186	0	0	111	9	2	0	0	122
17:45	2	0	140	19	2	2	0	165	0	0	95	9	0	0	0	104
H/TOT	3	0	572	82	7	5	0	669	0	0	394	35	2	3	0	434
18:00	0	1	134	9	0	0	1	145	1	0	111	5	0	0	0	117
18:15	0	1	140	12	1	0	1	155	0	1	99	6	2	1	1	110
18:30	0	0	115	10	0	2	0	127	0	0	72	8	0	0	0	80
18:45	0	0	104	6	3	0	0	113	0	0	63	3	0	0	0	66
H/TOT	0	2	493	37	4	2	2	540	1	1	345	22	2	1	1	373
12 TOT	5	4	3861	472	87	61	10	4500	9	4	3612	374	70	57	19	4145
	A => B								B => A							
	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys Ltd

Survey Name : *ITS J285 Site D*
Site: Site D
Date: 05/03/2019(07:00-19:00)
Location: Clane, Co Kildare



	A => A								A => B								A => C								A => D							
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	0	0	0	0	0	0	0	0	0	0	7	2	1	1	0	11	0	0	44	19	3	1	0	67	0	0	1	0	0	0	0	1
07:15	0	0	1	0	0	0	0	1	0	0	9	2	0	1	0	12	0	0	57	14	4	6	1	82	0	0	0	0	0	0	0	0
07:30	0	0	0	0	0	0	0	0	0	0	10	4	0	0	0	14	0	0	74	12	2	5	1	94	0	0	0	0	0	0	0	0
07:45	0	0	0	0	0	1	0	1	0	0	14	4	1	0	0	19	0	1	54	10	3	2	2	72	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	1	0	2	0	0	40	12	2	2	0	56	0	1	229	55	12	14	4	315	0	0	1	0	0	0	0	1
08:00	0	0	0	0	0	0	0	0	0	0	16	2	0	0	1	19	0	0	58	5	2	1	1	67	0	0	2	0	0	0	0	2
08:15	0	0	0	0	0	0	0	0	0	0	13	0	0	0	1	14	0	0	33	6	1	1	0	41	0	0	3	1	0	0	0	4
08:30	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	18	0	0	44	1	1	2	0	48	0	0	1	0	0	0	0	1
08:45	0	0	1	0	0	0	0	1	0	0	20	2	0	2	0	24	0	0	29	1	2	0	0	32	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	0	1	0	0	67	4	0	2	2	75	0	0	164	13	6	4	1	188	0	0	6	1	0	0	0	7
09:00	0	0	0	0	0	0	0	0	0	0	43	3	0	1	1	48	0	0	35	3	1	5	0	44	0	0	0	0	0	0	0	0
09:15	0	0	0	0	0	0	0	0	0	0	29	2	0	0	0	31	0	0	39	8	1	2	0	50	0	0	3	0	0	0	0	3
09:30	0	0	2	0	0	0	0	2	1	0	25	1	1	0	0	28	0	0	49	6	3	3	2	63	0	0	1	1	0	0	0	2
09:45	0	0	1	0	0	0	0	1	0	0	20	0	1	0	0	21	0	0	45	4	4	2	2	57	0	0	0	0	0	0	0	0
H/TOT	0	0	3	0	0	0	0	3	1	0	117	6	2	1	1	128	0	0	168	21	9	12	4	214	0	0	4	1	0	0	0	5
10:00	0	0	0	0	0	0	0	0	0	0	22	2	1	0	0	25	0	0	37	5	5	2	0	49	0	0	1	0	1	0	0	2
10:15	0	0	1	0	1	0	0	2	0	0	26	2	0	0	0	28	0	0	35	5	2	1	1	44	0	0	0	1	0	0	0	1
10:30	0	0	1	1	0	0	0	2	0	0	17	3	0	0	0	20	0	0	34	3	4	2	0	43	0	0	1	0	0	0	0	1
10:45	0	0	1	0	0	0	0	1	0	0	30	0	2	0	0	32	0	0	33	6	5	2	1	47	0	0	1	0	0	0	0	1
H/TOT	0	0	3	1	1	0	0	5	0	0	95	7	3	0	0	105	0	0	139	19	16	7	2	183	0	0	3	1	1	0	0	5
11:00	0	0	0	0	0	0	0	0	0	0	32	2	1	0	0	35	0	0	33	10	1	0	0	44	0	0	1	0	0	0	0	1
11:15	0	0	0	0	0	0	0	0	0	0	30	3	0	0	0	33	0	0	29	6	3	3	0	41	0	0	1	1	0	0	0	2
11:30	0	0	0	0	1	0	0	1	0	0	23	1	2	0	0	26	0	0	35	6	1	0	0	42	0	0	2	0	0	0	0	2
11:45	0	0	1	0	0	0	1	2	0	0	27	1	1	0	0	29	0	0	27	5	3	8	0	43	0	0	1	0	0	0	0	1
H/TOT	0	0	1	0	1	0	1	3	0	0	112	7	4	0	0	123	0	0	124	27	8	11	0	170	0	0	5	1	0	0	0	6
12:00	0	0	1	0	0	0	0	1	0	0	24	4	1	0	0	29	0	0	42	2	2	1	1	48	0	0	1	0	0	0	0	1
12:15	0	0	0	1	0	0	0	1	1	0	25	2	0	0	0	28	0	0	33	4	2	0	1	40	0	0	1	0	0	0	0	1
12:30	0	0	0	0	0	0	0	0	0	0	15	2	1	0	0	18	0	0	43	3	4	0	0	50	0	0	1	0	1	0	0	2
12:45	0	0	1	0	1	0	0	2	0	0	15	1	0	1	0	17	0	0	31	4	1	5	0	41	0	0	1	0	0	0	0	1
H/TOT	0	0	2	1	1	0	0	4	1	0	79	9	2	1	0	92	0	0	149	13	9	6	2	179	0	0	4	0	1	0	0	5
13:00	0	0	0	0	1	0	0	1	0	0	28	6	0	1	0	35	0	0	41	7	0	1	1	50	0	0	1	0	0	0	0	1
13:15	0	0	0	1	0	0	0	1	1	0	19	4	0	0	1	25	0	0	25	4	1	3	1	34	0	0	1	0	0	0	0	1
13:30	0	0	0	0	0	0	0	0	0	0	22	3	1	0	0	26	0	0	51	8	0	2	0	61	0	0	2	0	0	0	0	2
13:45	0	0	0	0	0	0	0	0	0	0	36	0	0	0	2	38	1	0	35	4	1	2	0	43	0	0	0	0	0	0	0	0
H/TOT	0	0	0	1	1	0	0	2	1	0	105	13	1	1	3	124	1	0	152	23	2	8	2	188	0	0	4	0	0	0	0	4
14:00	0	0	1	0	0	0	0	1	0	0	17	0	0	0	0	17	0	0	36	3	1	2	2	44	0	0	2	0	0	0	0	2
14:15	0	0	0	0	0	0	0	0	0	0	14	3	1	1	0	19	0	1	30	5	2	5	1	44	0	0	3	0	0	0	0	3
14:30	0	0	1	0	0	0	0	1	0	0	18	1	2	0	0	21	0	0	27	3	2	2	0	34	0	0	0	0	0	0	0	0
14:45	0	0	1	0	0	0	0	1	0	0	34	0	1	0	0	35	1	0	37	6	7	1	0	52	0	0	5	0	0	0	0	5
H/TOT	0	0	3	0	0	0	0	3	0	0	83	4	4	1	0	92	1	1	130	17	12	10	3	174	0	0	10	0	0	0	0	10
15:00	0	0	2	0	0	0	0	2	0	0	28	3	3	0	0	34	0	0	26	6	2	0	0	34	0	0	1	0	0	0	0	1
15:15	0	0	1	0	0	0	0	1	0	0	29	3	0	0	0	32	0	0	16	2	1	0	1	20	0	0	3	0	1	0	0	4
15:30	0	0	0	0	0	0	0	0	0	0	24	1	0	0	0	25	0	0	32	5	1	2	1	41	0	0	1	0	0	0	0	1
15:45	0	0	1	0	0	0	0	1	0	0	32	5	0	0	0	37	0	0	19	8	5	0	0	32	0	0	4	0	0	0	0	4
H/TOT	0	0	4	0	0	0	0	4	0	0	113	12	3	0	0	128	0	0	93	21	9	2	2	127	0	0	9	0	1	0	0	10
16:00	0	0	0	0	0	0	0	0	0	0	28	3	0	0	0	31	0	0	40	8	1	4	1	54	0	0	4	0	0	0	0	4
16:15	0	0	1	0	0	0	0	1	0	0	27	2	0	0	0	29	0	0	32	5	1	1	0	39	0	0	5	0	0	0	0	5
16:30	0	0	0	0	0	0	0	0	0	0	28	3	0	0	0	31	0	0	23	4	2	0	0	29	0	0	6	0	0	0	0	6
16:45	0	0	0	0	0	0	0	0	0	0	19	2	0	0	0	21	0	0	26	7	2	0	0	35	0	0	0	0	0	0	0	0
H/TOT	0	0	1	0	0	0	0	1	0	0	102	10	0	0	0	112	0	0	121	24	6	5	1	157	0	0	15	0	0	0	0	15
17:00	0	0	2	0	0	0	0	2	0	0	26	4	0	0	0	30	0	0	27	3	0	2	1	33	0	0	5	0	0	0	0	5
17:15	0	0	0	0	0	0	0	0	0	0	41	4	0	0	0	45	0	0	22	4	1	3	0	30	0	0	6	0	0	0	0	6
17:30	0	0	0	0	0	0	0	0	0	0	36	1	1	0	0	38	0	0	22	4	1	3	0	30	0	0	3	0	0	0	0	3
17:45	0	0	0	0	0	0	0	0	0	0	28	2	0	0	0	30	0	0	18	3	0	2	0	23	0	0	5	0	0	0	0	5
H/TOT	0	0	2	0	0	0	0	2	0	0	131	11	1	0	0	143	0	0	89	14	2	10	1	116	0	0	19	0	0	0	0	19
18:00	0	0	0	0	0	0	0	0	0	0	36	2	0	0	0	38	0	0	21	2	1	4	0	28	0	0	2	1	0	0	0	3
18:15	0	0	2	0	0	0	0	2	0	0	35	3	0	0	0	38	0	0	16	0	0	5	3	24	0	0	0	0	0	0	0	0
18:30	0	0	0	0	0	0	0	0	0	0	20	1	0	0	0	21	0	0	23	1	0	1	1	26	0	0	2	0	0	0	0	2
18:45	0	0	0	0	0	0	0	0	0	0	28	1	0	0	0	29	0	0	26	1	1	1	0	29	0	0	2	0	0	0	0	2
H/TOT	0	0	2	0	0	0	0	2	0	0	119	7	0	0	0	126	0	0	86	4	2	11	4	107	0	0	6	1	0	0	0	7
12 TOT	0	0	23	3	4	1	1	32	3	0	1163	102	22	8	6	1304	2	2	1644	251	93	100	26	2118	0	0	86	5	3	0	0	94
	A => A								A => B								A => C								A => D							
	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys

B => A								B => B								B => C								B => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	45	6	1	1	0	53	0	0	5	1	0	0	0	6
0	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0	0	0	46	6	2	0	0	54	0	0	5	1	0	0	0	6
0	0	11	3	0	0	0	14	0	0	0	0	0	0	0	0	0	0	52	4	1	1	1	59	0	0	11	1	0	0	0	12
0	0	15	3	0	0	0	18	0	0	1	0	0	0	0	1	0	0	51	6	0	1	1	59	0	0	18	2	0	0	0	20
0	0	32	7	0	0	0	39	0	0	1	0	0	0	0	1	0	0	194	22	4	3	2	225	0	0	39	5	0	0	0	44
0	0	13	0	1	0	0	14	0	0	0	0	0	0	0	0	0	1	46	4	0	1	0	52	0	0	32	0	0	0	0	32
0	0	44	1	0	0	0	45	0	0	0	0	0	0	0	0	0	0	48	2	1	1	1	53	0	0	18	4	0	0	0	22
0	0	54	1	0	0	0	55	0	0	0	0	0	0	0	0	0	0	61	6	0	1	1	69	0	0	34	0	1	0	1	36
0	0	18	1	0	0	0	19	0	0	0	0	0	0	0	0	0	0	47	7	1	0	0	55	0	0	20	3	0	0	0	23
0	0	129	3	1	0	0	133	0	0	0	0	0	0	0	0	0	1	202	19	2	3	2	229	0	0	104	7	1	0	1	113
0	0	10	0	0	0	1	11	0	0	0	0	0	0	0	0	0	0	32	3	2	1	0	38	0	0	10	1	0	0	0	11
0	0	15	1	0	0	0	16	0	0	0	0	0	0	0	0	0	0	47	10	1	1	0	59	0	0	6	0	0	0	0	6
0	0	15	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	38	3	1	1	1	44	0	0	11	1	0	0	0	12
0	0	18	1	0	0	0	19	0	0	0	0	0	0	0	0	0	0	41	4	0	2	0	47	0	0	7	1	0	0	0	8
0	0	58	2	0	0	1	61	0	0	0	0	0	0	0	0	0	0	158	20	4	5	1	188	0	0	34	3	0	0	0	37
1	0	15	0	2	0	0	18	0	0	0	0	0	0	0	0	0	0	34	4	1	0	0	39	0	0	8	1	1	0	0	10
0	0	9	0	1	0	0	10	0	0	0	0	0	0	0	0	0	0	42	8	1	3	0	54	0	0	3	1	0	0	0	4
0	0	18	1	1	0	0	20	0	0	0	0	0	0	0	0	0	0	39	4	2	1	0	46	0	0	5	0	0	0	0	5
0	0	21	1	0	0	0	22	0	0	1	0	0	0	0	1	0	0	37	3	3	1	0	44	0	0	11	0	0	0	0	11
1	0	63	2	4	0	0	70	0	0	1	0	0	0	0	1	0	0	152	19	7	5	0	183	0	0	27	2	1	0	0	30
0	0	21	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	30	6	0	0	0	36	0	0	4	1	0	0	0	5
0	0	26	1	0	0	0	27	0	0	0	0	0	0	0	0	0	0	33	7	1	1	0	42	0	0	14	0	0	0	0	14
0	0	25	3	0	0	0	28	0	0	0	0	0	0	0	0	0	0	29	2	2	2	0	35	0	0	9	0	0	0	0	9
0	0	29	3	0	1	0	33	0	0	0	0	0	0	0	0	0	0	33	3	1	1	0	38	0	0	5	0	0	0	0	5
0	0	101	7	0	1	0	109	0	0	0	0	0	0	0	0	0	0	125	18	4	4	0	151	0	0	32	1	0	0	0	33
0	0	19	2	0	0	0	21	0	0	0	0	0	0	0	0	0	0	30	5	0	2	0	37	0	0	9	6	0	0	0	15
0	0	16	0	1	0	0	17	0	0	0	0	0	0	0	0	0	0	28	4	1	3	0	36	0	0	6	3	0	0	0	9
0	0	21	2	1	0	0	24	0	0	0	0	0	0	0	0	0	0	38	5	2	0	0	45	0	0	7	1	0	0	0	8
0	0	17	0	1	0	0	18	0	0	0	0	0	0	0	0	0	0	27	2	1	1	0	31	0	0	5	1	0	0	0	6
0	0	73	4	3	0	0	80	0	0	0	0	0	0	0	0	0	0	123	16	4	6	0	149	0	0	27	11	0	0	0	38
1	0	23	1	0	0	0	25	0	0	0	0	0	0	0	0	0	0	39	6	5	3	0	53	0	0	13	1	0	0	0	14
0	0	30	3	0	0	0	33	0	0	0	0	0	0	0	0	0	0	35	9	1	3	0	48	0	0	15	1	0	0	1	17
0	0	18	0	0	0	0	18	0	0	1	0	0	0	0	1	0	0	31	2	1	1	0	35	0	0	10	1	0	0	0	11
0	0	18	1	1	0	0	20	0	0	0	0	0	0	0	0	0	0	40	5	1	1	0	47	0	0	10	2	0	0	0	12
1	0	89	5	1	0	0	96	0	0	1	0	0	0	0	1	0	0	145	22	8	8	0	183	0	0	48	5	0	0	1	54
0	0	24	1	0	0	0	25	0	0	1	0	0	0	0	1	0	1	44	11	0	1	0	57	0	0	13	3	0	0	0	16
0	0	28	1	0	0	1	30	0	0	0	0	0	0	0	0	0	0	36	3	2	2	0	43	0	0	19	8	0	0	0	27
0	0	22	0	0	0	0	22	0	0	0	0	0	0	0	0	0	0	31	8	1	0	0	40	0	0	7	1	0	0	0	8
0	0	25	1	1	0	0	27	0	0	0	0	0	0	0	0	0	0	26	7	3	0	2	38	0	0	11	6	0	0	0	17
0	0	99	3	1	0	1	104	0	0	1	0	0	0	0	1	0	1	137	29	6	3	2	178	0	0	50	18	0	0	0	68
0	0	15	2	1	0	2	20	0	0	0	0	0	0	0	0	0	0	41	3	3	2	1	50	0	0	12	1	0	0	0	13
1	0	25	9	2	0	0	37	0	0	0	0	0	0	0	0	0	0	50	8	4	2	0	64	1	0	17	4	0	0	0	22
0	0	22	0	2	0	0	24	0	0	0	0	0	0	0	0	0	0	47	6	1	1	1	56	0	0	16	4	0	0	0	20
0	0	27	0	2	0	0	29	0	0	0	0	0	0	0	0	0	0	48	5	0	2	0	55	0	0	14	2	0	0	0	16
1	0	89	11	7	0	2	110	0	0	0	0	0	0	0	0	0	0	186	22	8	7	2	225	1	0	59	11	0	0	0	71
0	0	26	1	1	0	0	28	0	0	1	0	0	0	0	1	0	0	33	8	3	2	0	46	0	0	14	7	0	0	0	21
0	0	27	2	0	0	0	29	0	0	0	0	0	0	0	0	0	0	52	9	0	0	0	61	0	0	29	3	0	0	0	32
0	0	27	3	0	0	0	30	0	0	0	0	0	0	0	0	0	0	50	13	0	1	0	64	0	0	41	8	1	0	0	50
0	0	36	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0	68	7	5	1	0	81	0	0	45	9	0	0	0	54
0	0	116	6	1	0	0	123	0	0	1	0	0	0	0	1	0	0	203	37	8	4	0	252	0	0	129	27	1	0	0	157
0	0	32	0	1	0	0	33	0	0	0	0	0	0	0	0	0	0	49	3	1	0	0	53	0	0	46	16	0	0	0	62
0	0	36	5	1	0	0	42	0	0	0	0	0	0	0	0	1	0	50	4	1	3	0	59	0	0	44	10	0	0	0	54
0	0	37	2	0	0	0	39	0	0	1	0	0	0	0	1	0	0	48	8	2	0	0	58	1	0	56	6	0	0	0	63
0	0	47	3	1	0	0	51	0	0	0	0	0	0	0	0	0	0	41	3	1	2	0	47	0	0	57	10	0	0	0	67
0	0	152	10	3	0	0	165	0	0	1	0	0	0	0	1	1	0	188	18	5	5	0	217	1	0	203	42	0	0	0	246
0	0	23	2	0	0	0	25	0	0	2	1	0	0	0	3	0	1	47	4	0	0	1	53	0	0	54	4	0	0	0	58
0	0	23	1	0	0	0	24	0	0	1	0	0	0	0	1	0	0	47	3	0	0	1	51	0	0	45	9	1	0	0	55
0	0	29	1	0	0	0	30	0	0	1	0	0	0	0	1	0	0	48	3	0	2	0	53	0	0	35	5	0	0	0	40
0	0	17	1	0	0	0	18	0	0	1	0	0	0	0	1	0	0	49	2	1	0	0	52	0	0	22	3	1	0	0	26
0	0	92	5	0	0	0	97	0	0	5	1	0	0	0	6	0	1	191	12	1	2	2	209	0	0	156	21	2	0	0	179
3	0	1093	65	21	1	4	1187	0	0	11	1	0	0	0	12	1	3	2004	254	61	55	11	2389	2	0	908	153	5	0	2	1070
B => A								B => B								B => C								B => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys

C => A								C => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
1	0	21	10	0	2	0	34	1	0	37	7	0	2	0	47
0	0	32	8	2	5	1	48	0	0	54	6	1	1	2	64
0	0	43	6	3	6	0	58	0	0	36	3	1	1	0	41
0	1	41	4	0	2	1	49	0	0	46	3	0	1	1	51
1	1	137	28	5	15	2	189	1	0	173	19	2	5	3	203
0	0	33	5	2	4	2	46	0	0	43	2	1	1	0	47
0	0	59	1	2	2	2	66	1	0	62	6	2	4	1	76
0	0	27	1	0	5	0	33	0	0	41	6	0	2	0	49
0	0	26	5	1	4	0	36	0	0	49	8	1	1	0	59
0	0	145	12	5	15	4	181	1	0	195	22	4	8	1	231
0	0	24	7	0	2	0	33	0	0	29	2	0	1	0	32
0	0	22	4	2	0	2	30	0	0	32	1	2	2	0	37
0	0	35	7	4	3	0	49	0	0	30	5	0	0	1	36
0	0	33	5	1	2	0	41	0	0	24	3	4	1	0	32
0	0	114	23	7	7	2	153	0	0	115	11	6	4	1	137
1	1	25	2	2	1	0	32	0	0	30	2	2	3	0	37
0	0	21	5	2	6	0	34	0	0	22	5	1	1	0	29
0	0	21	4	4	3	1	33	0	1	32	8	2	1	0	44
0	0	41	7	3	5	0	56	0	0	31	1	0	2	1	35
1	1	108	18	11	15	1	155	0	1	115	16	5	7	1	145
0	0	34	6	0	3	1	44	0	0	22	1	0	0	0	23
0	0	30	7	0	3	2	42	0	0	29	6	0	2	0	37
0	0	38	3	1	3	0	45	0	0	27	2	1	3	0	33
0	0	39	9	3	1	0	52	0	0	31	7	0	0	1	39
0	0	141	25	4	10	3	183	0	0	109	16	1	5	1	132
0	0	32	3	3	2	0	40	0	0	38	1	2	2	0	43
0	0	49	8	0	3	0	60	0	0	28	4	0	1	0	33
0	0	31	6	1	2	0	40	0	0	38	5	0	1	0	44
0	0	38	6	5	5	0	54	0	0	33	1	0	0	0	34
0	0	150	23	9	12	0	194	0	0	137	11	2	4	0	154
0	0	42	2	6	4	0	54	0	0	25	4	3	2	1	35
0	0	32	4	2	2	2	42	0	0	33	4	0	1	0	38
0	0	42	5	2	2	0	51	0	0	39	3	4	2	0	48
1	0	46	4	1	2	1	55	0	0	30	2	0	0	0	32
1	0	162	15	11	10	3	202	0	0	127	13	7	5	1	153
0	0	49	6	2	3	1	61	0	0	22	3	1	0	1	27
0	0	40	7	4	3	1	55	0	0	28	1	1	1	0	31
0	0	41	2	4	4	0	51	0	0	29	7	1	1	0	38
0	0	33	8	1	1	0	43	0	0	34	0	3	1	1	39
0	0	163	23	11	11	2	210	0	0	113	11	6	3	2	135
0	0	40	7	1	2	0	50	0	1	31	2	0	0	1	35
1	0	26	7	2	3	1	40	0	0	36	3	0	0	0	39
0	0	48	5	2	6	1	62	0	0	32	10	0	1	1	44
0	0	41	3	1	6	0	51	0	0	37	2	1	1	1	42
1	0	155	22	6	17	2	203	0	1	136	17	1	2	3	160
0	0	40	7	6	3	0	56	0	0	43	5	1	1	0	50
0	0	43	9	3	1	0	56	0	0	49	4	0	2	0	55
0	1	60	9	3	1	0	74	0	0	54	4	0	0	2	60
0	0	58	9	3	1	0	71	0	1	50	10	0	1	1	63
0	1	201	34	15	6	0	257	0	1	196	23	1	4	3	228
1	1	50	12	0	2	0	66	0	0	55	1	0	2	0	58
0	0	57	10	0	1	0	68	0	0	48	2	0	1	0	51
0	0	48	6	1	0	1	56	0	0	69	5	2	0	0	76
0	0	57	3	1	0	0	61	0	0	53	4	0	0	0	57
1	1	212	31	2	3	1	251	0	0	225	12	2	3	0	242
0	0	49	1	0	3	0	53	0	0	57	4	1	0	1	63
0	0	52	5	0	0	0	57	0	1	53	5	0	2	0	61
0	0	70	4	0	2	0	76	0	0	43	4	0	0	0	47
0	0	67	2	1	2	0	72	0	0	37	3	0	0	0	40
0	0	238	12	1	7	0	258	0	1	190	16	1	2	1	211
5	4	1926	266	87	128	20	2436	2	4	1831	187	38	52	17	2131
C => A								C => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

C => C								C => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	2	0	1	0	0	3
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	4	0	1	0	0	5
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	4
0	0	0	0	0	0	0	0	0	0	6	4	0	0	0	10
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	3	1	1	0	0	5
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	4	3	1	0	0	8
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	3
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2
0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	4
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
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0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
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0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
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0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	2
0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	6
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0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
0	0	0	0	0	0	0	0	0	0	15	1	0	0	0	16
0	0	0	0	0	0	0	0	0	0	49	13	4	0	2	68
C => C								C => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

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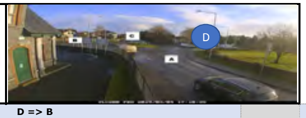

D => A								D => B								D => C								D => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	0	0	0	0	0	0	0	0	16	3	0	0	0	19	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	22	7	1	0	0	30	0	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	24	6	1	0	0	31	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
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0	0	3	0	0	0	0	3	0	0	102	23	2	0	0	127	0	0	5	1	0	0	0	6	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	18	4	0	0	0	22	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	24	6	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	37	4	0	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	4	0	0	0	0	4	0	0	57	4	1	0	1	63	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	10	0	0	136	18	1	0	1	156	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	52	2	0	0	0	54	0	0	3	1	0	0	0	4	0	0	0	0	0	0	0	0
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0	0	6	0	0	0	0	6	0	0	92	6	0	0	0	98	0	0	5	2	0	0	0	7	0	0	1	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	13	1	0	0	0	14	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	5	2	1	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	2	0	0	4	1	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	1	0	0	0	0	1	0	0	6	0	0	0	0	6	1	0	2	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	10	2	0	0	0	12	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
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0	0	1	0	0	0	0	1	0	0	7	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	0	1	0	0	0	1	0	0	4	0	0	0	0	4	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
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0	0	2	1	0	0	0	3	0	0	29	0	1	0	0	30	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	9	1	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	1	0	0	0	0	1	0	0	11	1	0	0	0	12	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	11	3	0	0	1	15	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	3	1	0	0	0	4	0	0	38	5	0	0	1	44	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0
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0	0	4	0	0	0	0	4	0	0	11	1	0	0	0	12	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	1	0	16	1	0	0	0	18	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	1	0	43	3	1	0	0	48	0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0
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0	0	4	1	0	0	0	5	0	0	15	0	2	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	7	0	0	0	0	7	0	0	12	1	0	0	0	13	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0
0	0	13	1	0	0	0	14	0	0	54	2	3	0	1	60	0	0	7	0	1	0	0	8	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	14	0	0	0	0	14	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	14	1	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	1	0	27	1	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	6	0	0	0	0	6	1	0	64	2	0	0	0	67	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	1	0	12	0	0	0	0	13	0	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0
0	0	3	0	0	0	0	3	0	0	19	1	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	2	0	0	0	0	2	0	0	23	3	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	3	1	0	0	0	4	0	0	14	2	0	0	0	16	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
0	0	10	1	0	0	0	11	1	0	68	6	0	0	0	75	0	0	2	1	0	0	0	3	0	0	0	0	0	0	0	0
0	0	3	1	0	0	0	4	0	0	19	3	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	1	0	0	17	3	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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0	0	1	0	0	0	0	1	0	0	10	1	0	0	0	11	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	5	1	0	0	0	6	0	0	55	8	0	0	0	63	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
0	0	73	6	0	0	0	79	3	0	741	83	9	0	3	839	1	0	38	5	2	0	0	46	0	0	1	0	0	0	0	1
D => A								D => B								D => C								D => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys Ltd

Survey Name : *ITS J285 Site E*
Site: Site E
Date: 05/03/2019(07:00-19:00)
Location: Clane, Co. Kildare

	A => B								B => A							
TIME	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
07:00	1	0	14	3	1	1	0	20	0	1	55	14	1	4	1	76
07:15	0	0	14	2	0	3	0	19	0	0	47	10	3	2	2	64
07:30	0	0	32	6	0	0	1	39	0	1	65	7	1	3	1	78
07:45	0	1	49	5	1	3	0	59	0	0	70	9	2	0	2	83
H/TOT	1	1	109	16	2	7	1	137	0	2	237	40	7	9	6	301
08:00	0	0	65	3	2	3	0	73	0	1	71	6	2	0	0	80
08:15	0	0	117	5	1	2	2	127	0	0	92	5	0	0	4	101
08:30	4	0	97	2	0	3	0	106	1	0	92	5	0	0	3	101
08:45	1	0	91	3	2	1	0	98	0	0	80	3	0	1	2	86
H/TOT	5	0	370	13	5	9	2	404	1	1	335	19	2	1	9	368
09:00	0	0	67	4	0	1	0	72	0	0	94	6	1	4	1	106
09:15	0	1	43	6	1	1	2	54	0	1	58	4	2	0	1	66
09:30	0	0	44	7	1	2	2	56	1	0	71	2	1	1	1	77
09:45	0	0	56	4	1	2	0	63	0	0	76	5	2	2	0	85
H/TOT	0	1	210	21	3	6	4	245	1	1	299	17	6	7	3	334
10:00	0	0	49	2	6	1	0	58	0	0	67	2	3	2	0	74
10:15	1	0	39	3	4	1	0	48	1	0	66	2	0	2	1	72
10:30	0	0	54	2	2	1	2	61	0	0	64	4	3	0	0	71
10:45	0	0	55	6	1	0	0	62	0	0	69	5	3	2	0	79
H/TOT	1	0	197	13	13	3	2	229	1	0	266	13	9	6	1	296
11:00	0	0	55	5	6	1	0	67	0	0	61	5	5	0	0	71
11:15	0	0	50	3	1	1	2	57	0	0	65	8	1	1	1	76
11:30	0	0	67	4	1	3	0	75	0	0	54	8	2	3	0	67
11:45	0	0	52	7	3	0	0	62	0	0	70	7	2	1	1	81
H/TOT	0	0	224	19	11	5	2	261	0	0	250	28	10	5	2	295
12:00	0	0	59	7	2	1	0	69	2	0	38	5	3	3	0	51
12:15	0	0	58	4	3	2	1	68	1	0	60	9	0	1	1	72
12:30	0	1	49	10	1	1	0	62	0	0	48	3	0	1	0	52
12:45	0	0	54	3	2	2	0	61	0	0	47	7	1	3	0	58
H/TOT	0	1	220	24	8	6	1	260	3	0	193	24	4	8	1	233
13:00	0	0	61	2	0	2	1	66	0	0	54	5	3	0	1	63
13:15	0	0	78	7	2	1	1	89	0	0	59	7	2	1	1	70
13:30	0	0	76	6	2	1	2	87	1	0	55	2	0	1	2	61
13:45	0	0	74	5	1	3	0	83	3	0	102	3	1	4	1	114
H/TOT	0	0	289	20	5	7	4	325	4	0	270	17	6	6	5	308
14:00	0	1	65	2	0	1	1	70	0	1	50	4	1	0	0	56
14:15	0	0	68	4	0	1	2	75	0	0	43	6	1	3	1	54
14:30	0	0	64	5	2	1	2	74	0	0	39	7	0	1	0	47
14:45	0	0	89	2	1	2	0	94	4	0	108	5	2	0	2	121
H/TOT	0	1	286	13	3	5	5	313	4	1	240	22	4	4	3	278
15:00	0	0	49	8	2	0	1	60	0	0	54	2	0	0	0	56
15:15	0	0	81	5	1	4	3	94	0	0	77	6	0	1	1	85
15:30	0	0	91	10	0	0	1	102	0	0	54	6	2	1	1	64
15:45	1	0	80	9	3	2	4	99	0	0	89	7	3	0	0	99
H/TOT	1	0	301	32	6	6	9	355	0	0	274	21	5	2	2	304
16:00	0	0	62	5	1	0	1	69	1	0	71	7	1	1	0	81
16:15	1	0	69	15	4	0	0	89	0	0	50	7	2	1	1	61
16:30	0	0	79	12	3	0	1	95	0	0	50	8	0	1	2	61
16:45	0	0	92	17	0	0	0	109	0	0	47	4	0	1	0	52
H/TOT	1	0	302	49	8	0	2	362	1	0	218	26	3	4	3	255
17:00	2	2	93	11	1	0	1	110	2	0	68	7	0	0	1	78
17:15	0	0	78	11	1	1	0	91	0	0	77	6	0	1	0	84
17:30	0	1	96	11	0	2	0	110	0	0	50	4	1	0	0	55
17:45	0	0	104	16	0	1	1	122	0	0	59	4	0	1	0	64
H/TOT	2	3	371	49	2	4	2	433	2	0	254	21	1	2	1	281
18:00	0	0	114	6	0	0	0	120	0	0	82	7	1	0	1	91
18:15	0	0	83	5	0	1	1	90	0	0	69	5	0	0	0	74
18:30	0	0	86	5	2	2	1	96	0	0	47	5	0	0	0	52
18:45	0	0	87	4	0	1	1	93	0	0	53	3	0	0	0	56
H/TOT	0	0	370	20	2	4	3	399	0	0	251	20	1	0	1	273
12 TOT	11	7	3249	289	68	62	37	3723	17	5	3087	268	58	54	37	3526
	A => B								B => A							
	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Site: Site F
Date: 05/03/2019(07:00-19:00)
Location: Clane, Co.Kildare

Irish Traffic Surveys


TIME	A => A P/C	A => A M/C	A => A CAR	A => A LGV	A => A OGV1	A => A OGV2	A => A PSV	A => A TOT	A => B P/C	A => B M/C	A => B CAR	A => B LGV	A => B OGV1	A => B OGV2	A => B PSV	A => B TOT
07:00	0	0	0	0	0	0	0	0	0	0	14	2	2	0	0	18
07:15	0	0	0	0	0	0	0	0	0	0	12	2	0	0	1	15
07:30	0	0	0	0	0	0	0	0	0	0	28	3	0	1	0	32
07:45	0	0	0	0	0	0	0	0	0	0	13	4	0	2	0	19
H/TOT	0	0	0	0	0	0	0	0	0	0	67	11	2	3	1	84
08:00	0	0	0	0	0	0	0	0	0	0	25	2	0	0	0	27
08:15	0	0	0	0	0	0	0	0	0	0	20	4	0	0	0	24
08:30	0	0	0	0	0	0	0	0	0	0	26	4	1	0	0	31
08:45	0	0	0	0	0	0	0	0	0	0	18	3	0	0	0	21
H/TOT	0	0	0	0	0	0	0	0	0	0	89	13	1	0	0	103
09:00	0	0	0	0	0	0	0	0	0	0	24	7	2	0	0	33
09:15	0	0	0	0	0	0	0	0	0	0	31	4	1	1	0	37
09:30	0	0	0	0	0	0	0	0	0	0	26	6	1	1	1	35
09:45	0	0	0	0	0	0	0	0	0	0	27	6	1	1	0	35
H/TOT	0	0	0	0	0	0	0	0	0	0	108	23	5	3	1	140
10:00	0	0	0	0	0	0	0	0	0	0	17	3	1	1	0	22
10:15	0	0	0	0	0	0	0	0	0	0	16	4	2	2	2	26
10:30	0	0	0	0	0	0	0	0	0	0	20	6	3	3	0	32
10:45	0	0	0	0	0	0	0	0	0	0	28	4	1	0	0	33
H/TOT	0	0	0	0	0	0	0	0	0	0	81	17	7	6	2	113
11:00	0	0	0	0	0	0	0	0	0	0	27	4	0	1	0	32
11:15	0	0	0	0	0	0	0	0	0	0	24	5	0	0	0	29
11:30	0	0	0	0	0	0	0	0	0	0	23	3	3	1	0	30
11:45	0	0	0	0	0	0	0	0	0	0	21	4	1	1	0	27
H/TOT	0	0	0	0	0	0	0	0	0	0	95	16	4	3	0	118
12:00	0	0	0	0	0	0	0	0	0	0	34	2	0	2	1	39
12:15	0	0	0	0	0	0	0	0	0	0	25	2	0	3	0	30
12:30	0	0	0	0	0	0	0	0	0	0	16	3	0	1	0	20
12:45	0	0	0	0	0	0	0	0	0	0	18	2	0	2	0	22
H/TOT	0	0	0	0	0	0	0	0	0	0	93	9	0	8	1	111
13:00	0	0	0	0	0	0	0	0	0	0	36	3	3	3	0	45
13:15	0	0	0	0	0	0	0	0	0	0	18	4	0	1	0	23
13:30	0	0	0	0	0	0	0	0	0	0	23	2	1	1	6	33
13:45	0	0	0	0	0	0	0	0	0	0	29	1	1	1	0	32
H/TOT	0	0	0	0	0	0	0	0	0	0	106	10	5	6	6	133
14:00	0	0	0	0	0	0	0	0	0	0	29	4	1	0	0	34
14:15	0	0	0	0	0	0	0	0	0	0	22	3	2	1	0	28
14:30	0	0	0	0	0	0	0	0	0	0	18	4	0	1	0	23
14:45	0	0	0	0	0	0	0	0	0	0	24	5	1	0	0	30
H/TOT	0	0	0	0	0	0	0	0	0	0	93	16	4	2	0	115
15:00	0	0	0	0	0	0	0	0	0	0	32	1	1	0	0	34
15:15	0	0	0	0	0	0	0	0	0	0	31	3	1	1	0	36
15:30	0	0	0	0	0	0	0	0	0	0	24	4	1	1	0	30
15:45	0	0	0	0	0	0	0	0	0	0	26	1	0	1	0	28
H/TOT	0	0	0	0	0	0	0	0	0	0	113	9	3	3	0	128
16:00	0	0	0	0	0	0	0	0	0	0	25	6	2	0	0	33
16:15	0	0	0	0	0	0	0	0	0	0	47	9	1	0	0	57
16:30	0	0	0	0	0	0	0	0	0	0	36	5	1	1	0	43
16:45	0	0	0	0	0	0	0	0	0	0	35	3	3	0	0	41
H/TOT	0	0	0	0	0	0	0	0	0	0	143	23	7	1	0	174
17:00	0	0	0	0	0	0	0	0	0	0	33	7	0	0	0	40
17:15	0	0	0	0	0	0	0	0	0	0	31	3	1	3	0	38
17:30	0	0	0	0	0	0	0	0	0	0	33	6	1	0	0	40
17:45	0	0	0	0	0	0	0	0	0	0	18	5	0	2	0	25
H/TOT	0	0	0	0	0	0	0	0	0	0	115	21	2	5	0	143
18:00	0	0	0	0	0	0	0	0	1	0	37	2	0	0	1	41
18:15	0	0	0	0	0	0	0	0	0	0	29	2	0	1	5	37
18:30	0	0	0	0	0	0	0	0	0	0	33	2	1	0	0	36
18:45	0	0	0	0	0	0	0	0	0	0	41	2	0	1	1	45
H/TOT	0	0	0	0	0	0	0	0	1	0	140	8	1	2	7	159
12 TOT	0	0	0	0	0	0	0	0	1	0	1243	176	41	42	18	1521
	A => A P/C	A => A M/C	A => A CAR	A => A LGV	A => A OGV1	A => A OGV2	A => A PSV	A => A TOT	A => B P/C	A => B M/C	A => B CAR	A => B LGV	A => B OGV1	A => B OGV2	A => B PSV	A => B TOT

TIME	A => C P/C	A => C M/C	A => C CAR	A => C LGV	A => C OGV1	A => C OGV2	A => C PSV	A => C TOT	A => D P/C	A => D M/C	A => D CAR	A => D LGV	A => D OGV1	A => D OGV2	A => D PSV	A => D TOT
07:00	0	0	37	12	5	1	0	55	0	0	1	0	0	0	0	1
07:15	0	0	39	13	4	7	0	63	0	0	1	0	0	0	0	1
07:30	0	0	49	16	5	4	0	74	0	0	1	0	1	0	0	2
07:45	0	0	48	9	2	1	0	60	0	0	2	0	0	0	0	2
H/TOT	0	0	173	50	16	13	0	252	0	0	5	0	1	0	0	6
08:00	0	0	60	8	4	2	1	75	0	0	1	0	0	0	0	1
08:15	1	0	50	6	2	0	0	59	0	0	3	0	1	0	0	4
08:30	0	0	32	3	1	3	0	39	0	0	0	0	1	0	0	1
08:45	0	0	41	4	3	3	1	52	0	0	3	0	0	0	0	3
H/TOT	1	0	183	21	10	8	2	225	0	0	7	0	2	0	0	9
09:00	0	0	37	4	0	1	0	42	0	0	1	0	0	1	0	2
09:15	0	0	55	7	4	3	0	69	0	0	5	1	1	0	0	7
09:30	0	0	46	6	4	2	0	58	0	0	3	0	0	0	0	3
09:45	0	0	44	5	4	2	0	55	0	0	5	0	0	0	0	5
H/TOT	0	0	182	22	12	8	0	224	0	0	14	1	1	1	0	17
10:00	0	0	51	6	3	1	0	61	0	0	7	1	0	0	0	8
10:15	0	0	28	5	2	2	1	38	0	0	3	0	0	0	0	3
10:30	0	0	28	4	4	1	0	37	0	0	2	1	0	0	0	3
10:45	0	0	27	10	7	2	0	46	0	0	3	0	1	0	0	4
H/TOT	0	0	134	25	16	6	1	182	0	0	15	2	1	0	0	18
11:00	1	0	31	11	2	0	0	45	0	0	3	1	0	0	0	4
11:15	0	0	40	5	3	2	0	50	0	0	2	1	1	0	0	4
11:30	0	0	39	7	1	0	0	47	0	0	3	0	0	0	0	3
11:45	0	0	34	7	2	8	0	51	0	0	3	0	0	0	0	3
H/TOT	1	0	144	30	8	10	0	193	0	0	11	2	1	0	0	14
12:00	1	0	41	6	1	2	1	52	0	0	3	1	0	0	0	4
12:15	0	1	32	8	2	1	0	44	0	0	7	2	0	0	0	9
12:30	0	0	41	2	5	1	0	49	0	0	4	0	0	0	0	4
12:45	0	0	39	3	3	3	0	48	0	0	4	0	0	0	0	4
H/TOT	1	1	153	19	11	7	1	193	0	0	18	3	0	0	0	21
13:00	0	0	40	6	1	2	0	49	0	0	3	0	1	0	0	4
13:15	0	0	48	10	1	4	1	64	0	0	3	0	0	0	1	4
13:30	0	0	46	7	1	2	0	56	0	0	1	0	0	0	0	1
13:45	0	0	36	7	0	3	1	47	0	0	3	1	0	0	0	4
H/TOT	0	0	170	30	3	11	2	216	0	0	10	1	1	0	1	13
14:00	0	0	44	6	2	3	0	55	0	0	5	0	0	0	0	5
14:15	0	0	38	3	1	4	0	46	0	0	2	0	0	0	0	2
14:30	0	0	37	3	2	3	0	45	0	0	0	1	0	0	0	1
14:45	0	0	33	8	8	1	0	50	0	0	5	0	0	0	0	5
H/TOT	0	0	152	20	13	11	0	196	0	0	12	1	0	0	0	13
15:00	0	0	25	6	1	0	0	32	0	0	6	0	0	0	0	6
15:15	0	0	26	3	3	1	1	34	0	0	10	0	0	0	1	11
15:30	0	0	34	7	1	2	1	45	0	0	6	0	0	0	0	6
15:45	0	0	30	5	3	0	1	39	0	0	7	0	0	0	0	7
H/TOT	0	0	115	21	8	3	3	150	0	0	29	0	0	0	1	30
16:00	0	0	39	10	2	3	1	55	0	0	3	0	0	0	0	3
16:15	0	0	33	6	2	1	0	42	0	0	8	0	0	0	0	8
16:30	0	0	35	13	0	1	0	49	0	0	6	0	0	0	0	6
16:45	0	0	40	7	2	0	0	49	0	0	4	1	0	0	0	5
H/TOT	0	0	147	36	6	5	1	195	0	0	21	1	0	0	0	22
17:00	0	0	32	4	0	1	0	37	0	0	6	0	0	0	0	6
17:15	0	0	30	8	2	4	0	44	0	0	3	1	0	0	0	4
17:30	0	0	40	5	1	2	0	48	0	0	5	1	0	0	0	6
17:45	0	0	47	6	0	1	0	54	0	0	3	0	0	0	0	3
H/TOT	0	0	149	23	3	8	0	183	0	0	17	2	0	0	0	19
18:00	0	0	40	5	1	5	0	51	0	0	2	1	0	0	0	3
18:15	0	0	30	4	0	5	3	42	0	0	6	1	0	0	0	7
18:30	0	0	40	5	0	2	0	47	1	0	8	0	0	0	0	9
18:45	0	0	48	3	1	1	0	53	0	0	5	0	0	0	0	5
H/TOT	0	0	158	17	2	13	3	193	1	0	21	2	0	0	0	24
12 TOT	3	1	1860	314	108	103	13	2402	1	0	180	15	7	1	2	206
	A => C P/C	A => C M/C	A => C CAR	A => C LGV	A => C OGV1	A => C OGV2	A => C PSV	A => C TOT	A => D P/C	A => D M/C	A => D CAR	A => D LGV	A => D OGV1	A => D OGV2	A => D PSV	A => D TOT

Irish Traffic Surveys

B => A								B => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	11	5	0	0	0	16	0	0	0	0	0	0	0	0
0	0	12	6	0	2	0	20	0	0	0	0	0	0	0	0
0	0	9	2	0	0	0	11	0	0	0	0	0	0	0	0
0	0	22	2	0	1	0	25	0	0	0	0	0	0	0	0
0	0	54	15	0	3	0	72	0	0	0	0	0	0	0	0
0	0	21	1	2	0	0	24	0	0	0	0	0	0	0	0
0	0	12	3	1	0	0	16	0	0	0	0	0	0	0	0
0	0	8	2	0	4	0	14	0	0	0	0	0	0	0	0
0	0	30	9	3	0	0	42	0	0	0	0	0	0	0	0
0	0	71	15	6	4	0	96	0	0	0	0	0	0	0	0
0	0	22	1	1	0	0	24	0	0	0	0	0	0	0	0
0	0	25	2	1	2	0	30	0	0	0	0	0	0	0	0
0	0	15	2	0	1	0	18	0	0	0	0	0	0	0	0
0	0	20	2	0	1	0	23	0	0	0	0	0	0	0	0
0	0	82	7	2	4	0	95	0	0	0	0	0	0	0	0
0	0	22	6	2	1	0	31	0	0	0	0	0	0	0	0
0	0	25	1	1	3	0	30	0	0	0	0	0	0	0	0
0	0	15	2	3	0	0	20	0	0	0	0	0	0	0	0
1	0	11	5	1	0	0	18	0	0	0	0	0	0	0	0
1	0	73	14	7	4	0	99	0	0	0	0	0	0	0	0
0	0	18	0	0	0	0	18	0	0	0	0	0	0	0	0
1	0	15	3	0	3	0	22	0	0	0	0	0	0	0	0
0	0	19	4	0	1	2	26	0	0	0	0	0	0	0	0
0	0	30	6	1	0	0	37	0	0	0	0	0	0	0	0
1	0	82	13	1	4	2	103	0	0	0	0	0	0	0	0
0	0	29	3	0	1	0	33	0	0	0	0	0	0	0	0
0	0	23	3	2	0	0	28	0	0	0	0	0	0	0	0
0	0	19	5	1	0	0	25	0	0	0	0	0	0	0	0
0	0	26	1	1	1	4	33	0	0	0	0	0	0	0	0
0	0	97	12	4	2	4	119	0	0	0	0	0	0	0	0
0	0	20	5	1	1	1	28	0	0	0	0	0	0	0	0
0	0	18	3	1	1	0	23	0	0	0	0	0	0	0	0
0	0	17	4	1	0	0	22	0	0	0	0	0	0	0	0
0	0	25	4	1	1	0	31	0	0	0	0	0	0	0	0
0	0	80	16	4	3	1	104	0	0	0	0	0	0	0	0
0	0	17	2	0	0	0	19	0	0	0	0	0	0	0	0
0	0	15	1	3	0	0	19	0	0	0	0	0	0	0	0
0	0	20	3	5	2	0	30	0	0	0	0	0	0	0	0
0	0	11	2	0	1	0	14	0	0	0	0	0	0	0	0
0	0	63	8	8	3	0	82	0	0	0	0	0	0	0	0
0	0	27	3	0	0	0	30	0	0	0	0	0	0	0	0
0	0	21	2	1	0	0	24	0	0	0	0	0	0	0	0
0	0	19	5	1	0	0	25	0	0	0	0	0	0	0	0
0	0	25	4	5	0	0	34	0	0	0	0	0	0	0	0
0	0	92	14	7	0	0	113	0	0	0	0	0	0	0	0
0	0	29	5	0	0	0	34	0	0	0	0	0	0	0	0
0	0	29	3	1	1	0	34	0	0	0	0	0	0	0	0
0	0	24	4	1	0	0	29	0	0	0	0	0	0	0	0
0	0	10	1	1	0	0	12	0	0	0	0	0	0	0	0
0	0	92	13	3	1	0	109	0	0	0	0	0	0	0	0
0	0	14	0	0	0	0	14	0	0	0	0	0	0	0	0
0	0	23	1	0	0	0	24	0	0	0	0	0	0	0	0
0	0	19	3	2	1	0	25	0	0	0	0	0	0	0	0
0	0	25	4	0	0	0	29	0	0	0	0	0	0	0	0
0	0	81	8	2	1	0	92	0	0	0	0	0	0	0	0
0	0	14	2	0	0	3	19	0	0	0	0	0	0	0	0
0	0	23	1	1	2	1	28	0	0	0	0	0	0	0	0
0	0	28	1	0	0	1	30	0	0	0	0	0	0	0	0
0	1	23	0	0	0	0	24	0	0	0	0	0	0	0	0
0	1	88	4	1	2	5	101	0	0	0	0	0	0	0	0
2	1	955	139	45	31	12	1185	0	0	0	0	0	0	0	0
B => A								B => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

B => C								B => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	13	7	2	2	0	24	0	0	6	1	0	0	0	7
0	0	13	2	1	1	1	18	0	0	6	0	1	0	1	8
0	0	26	6	1	0	2	35	0	0	5	0	1	0	0	6
0	1	28	3	1	2	0	35	0	0	4	0	0	0	0	4
0	1	80	18	5	5	3	112	0	0	21	1	2	0	1	25
0	0	42	3	2	2	0	49	0	0	12	1	0	1	0	14
0	0	50	2	1	3	2	58	0	0	11	2	1	0	1	15
0	0	52	4	1	1	0	58	0	0	4	0	0	0	0	4
0	0	43	4	0	2	0	49	0	0	15	0	0	0	0	15
0	0	187	13	4	8	2	214	0	0	42	3	1	1	1	48
0	0	34	4	0	1	0	39	0	0	13	2	0	0	0	15
0	0	36	6	0	0	2	44	0	0	13	1	1	0	0	15
0	0	37	1	1	2	0	41	0	0	3	0	0	0	1	4
0	0	43	3	1	2	1	50	0	0	8	1	0	0	0	9
0	0	150	14	2	5	3	174	0	0	37	4	1	0	1	43
0	0	25	5	5	2	0	37	0	0	9	0	0	1	0	10
0	0	32	5	0	1	1	39	0	0	5	0	0	0	0	5
0	0	31	4	1	1	1	38	0	0	14	2	2	0	0	18
0	0	35	4	2	1	1	43	0	0	9	0	0	0	0	9
0	0	123	18	8	5	3	157	0	0	37	2	2	1	0	42
0	0	37	4	2	1	0	44	0	0	13	0	1	0	0	14
0	0	38	4	0	1	2	45	0	0	6	1	1	0	0	8
0	0	38	6	3	2	0	49	0	0	13	1	2	0	0	16
0	0	40	2	2	1	1	46	0	0	8	2	0	0	0	10
0	0	153	16	7	5	3	184	0	0	40	4	4	0	0	48
0	0	33	1	3	1	1	39	0	0	9	1	0	0	0	10
0	0	36	8	1	0	1	46	0	0	14	0	0	0	0	14
0	1	46	5	1	1	0	54	0	0	13	1	0	0	0	14
1	0	42	1	0	2	1	47	0	0	14	3	0	0	0	17
1	1	157	15	5	4	3	186	0	0	50	5	0	0	0	55
1	0	34	5	0	3	1	44	0	0	19	2	0	0	0	21
0	1	51	8	0	0	1	61	0	0	11	1	0	0	0	12
0	0	51	5	3	2	1	62	0	0	7	1	0	0	0	8
0	0	48	4	0	1	1	54	0	0	10	0	0	0	1	11
1	1	184	22	3	6	4	221	0	0	47	4	0	0	1	52
0	1	39	5	0	1	1	47	0	0	11	0	0	0	0	11
0	0	52	3	0	0	2	57	0	0	7	0	0	0	0	7
0	0	63	5	4	2	0	74	0	0	13	3	0	0	0	16
0	0	40	5	1	0	0	46	0	0	12	1	0	0	0	13
0	1	194	18	5	3	3	224	0	0	43	4	0	0	0	47
0	0	48	5	2	1	1	57	0	0	19	0	0	0	0	19
0	0	48	6	0	3	2	59	0	0	21	2	2	0	0	25
0	0	54	7	0	1	0	62	0	0	10	0	0	0	0	10
0	0	55	8	3	1	2	69	0	0	20	3	0	0	0	23
0	0	205	26	5	6	5	247	0	0	70	5	2	0	0	77
0	0	48	9	0	0	0	57	0	0	22	2	0	0	0	24
0	0	64	10	4	1	0	79	0	0	26	0	0	0	0	26
0	0	61	14	1	0	1	77	0	0	20	4	0	0	0	24
0	1	53	13	1	0	0	68	0	0	18	1	0	0	0	19
0	1	226	46	6	1	1	281	0	0	86	7	0	0	0	93
0	1	54	9	0	1	2	67	0	1	21	1	0	0	0	23
0	0	44	8	1	0	0	53	0	0	29	4	0	0	0	33
0	1	57	9	0	2	1	70	0	0	35	5	0	0	0	40
1	0	59	10	0	1	0	71	0	0	31	1	0	0	0	32
1	2	214	36	1	4	3	261	0	1	116	11	0	0	0	128
0	0	51	3	0	0	0	54	0	0	29	4	0	0	0	33
0	0	51	5	0	2	2	60	0	0	38	5	0	0	0	43
0	0	60	5	2	0	1	68	0	0	26	1	0	0	0	27
0	0	58	4	0	1	1	64	0	0	23	0	0	0	0	23
0	0	220	17	2	3	4	246	0	0	116	10	0	0	0	126
3	7	2093	259	53	55	37	2507	0	1	705	60	12	2	4	784
B => C								B => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys

C => A								C => B								C => C								C => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	29	15	1	2	0	47	0	0	42	10	0	3	1	56	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	5
0	0	28	14	1	3	1	47	0	0	41	12	3	1	2	59	0	0	0	0	0	0	0	0	0	0	4	2	0	1	0	7
0	0	45	9	3	7	0	64	0	1	55	7	1	2	1	67	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	6
0	0	55	18	0	1	0	74	0	0	38	10	3	0	1	52	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	9
0	0	157	56	5	13	1	232	0	1	176	39	7	6	5	234	0	0	0	0	0	0	0	0	0	0	23	3	0	1	0	27
0	0	58	7	5	3	2	75	0	1	38	7	1	0	0	47	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	6
0	0	57	8	1	3	3	72	0	0	41	5	0	0	0	46	0	0	0	0	0	0	0	0	0	0	11	0	0	0	1	12
0	0	52	7	1	1	1	62	0	0	36	3	0	0	3	42	0	0	0	0	0	0	0	0	1	0	7	1	1	0	2	12
1	0	44	6	1	7	0	59	0	0	32	5	0	0	0	37	0	0	0	0	0	0	0	0	0	0	16	3	1	1	0	21
1	0	211	28	8	14	6	268	0	1	147	20	1	0	3	172	0	0	0	0	0	0	0	0	1	0	40	4	2	1	3	51
0	0	56	8	0	0	0	64	0	0	37	3	0	3	0	43	0	0	0	0	0	0	0	0	0	0	26	3	0	0	1	30
0	0	44	9	8	2	0	63	0	0	27	4	0	0	1	32	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	11
0	0	35	5	4	2	1	47	0	0	32	2	1	1	0	36	0	0	0	0	0	0	0	0	0	0	14	0	0	0	0	14
0	0	44	9	0	2	0	55	0	0	34	3	1	2	0	40	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	9
0	0	179	31	12	6	1	229	0	0	130	12	2	6	1	151	0	0	0	0	0	0	0	0	0	0	60	3	0	0	1	64
0	0	32	8	1	0	0	41	0	0	29	2	3	1	0	35	0	0	0	0	0	0	0	0	0	1	16	1	0	0	0	18
0	0	35	7	2	6	0	50	0	0	35	3	0	2	1	41	0	0	0	0	0	0	0	0	0	0	12	1	1	1	0	15
0	0	23	3	3	3	0	32	0	0	29	3	1	0	1	34	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	8
1	0	41	9	3	5	0	59	0	0	33	4	2	2	0	41	0	0	0	0	0	0	0	0	0	0	15	1	1	0	0	17
1	0	131	27	9	14	0	182	0	0	126	12	6	5	2	151	0	0	0	0	0	0	0	0	0	1	51	3	2	1	0	58
0	0	37	6	2	4	1	50	0	0	29	7	2	0	0	38	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	13
1	0	36	8	2	2	2	51	0	0	36	5	0	0	1	42	0	0	0	0	0	0	0	0	1	0	11	0	1	0	0	13
0	0	42	8	2	3	0	55	0	0	22	3	1	3	0	29	0	0	1	0	0	0	0	1	0	0	14	0	1	0	0	15
0	0	50	7	2	1	0	60	0	0	34	5	2	1	2	44	0	0	0	0	0	0	0	0	0	0	18	1	0	0	0	19
1	0	165	29	8	10	3	216	0	0	121	20	5	4	3	153	0	0	1	0	0	0	0	1	1	0	56	1	2	0	0	60
0	0	54	5	4	3	0	66	0	0	43	1	3	2	0	49	0	0	0	0	0	0	0	0	0	0	11	3	1	0	0	15
0	0	49	7	1	2	0	59	0	0	28	6	0	1	1	36	0	0	0	0	0	0	0	0	0	0	16	2	0	0	0	18
0	0	45	4	1	2	0	52	0	0	32	3	1	1	0	37	0	0	0	0	0	0	0	0	0	0	12	2	0	0	0	14
0	0	38	7	4	6	0	55	0	0	34	3	2	0	0	39	0	0	0	0	0	0	0	0	0	0	8	3	1	0	0	12
0	0	186	23	10	13	0	232	0	0	137	13	6	4	1	161	0	0	0	0	0	0	0	0	0	0	47	10	2	0	0	59
0	0	52	4	7	5	0	68	0	0	26	4	2	0	1	33	0	0	0	0	0	0	0	0	0	0	24	1	0	0	0	25
0	0	42	2	2	1	2	49	0	0	35	8	0	0	0	43	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	12
0	0	44	9	2	3	0	58	0	0	32	1	2	0	2	37	0	0	0	0	0	0	0	0	0	0	9	2	0	0	0	11
0	0	57	2	1	1	0	61	1	0	43	1	1	5	0	51	0	0	0	0	0	0	0	0	0	0	21	3	2	0	0	26
0	0	195	17	12	10	2	236	1	0	136	14	5	5	3	164	0	0	0	0	0	0	0	0	0	0	66	6	2	0	0	74
0	1	39	10	3	4	0	57	0	0	38	4	0	0	0	42	0	0	0	0	0	0	0	0	0	0	18	1	1	0	0	20
0	0	30	7	4	4	0	45	0	0	21	6	1	2	1	31	0	0	0	0	0	0	0	0	0	0	10	2	0	0	0	12
0	0	43	4	2	4	0	53	0	0	33	5	0	1	0	39	0	0	0	0	0	0	0	0	0	0	12	1	0	0	0	13
0	0	41	2	3	1	1	48	0	0	31	5	0	0	0	36	0	0	0	0	0	0	0	0	0	0	23	1	0	0	1	25
0	1	153	23	12	13	1	203	0	0	123	20	1	3	1	148	0	0	0	0	0	0	0	0	0	0	63	5	1	0	1	70
0	0	54	9	1	2	0	66	0	0	33	3	3	0	0	39	0	0	0	0	0	0	0	0	0	0	25	1	0	0	0	26
0	0	39	7	3	2	0	51	0	0	27	4	0	1	1	33	0	0	0	0	0	0	0	0	1	0	16	3	1	0	0	21
0	0	52	9	3	4	1	69	0	0	31	3	2	1	1	38	0	0	0	0	0	0	0	0	0	0	12	1	0	0	0	13
0	0	48	3	1	7	0	59	0	0	41	2	1	0	0	44	0	0	0	0	0	0	0	0	0	0	32	1	0	0	0	33
0	0	193	28	8	15	1	245	0	0	132	12	6	2	2	154	0	0	0	0	0	0	0	0	1	0	85	6	1	0	0	93
0	0	52	5	5	6	1	69	0	0	38	6	2	0	0	46	0	0	0	0	0	0	0	0	0	0	27	0	0	0	0	27
1	0	49	10	1	1	0	62	0	0	28	7	0	1	1	37	0	0	0	0	0	0	0	0	0	0	22	3	1	0	0	26
0	0	54	13	3	0	0	70	0	0	36	3	1	1	2	43	0	0	0	0	0	0	0	0	1	1	37	3	1	0	0	43
0	0	53	12	4	2	0	71	1	0	17	2	0	0	0	20	0	0	0	0	0	0	0	0	1	0	29	3	0	0	0	33
1	0	208	40	13	9	1	272	1	0	119	18	3	2	3	146	0	0	0	0	0	0	0	0	2	1	115	9	2	0	0	129
0	1	58	12	1	3	0	75	0	0	37	5	0	0	1	43	0	0	0	0	0	0	0	0	0	0	33	3	0	0	0	36
0	0	66	11	0	1	0	78	1	0	32	4	0	1	0	38	0	0	0	0	0	0	0	0	0	0	39	5	1	0	0	45
0	0	57	8	2	0	1	68	0	0	39	5	0	0	0	44	0	0	0	0	0	0	0	0	0	0	33	6	0	0	0	39
0	0	55	7	1	0	0	63	0	0	21	1	0	0	0	22	0	0	0	0	0	0	0	0	0	0	36	3	0	0	0	39
0	1	236	38	4	4	1	284	1	0	129	15	0	1	1	147	0	0	0	0	0	0	0	0	0	0	141	17	1	0	0	159
0	0	47	3	1	1	0	52	0	0	32	3	0	0	1	36	0	0	0	0	0	0	0	0	0	0	28	5	0	0	0	33
0	0	60	3	0	2	0	65	0	0	33	2	1	1	0	37	0	0	0	0	0	0	0	0	0	0	44	2	0	0	0	46
0	0	52	3	0	1	0	56	0	0	35	4	0	0	0	39	0	0	0	0	0	0	0	0	0	0	25	1	0	0	0	26
0	0	52	3	1	3	0	59	0	0	34	2	0	0	0	36	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	25
0	0	211	12	2	7	0	232	0	0	134	11	1	1	1	148	0	0	0	0	0	0	0	0	0	0	122	8	0	0	0	130
4	2	2225	352	103	128	17	2831	3	2	1610	206	43	39	26	1929	0	0	1	0	0	0	0	1	5	2	869	75	15	3	5	974
C => A								C => B								C => C								C => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

Irish Traffic Surveys

D => A								D => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	7	2	0	0	0	9	0	0	19	1	0	0	0	20
0	0	5	3	1	0	0	9	0	0	30	4	0	0	0	34
0	0	3	3	0	0	0	6	0	0	30	5	0	0	0	35
0	0	13	2	0	0	0	15	0	0	23	2	0	0	0	25
0	0	28	10	1	0	0	39	0	0	102	12	0	0	0	114
0	0	6	1	0	0	0	7	0	0	27	3	0	0	0	30
0	0	8	1	0	0	0	9	0	0	28	1	0	0	0	29
0	0	6	2	0	0	1	9	0	0	25	2	1	0	1	29
0	0	9	0	1	0	0	10	0	0	25	2	0	0	0	27
0	0	29	4	1	0	1	35	0	0	105	8	1	0	1	115
0	0	12	0	0	0	0	12	0	0	35	1	0	0	2	38
0	0	13	0	0	0	0	13	0	0	22	0	0	0	0	22
0	0	8	2	0	0	0	10	0	0	12	0	0	0	0	12
0	0	6	1	0	0	0	7	0	0	7	1	0	0	0	8
0	0	39	3	0	0	0	42	0	0	76	2	0	0	2	80
0	0	5	0	0	0	0	5	0	0	9	0	0	0	0	9
0	0	6	1	0	0	0	7	0	0	11	4	0	0	0	15
0	0	8	1	0	0	0	9	0	0	12	0	0	0	0	12
0	0	5	0	1	0	0	6	0	0	8	0	1	0	0	9
0	0	24	2	1	0	0	27	0	0	40	4	1	0	0	45
0	0	3	0	0	0	0	3	0	0	9	1	1	0	0	11
0	0	4	0	0	1	0	5	0	0	14	1	0	0	0	15
0	0	1	1	1	0	0	3	0	0	13	1	0	0	0	14
0	0	6	2	0	0	0	8	0	0	5	1	0	0	0	6
0	0	14	3	1	1	0	19	0	0	41	4	1	0	0	46
0	0	7	1	0	0	0	8	0	0	11	0	0	0	0	11
0	0	4	1	0	0	0	5	0	0	12	1	0	0	0	13
0	0	7	0	0	0	0	7	0	0	6	1	0	0	0	7
0	0	4	0	0	0	0	4	0	0	15	1	0	0	0	16
0	0	22	2	0	0	0	24	0	0	44	3	0	0	0	47
0	0	2	0	0	0	0	2	1	0	21	0	0	0	0	22
0	0	4	2	0	0	0	6	0	0	7	2	3	0	0	12
0	0	5	0	0	0	0	5	0	0	9	1	0	0	0	10
0	0	6	0	0	0	0	6	0	0	11	0	0	0	0	11
0	0	17	2	0	0	0	19	1	0	48	3	3	0	0	55
0	0	6	2	0	0	0	8	0	0	15	0	0	1	0	16
0	0	6	0	3	0	0	9	0	0	17	0	1	0	0	18
0	0	10	0	0	0	0	10	0	0	14	2	0	0	0	16
0	0	11	0	0	0	0	11	0	0	22	2	0	0	0	24
0	0	33	2	3	0	0	38	0	0	68	4	1	1	0	74
0	0	8	0	0	0	1	9	0	0	17	0	0	0	1	18
0	0	7	0	0	0	0	7	0	0	18	1	0	0	0	19
0	0	4	1	0	0	1	6	0	0	14	4	0	0	0	18
0	0	6	1	0	0	0	7	0	0	16	0	0	0	0	16
0	0	25	2	0	0	2	29	0	0	65	5	0	0	1	71
0	0	4	1	0	0	0	5	0	0	14	1	0	0	0	15
0	0	11	0	0	0	0	11	0	0	13	3	0	0	1	17
0	0	9	1	1	0	0	11	0	0	20	1	0	0	0	21
0	0	14	1	1	0	0	16	0	0	22	4	0	0	0	26
0	0	38	3	2	0	0	43	0	0	69	9	0	0	1	79
0	0	5	2	0	0	0	7	0	0	24	0	0	0	0	24
0	0	6	0	0	0	0	6	0	0	24	1	1	0	0	26
0	0	9	0	0	0	0	9	0	0	19	2	0	0	0	21
0	0	14	0	0	0	0	14	0	0	24	1	0	0	1	26
0	0	34	2	0	0	0	36	0	0	91	4	1	0	1	97
0	0	10	2	0	0	0	12	0	0	15	4	0	0	0	19
0	0	10	0	0	0	0	10	0	0	15	0	0	0	0	15
0	0	10	2	0	0	0	12	0	0	23	1	0	0	0	24
0	0	13	1	0	0	0	14	0	0	17	2	0	0	0	19
0	0	43	5	0	0	0	48	0	0	70	7	0	0	0	77
0	0	346	40	9	1	3	399	1	0	819	65	8	1	6	900
D => A								D => B							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

D => C								D => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT
0	0	16	5	0	0	0	21	0	0	0	0	0	0	0	0
0	0	20	1	0	0	0	21	0	0	0	0	0	0	0	0
0	0	28	4	0	1	0	33	0	0	0	0	0	0	0	0
0	0	27	3	1	0	0	31	0	0	0	0	0	0	0	0
0	0	91	13	1	1	0	106	0	0	0	0	0	0	0	0
0	0	31	4	0	0	0	35	0	0	0	0	0	0	0	0
0	0	31	2	0	0	0	33	0	0	0	0	0	0	0	0
0	0	24	0	1	0	0	25	0	0	0	0	0	0	0	0
0	0	17	2	0	0	0	19	0	0	0	0	0	0	0	0
0	0	103	8	1	0	0	112	0	0	0	0	0	0	0	0
0	0	13	3	0	0	0	16	0	0	0	0	0	0	0	0
0	1	23	2	0	0	0	26	0	0	0	0	0	0	0	0
0	0	14	3	0	0	1	18	0	0	0	0	0	0	0	0
0	0	15	0	0	0	0	15	0	0	0	0	0	0	0	0
0	1	65	8	0	0	1	75	0	0	0	0	0	0	0	0
0	0	7	4	0	0	0	11	0	0	0	0	0	0	0	0
0	0	15	0	0	0	0	15	0	0	0	0	0	0	0	0
0	0	9	0	1	0	0	10	0	0	0	0	0	0	0	0
0	1	19	1	1	0	0	22	0	0	0	0	0	0	0	0
0	1	50	5	2	0	0	58	0	0	0	0	0	0	0	0
0	0	8	0	0	0	0	8	0	0	0	0	0	0	0	0
0	0	8	2	1	0	0	11	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0
0	0	13	1	1	0	0	15	0	0	0	0	0	0	0	0
0	0	39	3	2	0	0	44	0	0	0	0	0	0	0	0
0	0	18	0	0	0	0	18	0	0	0	0	0	0	0	0
0	0	14	2	0	0	0	16	0	0	0	0	0	0	0	0
0	0	11	2	0	0	0	13	0	0	0	0	0	0	0	0
0	0	10	0	0	0	0	10	0	0	0	0	0	0	0	0
0	0	53	4	0	0	0	57	0	0	0	0	0	0	0	0
0	0	23	0	1	0	0	24	0	0	0	0	0	0	0	0
0	0	12	1	0	0	0	13	0	0	0	0	0	0	0	0
0	0	26	3	0	0	1	30	0	0	0	0	0	0	0	0
0	0	10	1	0	0	0	11	0	0	0	0	0	0	0	0
0	0	71	5	1	0	1	78	0	0	0	0	0	0	0	0
0	0	15	0	0	0	1	16	0	0	0	0	0	0	0	0
0	1	28	1	1	0	0	31	0	0	0	0	0	0	0	0
0	0	13	1	0	0	0	14	0	0	0	0	0	0	0	0
0	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0
0	1	68	2	1	0	1	73	0	0	0	0	0	0	0	0
0	0	12	2	0	0	0	14	0	0	0	0	0	0	0	0
0	0	14	1	0	0	0	15	0	0	0	0	0	0	0	0
0	0	14	0	0	0	0	14	0	0	0	0	0	0	0	0
0	0	16	3	1	0	0	20	0	0	0	0	0	0	0	0
0	0	56	6	1	0	0	63	0	0	0	0	0	0	0	0
0	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0
1	0	14	0	0	0	0	15	0	0	0	0	0	0	0	0
0	0	11	0	2	0	0	13	0	0	0	0	0	0	0	0
1	0	25	1	1	0	0	28	0	0	0	0	0	0	0	0
2	0	62	1	3	0	0	68	0	0	0	0	0	0	0	0
0	0	14	2	0	0	0	16	0	0	0	0	0	0	0	0
0	0	15	3	0	0	0	18	0	0	0	0	0	0	0	0
0	0	13	1	0	0	0	14	0	0	0	0	0	0	0	0
0	0	16	1	0	0	0	17	0	0	0	0	0	0	0	0
0	0	58	7	0	0	0	65	0	0	0	0	0	0	0	0
0	0	6	0	0	0	0	6	0	0	0	0	0	0	0	0
0	0	11	0	0	0	0	11	0	0	0	0	0	0	0	0
0	0	12	1	0	0	0	13	0	0	0	0	0	0	0	0
0	0	17	0	0	0	0	17	0	0	0	0	0	0	0	0
0	0	46	1	0	0	0	47	0	0	0	0	0	0	0	0
2	3	762	63	12	1	3	846	0	0	0	0	0	0	0	0
D => C								D => D							
P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT	P/C	M/C	CAR	LGV	OGV1	OGV2	PSV	TOT

BleuScan - Survey "Clane" v2.0 22/03/2019

Average weekday matrice

Period: 05.03.2019 - 08.03.2019

Trafic extrapolated

Average weekday 07:00 - 19:00

Stations	1	2	3	4	5	6	SUM
1	221	274	220	813	160	945	2633
2	240	222	883	1008	811	609	3773
3	131	828	65	321	66	167	1578
4	704	1236	333	155	304	333	3065
5	133	811	66	345	169	203	1727
6	766	609	172	523	267	141	2478
SUM	2195	3980	1739	3165	1777	2398	
Big sum (trafic o-d)	4828	7753	3317	6230	3504	4876	
Counting	7160	11130	8650	9190	5850	7250	

*Difference between "Counting" and "trafic o-d" is local trafic (counted only at one station)

Average weekday **

Stations	1	2	3	4	5	6	SUM
1	280	347	279	1029	203	1196	3334
2	304	281	1118	1276	1027	771	4777
3	166	1048	82	406	84	211	1997
4	891	1565	422	196	385	422	3881
5	168	1027	84	437	214	257	2187
6	970	771	218	662	338	179	3138
SUM	2779	5039	2203	4006	2251	3036	
Big sum (trafic o-d)	6113	9816	4200	7887	4438	6174	
Detection	9065	14091	10951	11635	7406	9179	

**The evaluation of different counting stations in Switzerland has shown that an average of 79% of trafic is counted between 07:00 and 19:00. So the result must be extrapolated by a factor of 1.266 to get an average weekday (00 - 24)

APPENDIX C – TRAFFIC FLOW SHEETS

R403 / Brooklands / Capdoo Park Crossroads Junction - AM Peak

2018 AM Peak - Existing Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	285	10	**296**
Brooklands	31	0	58	1	**90**
R403 (west)	799	9	0	14	**822**
Capdoo Park	39	3	15	0	**57**
Totals	**869**	**13**	**358**	**25**	**1265**

2020 AM Peak - Base Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	293	10	**304**
Brooklands	32	0	60	1	**93**
R403 (west)	822	9	0	14	**845**
Capdoo Park	40	3	15	0	**58**
Totals	**894**	**13**	**368**	**25**	**1300**

AM Peak - Development flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	4	0	0	**4**
Brooklands	22	0	41	0	**63**
R403 (west)	0	36	0	0	**36**
Capdoo Park	0	0	0	0	**0**
Totals	**22**	**40**	**41**	**0**	**103**

2022 AM Peak - No Development (Existing + 5.88%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	310	11	**322**
Brooklands	34	0	64	1	**98**
R403 (west)	870	10	0	15	**895**
Capdoo Park	42	3	16	0	**61**
Totals	**947**	**14**	**390**	**26**	**1376**

2022 AM Peak - With Development

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	5	310	11	**326**
Brooklands	56	0	105	1	**161**
R403 (west)	870	46	0	15	**931**
Capdoo Park	42	3	16	0	**61**
Totals	**969**	**54**	**431**	**26**	**1479**

2027 AM Peak - No Development (Existing + 16.49%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	341	12	**354**
Brooklands	37	0	70	1	**108**
R403 (west)	958	10	0	16	**984**
Capdoo Park	47	3	17	0	**68**
Totals	**1041**	**15**	**429**	**29**	**1514**

2027 AM Peak - With Development

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	5	341	12	**358**
Brooklands	59	0	111	1	**171**
R403 (west)	958	46	0	16	**1020**
Capdoo Park	47	3	17	0	**68**
Totals	**1063**	**55**	**470**	**29**	**1617**

2037 AM Peak - No Development (Existing + 27.19%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	373	13	**387**
Brooklands	41	0	76	1	**118**
R403 (west)	1046	11	0	18	**1075**
Capdoo Park	51	4	19	0	**74**
Totals	**1137**	**17**	**468**	**32**	**1653**

2037 AM Peak - With Development

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	5	373	13	**391**
Brooklands	63	0	117	1	**181**
R403 (west)	1046	47	0	18	**1111**
Capdoo Park	51	4	19	0	**74**
Totals	**1159**	**57**	**509**	**32**	**1756**

R403 / Brooklands / Capdoo Park Crossroads Junction - PM Peak

2018 PM Peak - Existing Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	24	797	42	**863**
Brooklands	6	0	32	3	**41**
R403 (west)	365	43	0	36	**444**
Capdoo Park	18	0	11	0	**29**
Totals	**389**	**67**	**840**	**81**	**1377**

2020 PM Peak - Base Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	25	820	43	**888**
Brooklands	6	0	40	3	**49**
R403 (west)	375	44	0	37	**456**
Capdoo Park	19	0	11	0	**30**
Totals	**400**	**69**	**871**	**83**	**1423**

PM Peak - Development flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	22	0	0	**22**
Brooklands	6	0	36	0	**42**
R403 (west)	0	40	0	0	**40**
Capdoo Park	0	0	0	0	**0**
Totals	**6**	**62**	**36**	**0**	**104**

2022 PM Peak - No Development (Existing + 5.88%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	26	868	46	**940**
Brooklands	6	0	42	3	**52**
R403 (west)	397	47	0	39	**483**
Capdoo Park	20	0	12	0	**32**
Totals	**424**	**73**	**922**	**88**	**1507**

2022 PM Peak - With Development

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	48	868	46	**962**
Brooklands	12	0	78	3	**94**
R403 (west)	397	87	0	39	**523**
Capdoo Park	20	0	12	0	**32**
Totals	**430**	**135**	**958**	**88**	**1611**

2027 PM Peak - No Development (Existing + 16.49%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	29	955	50	**1034**
Brooklands	7	0	47	3	**57**
R403 (west)	437	51	0	43	**531**
Capdoo Park	22	0	13	0	**35**
Totals	**466**	**80**	**1015**	**97**	**1658**

2027 PM Peak - With Development

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	51	955	50	**1056**
Brooklands	13	0	83	3	**99**
R403 (west)	437	91	0	43	**571**
Capdoo Park	22	0	13	0	**35**
Totals	**472**	**142**	**1051**	**97**	**1762**

2037 PM Peak - No Development (Existing + 27.19%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	32	1043	55	**1129**
Brooklands	8	0	51	4	**62**
R403 (west)	477	56	0	47	**580**
Capdoo Park	24	0	14	0	**38**
Totals	**509**	**88**	**1108**	**106**	**1810**

2037 PM Peak - With Development

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	54	1043	55	**1151**
Brooklands	14	0	87	4	**104**
R403 (west)	477	96	0	47	**620**
Capdoo Park	24	0	14	0	**38**
Totals	**515**	**150**	**1144**	**106**	**1914**

R403 / Brooklands / Capdoo Park Crossroads Junction - AM Peak with Relief Road Open

2020 AM Peak - Base Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	293	10	**304**
Brooklands	32	0	60	1	**93**
R403 (west)	822	9	0	14	**845**
Capdoo Park	40	3	15	0	**58**
Totals	**894**	**13**	**368**	**25**	**1300**

Relief Road Open - Redistribution of Base Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	0	-70	27	**-43**
Brooklands	0	0	0	0	**0**
R403 (west)	-68	0	0	62	**-6**
Capdoo Park	26	0	62	0	**88**
Totals	**-42**	**0**	**-8**	**89**	**39**

AM Peak - Base Flows with Relief Road Open

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	223	37	**261**
Brooklands	32	0	60	1	**93**
R403 (west)	754	9	0	76	**839**
Capdoo Park	66	3	77	0	**146**
Totals	**852**	**13**	**360**	**114**	**1339**

AM Peak - Development Flows + Sensitivity Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	4	0	4	**8**
Brooklands	22	0	28	13	**63**
R403 (west)	0	36	0	33	**69**
Capdoo Park	36	0	45	0	**81**
Totals	**58**	**40**	**73**	**50**	**221**

2027 AM Peak - No Development (Existing + 16.49%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	260	43	**304**
Brooklands	37	0	70	1	**108**
R403 (west)	878	10	0	89	**977**
Capdoo Park	77	3	90	0	**170**
Totals	**992**	**15**	**419**	**133**	**1560**

2027 AM Peak - With Development

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	5	260	47	**312**
Brooklands	59	0	98	14	**171**
R403 (west)	878	46	0	122	**1046**
Capdoo Park	113	3	135	0	**251**
Totals	**1050**	**55**	**492**	**183**	**1781**

2037 AM Peak - No Development (Existing + 27.19%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	1	284	47	**332**
Brooklands	41	0	76	1	**118**
R403 (west)	959	11	0	97	**1067**
Capdoo Park	84	4	98	0	**186**
Totals	**1084**	**17**	**458**	**145**	**1703**

2037 AM Peak - With Development

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	5	284	51	**340**
Brooklands	63	0	104	14	**181**
R403 (west)	959	47	0	130	**1136**
Capdoo Park	120	4	143	0	**267**
Totals	**1142**	**57**	**531**	**195**	**1924**

R403 / Brooklands / Capdoo Park Crossroads Junction - PM Peak with Relief Road Open

2020 PM Peak - Base Flows

0	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	25	820	43	**888**
Brooklands	6	0	40	3	**49**
R403 (west)	375	44	0	37	**456**
Capdoo Park	19	0	11	0	**30**
Totals	**400**	**69**	**871**	**83**	**1423**

Relief Road Open - Redistribution of Base Flows

0	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	0	-75	29	**-46**
Brooklands	0	0	0	0	**0**
R403 (west)	-73	0	0	68	**-5**
Capdoo Park	28	0	67	0	**95**
Totals	**-45**	**0**	**-8**	**97**	**44**

PM Peak - Base Flows with Relief Road Open

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	25	745	72	**842**
Brooklands	6	0	40	3	**49**
R403 (west)	302	44	0	105	**451**
Capdoo Park	47	0	78	0	**125**
Totals	**355**	**69**	**863**	**180**	**1467**

PM Peak - Development Flows + Sensitivity Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	22	0	29	**51**
Brooklands	7	0	27	8	**42**
R403 (west)	0	40	0	54	**94**
Capdoo Park	23	0	28	0	**51**
Totals	**30**	**62**	**55**	**91**	**238**

2027 PM Peak - No Development (Existing + 16.49%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	29	868	84	**981**
Brooklands	7	0	47	3	**57**
R403 (west)	352	51	0	122	**525**
Capdoo Park	55	0	91	0	**146**
Totals	**414**	**80**	**1005**	**210**	**1709**

2027 PM Peak - With Development + Sensitivity Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	51	868	113	**1032**
Brooklands	14	0	74	11	**99**
R403 (west)	352	91	0	176	**619**
Capdoo Park	78	0	119	0	**197**
Totals	**444**	**142**	**1060**	**301**	**1947**

2037 PM Peak - No Development (Existing + 27.19%)

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	32	948	92	**1071**
Brooklands	8	0	51	4	**62**
R403 (west)	384	56	0	134	**574**
Capdoo Park	60	0	99	0	**159**
Totals	**452**	**88**	**1098**	**229**	**1866**

2037 PM Peak - With Development + Sensitivity Flows

	R403 (east)	Brooklands	R403 (west)	Capdoo Park	**Totals**
R403 (east)	0	54	948	121	**1122**
Brooklands	15	0	78	12	**104**
R403 (west)	384	96	0	188	**668**
Capdoo Park	83	0	127	0	**210**
Totals	**482**	**150**	**1153**	**320**	**2104**

R403 / Alexander Walk / The Avenue Roundabout - AM Peak

2018 AM Peak - Existing Flows

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	29	313	1	**343**
Alexandra Walk	72	0	85	0	**157**
R403 (west)	362	21	0	4	**387**
The Avenue	10	0	6	0	**16**
Totals	**444**	**50**	**404**	**5**	**903**

2020 AM Peak - Base Flows

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	30	322	1	**353**
Alexandra Walk	74	0	87	0	**161**
R403 (west)	372	22	0	4	**398**
The Avenue	10	0	6	0	**16**
Totals	**456**	**52**	**415**	**5**	**928**

AM Peak - Development flows

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	0	0	0	**0**
Alexandra Walk	0	0	48	0	**48**
R403 (west)	0	30	0	0	**30**
The Avenue	0	0	0	0	**0**
Totals	**0**	**30**	**48**	**0**	**78**

2022 AM Peak - No Development (Existing + 5.88%)

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	32	341	1	**374**
Alexandra Walk	78	0	92	0	**170**
R403 (west)	394	23	0	4	**421**
The Avenue	11	0	6	0	**17**
Totals	**483**	**55**	**439**	**5**	**983**

2022 AM Peak - With Development

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	32	341	1	**374**
Alexandra Walk	78	0	140	0	**218**
R403 (west)	394	53	0	4	**451**
The Avenue	11	0	6	0	**17**
Totals	**483**	**85**	**487**	**5**	**1061**

2027 AM Peak - No Development (Existing + 16.49%)

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	35	375	1	**411**
Alexandra Walk	86	0	101	0	**188**
R403 (west)	433	26	0	5	**464**
The Avenue	12	0	7	0	**19**
Totals	**531**	**61**	**483**	**6**	**1081**

2027 AM Peak - With Development

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	35	375	1	**411**
Alexandra Walk	86	0	149	0	**236**
R403 (west)	433	56	0	5	**494**
The Avenue	12	0	7	0	**19**
Totals	**531**	**91**	**531**	**6**	**1159**

2037 AM Peak - No Development (Existing + 27.19%)

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	37	398	1	**436**
Alexandra Walk	92	0	108	0	**200**
R403 (west)	460	27	0	5	**492**
The Avenue	13	0	8	0	**20**
Totals	**565**	**64**	**514**	**6**	**1149**

2037 AM Peak - With Development

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	37	398	1	**436**
Alexandra Walk	92	0	156	0	**248**
R403 (west)	460	57	0	5	**522**
The Avenue	13	0	8	0	**20**
Totals	**565**	**94**	**562**	**6**	**1227**

R403 / Alexander Walk / The Avenue Roundabout - PM Peak

2018 PM Peak - Existing Flows

#REF!	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	49	580	9	**638**
Alexandra Walk	31	0	31	0	**62**
R403 (west)	440	70	3	10	**523**
The Avenue	3	0	3	0	**6**
Totals	**474**	**119**	**617**	**19**	**1229**

2020 PM Peak - Base Flows

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	50	597	9	**656**
Alexandra Walk	32	0	32	0	**64**
R403 (west)	453	72	3	10	**538**
The Avenue	3	0	3	0	**6**
Totals	**488**	**122**	**635**	**19**	**1264**

PM Peak - Developmer

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	0	0	0	**0**
Alexandra Walk	0	0	31	0	**31**
R403 (west)	0	47	0	0	**47**
The Avenue	0	0	0	0	**0**
Totals	**0**	**47**	**31**	**0**	**78**

2022 PM Peak - No Development (Existing + 5.88%)

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	53	632	10	**695**
Alexandra Walk	34	0	34	0	**68**
R403 (west)	480	76	3	11	**570**
The Avenue	3	0	3	0	**6**
Totals	**517**	**129**	**672**	**20**	**1338**

2022 PM Peak - With Development

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	53	632	10	**695**
Alexandra Walk	34	0	65	0	**99**
R403 (west)	480	123	3	11	**617**
The Avenue	3	0	3	0	**6**
Totals	**517**	**176**	**703**	**20**	**1416**

2027 PM Peak - No Development (Existing + 16.49%)

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	58	695	10	**764**
Alexandra Walk	37	0	37	0	**75**
R403 (west)	528	84	3	12	**627**
The Avenue	3	0	3	0	**7**
Totals	**568**	**142**	**740**	**22**	**1472**

2027 PM Peak - With Development

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	58	695	10	**764**
Alexandra Walk	37	0	68	0	**106**
R403 (west)	528	131	3	12	**674**
The Avenue	3	0	3	0	**7**
Totals	**568**	**189**	**771**	**22**	**1550**

2037 PM Peak - No Development (Existing + 27.19%)

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	62	738	11	**811**
Alexandra Walk	39	0	39	0	**79**
R403 (west)	560	89	4	13	**665**
The Avenue	4	0	4	0	**8**
Totals	**603**	**151**	**785**	**24**	**1563**

2037 PM Peak - With Development

	R403 (east)	Alexandra Walk	R403 (west)	The Avenue	**Totals**
R403 (east)	0	62	738	11	**811**
Alexandra Walk	39	0	70	0	**110**
R403 (west)	560	136	4	13	**712**
The Avenue	4	0	4	0	**8**
Totals	**603**	**198**	**816**	**24**	**1641**

APPENDIX D – TRICS INFORMATION

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED

VEHICLES

Selected regions and areas:

08	**NORTH WEST**		
	GM	GREATER MANCHESTER	5 days
	LC	LANCASHIRE	2 days
11	**SCOTLAND**		
	FI	FIFE	1 days
12	**NORTHERN IRELAND**		
	NI	NORTHERN IRELAND	12 days

Main parameter selection:

Parameter: Number of households
Range: 20 to 147 (units:)

Date Range: 01/01/97 to 20/06/05

Selected survey days:

Monday	5 days
Tuesday	3 days
Wednesday	2 days
Thursday	5 days
Friday	5 days

Selected survey types:

Manual count	3 days
Directional ATC Count	17 days

LIST OF SITES relevant to selection parameters

1 **FI-03-A-01** **BALMULLO HOUSING,NEAR CUPAR** **FIFE**
HILLVIEW ROAD

BALMULLO
Total Number of households: 118 ******

2 **GM-03-A-01** **BOLTON HOUSING** **GREATER MANCHESTER**
COLLINGWOOD WAY
WESTHOUGHTON
BOLTON
Total Number of households: 83 ******

3 **LC-03-A-12** **LANCASTER HOUSING** **LANCASHIRE**
PENNINE VIEW
GLASSON
LANCASTER
Total Number of households: 29 ******

4 **LC-03-A-13** **CHORLEY HOUSING** **LANCASHIRE**
DUNROBIN DRIVE
EUXTON
CHORLEY
Total Number of households: 37 ******

5 **NI-03-A-05** **PRIVATE HOUSING, ENNISKILLEN** **NORTHERN IRELAND**
CASTLECOOLE ROAD

ENNISKILLEN
Total Number of households: 132 ******

6 **NI-03-A-06** **PRIVATE HOUSING,MAGHERAFELT** **NORTHERN IRELAND**
STATION ROAD

MAGHERAFELT
Total Number of households: 106 ******

7 **NI-03-A-07** **PRIVATE HOUSING, COLERAINE** **NORTHERN IRELAND**
GREENHALL HIGHWAY

COLERAINE
Total Number of households: 112 ******

8 **NI-03-A-09** **BUNGALOWS, BALLYNAHINCH** **NORTHERN IRELAND**
KINEDALE PARK

BALLYNAHINCH
Total Number of households: 104 ******

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

VEHICLES

Calculation factor: 1 HHOLDS

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate
00:00 - 01:00	17	101	0.02	17	101	0.01	17	101	0.03
01:00 - 02:00	17	101	0.01	17	101	0.01	17	101	0.02
02:00 - 03:00	17	101	0.01	17	101	0.00	17	101	0.01
03:00 - 04:00	17	101	0.00	17	101	0.01	17	101	0.01
04:00 - 05:00	17	101	0.01	17	101	0.02	17	101	0.03
05:00 - 06:00	17	101	0.02	17	101	0.07	17	101	0.09
06:00 - 07:00	17	101	0.06	17	101	0.19	17	101	0.25
07:00 - 08:00	20	95	0.15	**20**	**95**	**0.49**	20	95	0.64
08:00 - 09:00	20	95	0.20	20	95	0.40	20	95	0.60
09:00 - 10:00	20	95	0.16	20	95	0.23	20	95	0.39
10:00 - 11:00	20	95	0.19	20	95	0.22	20	95	0.41
11:00 - 12:00	20	95	0.19	20	95	0.20	20	95	0.39
12:00 - 13:00	20	95	0.24	20	95	0.24	20	95	0.48
13:00 - 14:00	20	95	0.21	20	95	0.25	20	95	0.46
14:00 - 15:00	20	95	0.29	20	95	0.23	20	95	0.52
15:00 - 16:00	20	95	0.37	20	95	0.26	20	95	0.63
16:00 - 17:00	20	95	0.43	20	95	0.24	20	95	0.67
17:00 - 18:00	**20**	**95**	**0.45**	20	95	0.27	**20**	**95**	**0.72**
18:00 - 19:00	20	95	0.38	20	95	0.34	20	95	0.72
19:00 - 20:00	17	101	0.32	17	101	0.30	17	101	0.62
20:00 - 21:00	17	101	0.25	17	101	0.17	17	101	0.42
21:00 - 22:00	17	101	0.21	17	101	0.13	17	101	0.34
22:00 - 23:00	17	101	0.13	17	101	0.07	17	101	0.20
23:00 - 24:00	17	101	0.06	17	101	0.04	17	101	0.10
Daily Trip Rates:			4.35			4.38			8.75

Parameter summary

Trip rate parameter range selected:	20 - 147 (units:)
Survey date date range:	01/01/97 - 20/06/05
Number of weekdays (Monday-Friday):	20
Number of Saturdays:	0
Number of Sundays:	0
Optional parameters used in selection:	NO
Surveys manually removed from selection:	9

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED

VEHICLES

Selected regions and areas:

06	**WEST MIDLANDS**	
	WM WEST MIDLANDS	1 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**	
	NY NORTH YORKSHIRE	1 days
	WY WEST YORKSHIRE	1 days
14	**REPUBLIC OF IRELAND**	
	IR REPUBLIC OF IRELAND	1 days

Main parameter selection:

Parameter: Number of households
Range: 26 to 144 (units:)

Date Range: 01/01/97 to 13/11/03

Selected survey days:

Monday	1 days
Thursday	1 days
Friday	2 days

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
VEHICLES
Calculation factor: 1 HHOLDS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate
00:00 - 01:00	0	0	0.00	0	0	0.00	0	0	0.00
01:00 - 02:00	0	0	0.00	0	0	0.00	0	0	0.00
02:00 - 03:00	0	0	0.00	0	0	0.00	0	0	0.00
03:00 - 04:00	0	0	0.00	0	0	0.00	0	0	0.00
04:00 - 05:00	0	0	0.00	0	0	0.00	0	0	0.00
05:00 - 06:00	0	0	0.00	0	0	0.00	0	0	0.00
06:00 - 07:00	0	0	0.00	0	0	0.00	0	0	0.00
07:00 - 08:00	4	82	0.02	**4**	**82**	**0.15**	4	82	0.17
08:00 - 09:00	4	82	0.05	4	82	0.15	4	82	0.20
09:00 - 10:00	4	82	0.06	4	82	0.11	4	82	0.17
10:00 - 11:00	4	82	0.05	4	82	0.10	4	82	0.15
11:00 - 12:00	4	82	0.04	4	82	0.04	4	82	0.08
12:00 - 13:00	4	82	0.05	4	82	0.06	4	82	0.11
13:00 - 14:00	4	82	0.06	4	82	0.06	4	82	0.12
14:00 - 15:00	4	82	0.08	4	82	0.09	4	82	0.17
15:00 - 16:00	4	82	0.08	4	82	0.07	4	82	0.15
16:00 - 17:00	4	82	0.10	4	82	0.05	4	82	0.15
17:00 - 18:00	4	82	0.12	4	82	0.07	4	82	0.19
18:00 - 19:00	**4**	**82**	**0.15**	4	82	0.05	4	82	0.20
19:00 - 20:00	1	26	0.12	1	26	0.12	**1**	**26**	**0.24**
20:00 - 21:00	1	26	0.12	1	26	0.12	1	26	0.24
21:00 - 22:00	0	0	0.00	0	0	0.00	0	0	0.00
22:00 - 23:00	0	0	0.00	0	0	0.00	0	0	0.00
23:00 - 24:00	0	0	0.00	0	0	0.00	0	0	0.00
Daily Trip Rates:			1.08			1.23			2.34

Parameter summary

Trip rate parameter range selected:	26 - 144 (units:)
Survey date date range:	01/01/97 - 13/11/03
Number of weekdays (Monday-Friday):	4
Number of Saturdays:	0
Number of Sundays:	0
Optional parameters used in selection:	NO
Surveys manually removed from selection:	0

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 04 - EDUCATION
Category : D - NURSERY

Selected regions and areas:

02	**SOUTH EAST**		
	SC	SURREY	1 days
10	**WALES**		
	WR	WREXHAM	1 days
11	**SCOTLAND**		
	ER	EAST RENFREWSHIRE	6 days

Main parameter selection:

Parameter: Gross floor area
Range: 120 to 350 (units: sqm)

Date Range: 01/01/96 to 23/09/03

Selected survey days:

Tuesday	4 days
Wednesday	3 days
Thursday	1 days

Selected survey types:

Manual count	8 days
Directional ATC Count	0 days

LIST OF SITES relevant to selection parameters

1 **ER-04-D-04** **NURSERY, NEWTON MEARNS** **EAST RENFREWSHIRE**
STEWARTON ROAD
GREENLAW
NEWTON MEARNS
Total Gross floor area: 205 sqm

2 **ER-04-D-07** **NURSERY, NEILSTON** **EAST RENFREWSHIRE**
HIGH STREET

NEILSTON
Total Gross floor area: 341 sqm

3 **ER-04-D-08** **NURSERY, GIFFNOCK** **EAST RENFREWSHIRE**
WOODFARM ROAD

GIFFNOCK
Total Gross floor area: 350 sqm

4 **SC-04-D-03** **NURSERY, CHOBHAM** **SURREY**
CHERTSEY ROAD
LARKENSHAW
CHOBHAM
Total Gross floor area: 120 sqm

5 **WR-04-D-01** **NURSERY, NEAR WREXHAM** **WREXHAM**
LLAY ROAD
CEFN-Y-BEDD
NEAR WREXHAM
Total Gross floor area: 230 sqm

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	0	0	0.00	0	0	0.00	0	0	0.00
01:00 - 02:00	0	0	0.00	0	0	0.00	0	0	0.00
02:00 - 03:00	0	0	0.00	0	0	0.00	0	0	0.00
03:00 - 04:00	0	0	0.00	0	0	0.00	0	0	0.00
04:00 - 05:00	0	0	0.00	0	0	0.00	0	0	0.00
05:00 - 06:00	0	0	0.00	0	0	0.00	0	0	0.00
06:00 - 07:00	0	0	0.00	0	0	0.00	0	0	0.00
07:00 - 08:00	8	268	1.26	8	268	0.42	8	268	1.68
08:00 - 09:00	**8**	**268**	**5.93**	8	268	4.11	**8**	**268**	**10.04**
09:00 - 10:00	8	268	3.73	8	268	4.06	8	268	7.79
10:00 - 11:00	8	268	1.91	8	268	1.77	8	268	3.68
11:00 - 12:00	8	268	3.73	**8**	**268**	**4.39**	8	268	8.12
12:00 - 13:00	8	268	4.95	8	268	3.83	8	268	8.78
13:00 - 14:00	8	268	2.75	8	268	3.73	8	268	6.48
14:00 - 15:00	8	268	1.87	8	268	2.05	8	268	3.92
15:00 - 16:00	8	268	2.85	8	268	3.45	8	268	6.30
16:00 - 17:00	8	268	1.73	8	268	1.91	8	268	3.64
17:00 - 18:00	8	268	2.99	8	268	3.22	8	268	6.21
18:00 - 19:00	7	273	0.00	7	273	0.52	7	273	0.52
19:00 - 20:00	0	0	0.00	0	0	0.00	0	0	0.00
20:00 - 21:00	0	0	0.00	0	0	0.00	0	0	0.00
21:00 - 22:00	0	0	0.00	0	0	0.00	0	0	0.00
22:00 - 23:00	0	0	0.00	0	0	0.00	0	0	0.00
23:00 - 24:00	0	0	0.00	0	0	0.00	0	0	0.00
Daily Trip Rates:			33.71			33.48			67.16

Parameter summary

Trip rate parameter range selected:	120 - 350 (units: sqm)
Survey date date range:	01/01/96 - 23/09/03
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Optional parameters used in selection:	NO
Surveys manually removed from selection:	1

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED
VEHICLES

Selected regions and areas:

07	YORKSHIRE & NORTH LINCOLNSHIRE	
	WY WEST YORKSHIRE	1 days
13	REPUBLIC OF IRELAND	
	WT WESTMEATH	1 days

Main parameter selection:

Parameter: Number of households
Range: 12 to 20 (units:)

Date Range: 01/01/00 to 21/09/07

Selected survey days:

Tuesday	1 days
Wednesday	1 days

Selected survey types:

Manual count	2 days
Directional ATC Count	0 days

Selected Locations:

Town Centre	1
Edge of Town Centre	1

Selected Location Sub Categories:

Built-Up Zone	1
No Sub Category	1

LIST OF SITES relevant to selection parameters

1 WT-03-C-02 FLATS, ATHLONE WESTMEATH
CUSTUME PLACE

ATHLONE
Total Number of households: 20

2 WY-03-C-02 BLOCK OF FLATS, HUDDERSFIELD WEST YORKSHIRE
KINGS MILL LANE
ASPLEY
HUDDERSFIELD
Total Number of households: 12

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
VEHICLES
Calculation factor: 1 HHOLDS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate	No. Days	Ave. HHOLDS	Trip Rate
00:00 - 01:00	0	0	0.000	0	0	0.000	0	0	0.000
01:00 - 02:00	0	0	0.000	0	0	0.000	0	0	0.000
02:00 - 03:00	0	0	0.000	0	0	0.000	0	0	0.000
03:00 - 04:00	0	0	0.000	0	0	0.000	0	0	0.000
04:00 - 05:00	0	0	0.000	0	0	0.000	0	0	0.000
05:00 - 06:00	0	0	0.000	0	0	0.000	0	0	0.000
06:00 - 07:00	0	0	0.000	0	0	0.000	0	0	0.000
07:00 - 08:00	2	16	0.031	2	16	0.063	2	16	0.093
08:00 - 09:00	2	16	0.031	**2**	**16**	**0.281**	2	16	0.312
09:00 - 10:00	2	16	0.063	2	16	0.156	2	16	0.218
10:00 - 11:00	2	16	0.063	2	16	0.031	2	16	0.093
11:00 - 12:00	2	16	0.031	2	16	0.031	2	16	0.062
12:00 - 13:00	2	16	0.000	2	16	0.094	2	16	0.094
13:00 - 14:00	2	16	0.031	2	16	0.031	2	16	0.062
14:00 - 15:00	2	16	0.031	2	16	0.031	2	16	0.062
15:00 - 16:00	2	16	0.094	2	16	0.031	2	16	0.125
16:00 - 17:00	2	16	0.063	2	16	0.031	2	16	0.093
17:00 - 18:00	**2**	**16**	**0.188**	2	16	0.156	**2**	**16**	**0.344**
18:00 - 19:00	2	16	0.063	2	16	0.094	2	16	0.156
19:00 - 20:00	0	0	0.000	0	0	0.000	0	0	0.000
20:00 - 21:00	0	0	0.000	0	0	0.000	0	0	0.000
21:00 - 22:00	0	0	0.000	0	0	0.000	0	0	0.000
22:00 - 23:00	0	0	0.000	0	0	0.000	0	0	0.000
23:00 - 24:00	0	0	0.000	0	0	0.000	0	0	0.000
Total Rates:			0.685			1.029			1.714

Parameter summary

Trip rate parameter range selected:	12 - 20 (units:)
Survey date date range:	01/01/00 - 21/09/07
Number of weekdays (Monday-Friday):	2
Number of Saturdays:	0
Number of Sundays:	0
Optional parameters used in selection:	NO
Surveys manually removed from selection:	5

APPENDIX E – PICADY RESULTS

Junctions 9

PICADY 9 - Priority Intersection Module

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: Existing Junction.j9
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\PICADY
Report generation date: 01/12/2020 11:02:57

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	2020							
Stream B-ACD	0.3	13.42	0.26	B	0.2	13.99	0.18	B
Stream A-BCD	0.0	9.14	0.03	A	0.1	7.02	0.09	A
Stream D-AB	0.2	10.69	0.14	B	0.1	6.83	0.05	A
Stream D-BC	0.1	18.29	0.11	C	0.1	14.41	0.07	B
Stream C-ABD	0.0	6.52	0.02	A	0.1	8.16	0.11	A
	2022 no dev							
Stream B-ACD	0.4	14.50	0.28	B	0.2	14.82	0.20	B
Stream A-BCD	0.0	9.47	0.03	A	0.1	7.07	0.09	A
Stream D-AB	0.2	11.22	0.16	B	0.1	6.97	0.06	A
Stream D-BC	0.1	19.92	0.13	C	0.1	15.45	0.08	C
Stream C-ABD	0.0	6.56	0.02	A	0.1	8.41	0.12	A
	2022 with dev							
Stream B-ACD	0.8	19.52	0.45	C	0.5	18.02	0.35	C
Stream A-BCD	0.0	9.82	0.03	A	0.1	7.22	0.10	A
Stream D-AB	0.2	11.35	0.16	B	0.1	6.98	0.06	A
Stream D-BC	0.2	22.27	0.14	C	0.1	16.84	0.09	C
Stream C-ABD	0.1	6.37	0.08	A	0.3	8.82	0.21	A
	2027 no dev							
Stream B-ACD	0.5	16.48	0.33	C	0.3	17.78	0.25	C
Stream A-BCD	0.0	10.20	0.04	B	0.1	7.12	0.10	A
Stream D-AB	0.2	12.48	0.18	B	0.1	7.15	0.06	A
Stream D-BC	0.2	23.93	0.15	C	0.1	17.64	0.11	C
Stream C-ABD	0.0	6.68	0.03	A	0.2	8.88	0.14	A
	2027 with dev							
Stream B-ACD	1.0	23.37	0.51	C	0.7	22.40	0.42	C
Stream A-BCD	0.0	10.59	0.05	B	0.1	7.27	0.11	A
Stream D-AB	0.2	12.68	0.19	B	0.1	7.17	0.06	A
Stream D-BC	0.2	27.54	0.16	D	0.1	19.52	0.12	C
Stream C-ABD	0.1	6.42	0.09	A	0.4	9.28	0.24	A
	2037 no dev							
Stream B-ACD	0.6	19.28	0.39	C	0.4	20.69	0.30	C
Stream A-BCD	0.1	10.92	0.05	B	0.2	7.14	0.12	A
Stream D-AB	0.3	13.98	0.22	B	0.1	7.42	0.07	A
Stream D-BC	0.2	30.19	0.19	D	0.2	20.82	0.14	C
Stream C-ABD	0.0	6.74	0.03	A	0.2	9.35	0.17	A
	2037 with dev							
Stream B-ACD	1.3	29.31	0.58	D	0.9	27.56	0.48	D
Stream A-BCD	0.1	11.38	0.05	B	0.2	7.28	0.12	A
Stream D-AB	0.3	14.31	0.23	B	0.1	7.45	0.07	A
Stream D-BC	0.3	36.22	0.21	E	0.2	23.45	0.16	C
Stream C-ABD	0.1	6.41	0.09	A	0.5	9.76	0.28	A
	2037 Sensitivity							
Stream B-ACD	1.9	43.86	0.68	E	1.2	40.75	0.57	E
Stream A-BCD	0.2	13.04	0.19	B	1.0	7.56	0.36	A
Stream D-AB	1.6	35.38	0.64	E	0.4	12.58	0.30	B
Stream D-BC	39.3	764.93	1.53	F	9.2	234.22	1.02	F
Stream C-ABD	0.1	6.27	0.09	A	0.6	9.50	0.29	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	12/04/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROADPLAN01\jbyrne
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2020	AM	DIRECT	07:30	08:30	60	15	✓
D2	2020	PM	DIRECT	17:30	18:30	60	15	✓
D3	2022 no dev	AM	DIRECT	07:30	08:30	60	15	✓
D4	2022 with dev	AM	DIRECT	07:30	08:30	60	15	✓
D5	2027 no dev	AM	DIRECT	07:30	08:30	60	15	✓
D6	2027 with dev	AM	DIRECT	07:30	08:30	60	15	✓
D7	2037 no dev	AM	DIRECT	07:30	08:30	60	15	✓
D8	2037 with dev	AM	DIRECT	07:30	08:30	60	15	✓
D9	2022 no dev	PM	DIRECT	17:30	18:30	60	15	✓
D10	2022 with dev	PM	DIRECT	17:30	18:30	60	15	✓
D11	2027 no dev	PM	DIRECT	17:30	18:30	60	15	✓
D12	2027 with dev	PM	DIRECT	17:30	18:30	60	15	✓
D13	2037 no dev	PM	DIRECT	17:30	18:30	60	15	✓
D14	2037 with dev	PM	DIRECT	17:30	18:30	60	15	✓
D15	2037 Sensitivity	AM	DIRECT	07:30	08:30	60	15	✓
D16	2037 Sensitivity	PM	DIRECT	17:30	18:30	60	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2020, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.61	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	untitled		Major
B	untitled		Minor
C	untitled		Major
D	untitled		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A	6.50			115.0	✓	1.00
C	6.50			250.0	✓	1.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Lane width (m)	Lane Width (Left) (m)	Lane Width (Right) (m)	Visibility to left (m)	Visibility to right (m)
B	One lane	2.20			25	30
D	Two lanes		3.20	3.20	40	35

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Junction	Stream	Intercept (Veh/TS)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
1	A-D	160.140	-	-	-	-	-	-	0.243	0.347	0.243	-	-	-
1	B-A	115.087	0.082	0.207	0.207	-	-	-	0.130	0.296	-	0.207	0.207	0.104
1	B-C	147.834	0.089	0.224	-	-	-	-	-	-	-	-	-	-
1	B-D, nearside lane	115.087	0.082	0.207	0.207	-	-	-	0.130	0.296	0.130	-	-	-
1	B-D, offside lane	115.087	0.082	0.207	0.207	-	-	-	0.130	0.296	0.130	-	-	-
1	C-B	179.685	0.272	0.272	0.389	-	-	-	-	-	-	-	-	-
1	D-A	164.726	-	-	-	-	-	-	0.250	-	0.099	-	-	-
1	D-B, nearside lane	129.485	0.147	0.147	0.333	-	-	-	0.233	0.233	0.092	-	-	-
1	D-B, offside lane	129.485	0.147	0.147	0.333	-	-	-	0.233	0.233	0.092	-	-	-
1	D-C	129.485	-	0.147	0.333	0.117	0.233	0.233	0.233	0.233	0.092	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2020	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

07:30 - 07:45

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	50.00	3.00
	B	9.00	0.00	12.00	0.00
	C	234.00	3.00	0.00	0.00
	D	6.00	0.00	0.00	0.00

07:45 - 08:00

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	73.00	2.00
	B	9.00	0.00	10.00	0.00
	C	233.00	2.00	0.00	2.00
	D	8.00	1.00	4.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	76.00	2.00
	B	9.00	0.00	15.00	0.00
	C	193.00	2.00	0.00	2.00
	D	11.00	0.00	5.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	94.00	3.00
	B	4.00	0.00	22.00	1.00
	C	160.00	2.00	0.00	10.00
	D	14.00	2.00	6.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	6	0
	B	0	0	4	0
	C	4	11	0	0
	D	0	67	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.26	13.42	0.3	B	22.75	91.00
A-BCD	0.03	9.14	0.0	A	2.54	10.16
A-B					0.25	1.00
A-C					73.21	292.84
D-AB	0.14	10.69	0.2	B	10.16	40.63
D-BC	0.11	18.29	0.1	C	4.09	16.38
C-ABD	0.02	6.52	0.0	A	2.33	9.33
C-D					3.50	14.00
C-A					204.92	819.68

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	21.00	21.00	94.90	0.221	20.72	0.0	0.3	12.089	B
A-BCD	3.05	3.05	101.40	0.030	3.01	0.0	0.0	9.144	A
A-B	0.00	0.00			0.00				
A-C	49.95	49.95			49.95				
D-AB	6.00	6.00	103.95	0.058	5.94	0.0	0.1	9.177	A
D-BC	0.00	0.00	45.78	0.000	0.00	0.0	0.0	0.000	A
C-ABD	3.14	3.14	154.81	0.020	3.12	0.0	0.0	5.933	A
C-D	0.00	0.00			0.00				
C-A	233.86	233.86			233.86				

07:45 - 08:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	19.00	19.00	86.11	0.221	19.00	0.3	0.3	13.424	B
A-BCD	2.03	2.03	101.53	0.020	2.04	0.0	0.0	9.047	A
A-B	1.00	1.00			1.00				
A-C	72.97	72.97			72.97				
D-AB	8.54	8.54	91.11	0.094	8.50	0.1	0.1	10.693	B
D-BC	4.46	4.46	53.49	0.083	4.38	0.0	0.1	18.293	C
C-ABD	2.07	2.07	146.92	0.014	2.08	0.0	0.0	6.210	A
C-D	2.00	2.00			2.00				
C-A	232.93	232.93			232.93				

08:00 - 08:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	24.00	24.00	95.17	0.252	23.95	0.3	0.3	12.599	B
A-BCD	2.03	2.03	111.53	0.018	2.03	0.0	0.0	8.220	A
A-B	0.00	0.00			0.00				
A-C	75.97	75.97			75.97				
D-AB	11.00	11.00	112.04	0.098	10.99	0.1	0.1	9.083	A
D-BC	5.00	5.00	64.66	0.077	5.00	0.1	0.1	15.606	C
C-ABD	2.06	2.06	145.58	0.014	2.06	0.0	0.0	6.271	A
C-D	2.00	2.00			2.00				
C-A	192.94	192.94			192.94				

08:15 - 08:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	27.00	27.00	105.26	0.257	26.99	0.3	0.3	11.445	B
A-BCD	3.06	3.06	118.93	0.026	3.05	0.0	0.0	7.765	A
A-B	0.00	0.00			0.00				
A-C	93.94	93.94			93.94				
D-AB	15.09	15.09	105.40	0.143	15.04	0.1	0.2	9.734	A
D-BC	6.91	6.91	63.14	0.110	6.88	0.1	0.1	15.400	C
C-ABD	2.06	2.06	140.15	0.015	2.06	0.0	0.0	6.516	A
C-D	10.00	10.00			10.00				
C-A	159.95	159.95			159.95				

2020, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.11	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2020	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		A	B	C	D
From	A	0.00	8.00	209.00	11.00
	B	3.00	0.00	10.00	1.00
	C	81.00	11.00	0.00	10.00
	D	5.00	0.00	2.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		A	B	C	D
From	A	0.00	8.00	210.00	11.00
	B	0.00	0.00	9.00	1.00
	C	87.00	12.00	0.00	11.00
	D	7.00	0.00	5.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	4.00	220.00	11.00
	B	2.00	0.00	5.00	0.00
	C	91.00	12.00	0.00	7.00
	D	4.00	0.00	3.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	4.00	181.00	9.00
	B	1.00	0.00	8.00	1.00
	C	116.00	8.00	0.00	8.00
	D	2.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	2
	B	0	0	3	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.18	13.99	0.2	B	10.25	41.00
A-BCD	0.09	7.02	0.1	A	12.00	47.99
A-B					5.96	23.83
A-C					203.55	814.18
D-AB	0.05	6.83	0.1	A	4.50	18.00
D-BC	0.07	14.41	0.1	B	2.75	11.00
C-ABD	0.11	8.16	0.1	A	11.63	46.52
C-D					8.92	35.68
C-A					92.95	371.81

Main Results for each time segment

17:30 - 17:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	14.00	14.00	77.91	0.180	13.79	0.0	0.2	13.991	B
A-BCD	12.60	12.60	150.31	0.084	12.50	0.0	0.1	6.527	A
A-B	7.94	7.94			7.94				
A-C	207.46	207.46			207.46				
D-AB	5.00	5.00	142.06	0.035	4.96	0.0	0.0	6.562	A
D-BC	2.00	2.00	68.72	0.029	1.97	0.0	0.0	13.478	B
C-ABD	11.83	11.83	123.76	0.096	11.72	0.0	0.1	8.026	A
C-D	9.91	9.91			9.91				
C-A	80.26	80.26			80.26				

17:45 - 18:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	10.00	10.00	88.13	0.113	10.09	0.2	0.1	11.504	B
A-BCD	12.66	12.66	148.63	0.085	12.66	0.1	0.1	6.619	A
A-B	7.94	7.94			7.94				
A-C	208.40	208.40			208.40				
D-AB	7.00	7.00	138.83	0.050	6.98	0.0	0.1	6.826	A
D-BC	5.00	5.00	67.30	0.074	4.95	0.0	0.1	14.412	B
C-ABD	13.07	13.07	124.98	0.105	13.06	0.1	0.1	8.040	A
C-D	10.88	10.88			10.88				
C-A	86.05	86.05			86.05				

18:00 - 18:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	7.00	7.00	74.83	0.094	7.02	0.1	0.1	13.326	B
A-BCD	12.71	12.71	149.14	0.085	12.71	0.1	0.1	6.599	A
A-B	3.97	3.97			3.97				
A-C	218.32	218.32			218.32				
D-AB	4.00	4.00	139.21	0.029	4.02	0.1	0.0	6.657	A
D-BC	3.00	3.00	66.19	0.045	3.03	0.1	0.0	14.257	B
C-ABD	13.10	13.10	123.45	0.106	13.10	0.1	0.1	8.157	A
C-D	6.92	6.92			6.92				
C-A	89.97	89.97			89.97				

18:15 - 18:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	10.00	10.00	88.11	0.114	9.98	0.1	0.1	11.503	B
A-BCD	10.02	10.02	138.29	0.072	10.04	0.1	0.1	7.019	A
A-B	3.98	3.98			3.98				
A-C	180.00	180.00			180.00				
D-AB	2.00	2.00	133.86	0.015	2.01	0.0	0.0	6.828	A
D-BC	1.00	1.00	66.77	0.015	1.03	0.0	0.0	13.695	B
C-ABD	8.51	8.51	132.68	0.064	8.57	0.1	0.1	7.256	A
C-D	7.97	7.97			7.97				
C-A	115.52	115.52			115.52				

2022 no dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.74	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D3	2022 no dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

07:30 - 07:45

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	53.00	3.00
	B	10.00	0.00	13.00	0.00
	C	248.00	3.00	0.00	0.00
	D	7.00	0.00	0.00	0.00

07:45 - 08:00

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	77.00	2.00
	B	10.00	0.00	11.00	0.00
	C	247.00	2.00	0.00	2.00
	D	9.00	1.00	4.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	81.00	2.00
	B	10.00	0.00	16.00	0.00
	C	205.00	2.00	0.00	2.00
	D	12.00	0.00	5.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	99.00	3.00
	B	4.00	0.00	23.00	1.00
	C	170.00	2.00	0.00	11.00
	D	15.00	2.00	7.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	6	0
	B	0	0	4	0
	C	4	11	0	0
	D	0	67	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.28	14.50	0.4	B	24.50	98.00
A-BCD	0.03	9.47	0.0	A	2.55	10.18
A-B					0.25	1.00
A-C					77.45	309.82
D-AB	0.16	11.22	0.2	B	11.16	44.65
D-BC	0.13	19.92	0.1	C	4.34	17.35
C-ABD	0.02	6.56	0.0	A	2.34	9.35
C-D					3.75	15.00
C-A					217.41	869.65

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	23.00	23.00	92.07	0.250	22.67	0.0	0.3	12.909	B
A-BCD	3.05	3.05	98.02	0.031	3.02	0.0	0.0	9.471	A
A-B	0.00	0.00			0.00				
A-C	52.95	52.95			52.95				
D-AB	7.00	7.00	100.31	0.070	6.93	0.0	0.1	9.622	A
D-BC	0.00	0.00	42.74	0.000	0.00	0.0	0.0	0.000	A
C-ABD	3.15	3.15	154.48	0.020	3.13	0.0	0.0	5.946	A
C-D	0.00	0.00			0.00				
C-A	247.85	247.85			247.85				

07:45 - 08:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	21.00	21.00	83.14	0.253	20.99	0.3	0.3	14.496	B
A-BCD	2.03	2.03	98.13	0.021	2.04	0.0	0.0	9.369	A
A-B	1.00	1.00			1.00				
A-C	76.97	76.97			76.97				
D-AB	9.54	9.54	88.27	0.108	9.49	0.1	0.1	11.225	B
D-BC	4.46	4.46	49.45	0.090	4.36	0.0	0.1	19.922	C
C-ABD	2.08	2.08	146.22	0.014	2.08	0.0	0.0	6.243	A
C-D	2.00	2.00			2.00				
C-A	246.92	246.92			246.92				

08:00 - 08:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	26.00	26.00	91.99	0.283	25.95	0.3	0.4	13.586	B
A-BCD	2.03	2.03	108.64	0.019	2.03	0.0	0.0	8.444	A
A-B	0.00	0.00			0.00				
A-C	80.97	80.97			80.97				
D-AB	12.00	12.00	108.83	0.110	11.99	0.1	0.1	9.465	A
D-BC	5.00	5.00	60.60	0.082	5.00	0.1	0.1	16.742	C
C-ABD	2.06	2.06	144.57	0.014	2.06	0.0	0.0	6.313	A
C-D	2.00	2.00			2.00				
C-A	204.94	204.94			204.94				

08:15 - 08:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	28.00	28.00	103.75	0.270	28.01	0.4	0.4	11.825	B
A-BCD	3.07	3.07	116.36	0.026	3.06	0.0	0.0	7.942	A
A-B	0.00	0.00			0.00				
A-C	98.93	98.93			98.93				
D-AB	16.11	16.11	102.63	0.157	16.06	0.1	0.2	10.162	B
D-BC	7.89	7.89	60.45	0.131	7.84	0.1	0.1	16.573	C
C-ABD	2.06	2.06	139.13	0.015	2.06	0.0	0.0	6.565	A
C-D	11.00	11.00			11.00				
C-A	169.94	169.94			169.94				

2022 with dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		2.99	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D4	2022 with dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		A	B	C	D
From	A	0.00	1.00	53.00	3.00
	B	16.00	0.00	24.00	0.00
	C	248.00	12.00	0.00	0.00
	D	7.00	0.00	0.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		A	B	C	D
From	A	0.00	2.00	77.00	2.00
	B	16.00	0.00	21.00	0.00
	C	247.00	11.00	0.00	2.00
	D	9.00	1.00	4.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	81.00	2.00
	B	15.00	0.00	26.00	0.00
	C	205.00	11.00	0.00	2.00
	D	12.00	0.00	5.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	99.00	3.00
	B	9.00	0.00	33.00	1.00
	C	170.00	11.00	0.00	11.00
	D	15.00	2.00	7.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	6	0
	B	0	0	4	0
	C	4	11	0	0
	D	0	67	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.45	19.52	0.8	C	40.25	161.00
A-BCD	0.03	9.82	0.0	A	2.55	10.20
A-B					1.25	5.00
A-C					77.45	309.81
D-AB	0.16	11.35	0.2	B	11.17	44.67
D-BC	0.14	22.27	0.2	C	4.33	17.34
C-ABD	0.08	6.37	0.1	A	13.07	52.28
C-D					3.72	14.87
C-A					215.71	862.85

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	40.00	40.00	91.77	0.436	39.25	0.0	0.7	16.911	C
A-BCD	3.06	3.06	94.64	0.032	3.02	0.0	0.0	9.820	A
A-B	1.00	1.00			1.00				
A-C	52.94	52.94			52.94				
D-AB	7.00	7.00	100.31	0.070	6.93	0.0	0.1	9.622	A
D-BC	0.00	0.00	39.54	0.000	0.00	0.0	0.0	0.000	A
C-ABD	14.12	14.12	172.78	0.082	14.02	0.0	0.1	5.667	A
C-D	0.00	0.00			0.00				
C-A	245.88	245.88			245.88				

07:45 - 08:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	37.00	37.00	83.05	0.445	36.96	0.7	0.8	19.520	C
A-BCD	2.04	2.04	94.72	0.022	2.05	0.0	0.0	9.713	A
A-B	2.00	2.00			2.00				
A-C	76.96	76.96			76.96				
D-AB	9.54	9.54	87.37	0.109	9.50	0.1	0.1	11.355	B
D-BC	4.46	4.46	44.65	0.100	4.35	0.0	0.1	22.274	C
C-ABD	12.96	12.96	165.72	0.078	12.96	0.1	0.1	5.894	A
C-D	1.98	1.98			1.98				
C-A	245.06	245.06			245.06				

08:00 - 08:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	41.00	41.00	90.78	0.452	40.98	0.8	0.8	18.016	C
A-BCD	2.03	2.03	105.21	0.019	2.03	0.0	0.0	8.725	A
A-B	1.00	1.00			1.00				
A-C	80.97	80.97			80.97				
D-AB	12.00	12.00	108.59	0.110	11.99	0.1	0.1	9.490	A
D-BC	5.00	5.00	55.16	0.091	5.00	0.1	0.1	18.557	C
C-ABD	12.65	12.65	160.69	0.079	12.65	0.1	0.1	6.077	A
C-D	1.98	1.98			1.98				
C-A	203.37	203.37			203.37				

08:15 - 08:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	43.00	43.00	97.88	0.439	43.01	0.8	0.8	16.344	C
A-BCD	3.07	3.07	112.97	0.027	3.07	0.0	0.0	8.187	A
A-B	1.00	1.00			1.00				
A-C	98.93	98.93			98.93				
D-AB	16.12	16.12	101.59	0.159	16.06	0.1	0.2	10.285	B
D-BC	7.88	7.88	55.80	0.141	7.83	0.1	0.2	18.175	C
C-ABD	12.54	12.54	153.73	0.082	12.54	0.1	0.1	6.373	A
C-D	10.91	10.91			10.91				
C-A	168.55	168.55			168.55				

2027 no dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.99	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D5	2027 no dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		A	B	C	D
From	A	0.00	0.00	59.00	4.00
	B	11.00	0.00	14.00	0.00
	C	273.00	4.00	0.00	0.00
	D	7.00	0.00	0.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		A	B	C	D
From	A	0.00	1.00	85.00	2.00
	B	11.00	0.00	12.00	0.00
	C	272.00	2.00	0.00	2.00
	D	10.00	1.00	5.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	89.00	2.00
	B	11.00	0.00	18.00	0.00
	C	225.00	2.00	0.00	2.00
	D	13.00	0.00	6.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	109.00	4.00
	B	5.00	0.00	25.00	1.00
	C	187.00	2.00	0.00	12.00
	D	17.00	2.00	7.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	6	0
	B	0	0	4	0
	C	4	11	0	0
	D	0	67	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.33	16.48	0.5	C	27.00	108.00
A-BCD	0.04	10.20	0.0	B	3.09	12.34
A-B					0.25	1.00
A-C					85.42	341.66
D-AB	0.18	12.48	0.2	B	12.17	48.68
D-BC	0.15	23.93	0.2	C	4.83	19.32
C-ABD	0.03	6.68	0.0	A	2.63	10.52
C-D					4.00	15.99
C-A					239.12	956.48

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	25.00	25.00	86.90	0.288	24.61	0.0	0.4	14.359	B
A-BCD	4.12	4.12	92.30	0.045	4.07	0.0	0.0	10.195	B
A-B	0.00	0.00			0.00				
A-C	58.88	58.88			58.88				
D-AB	7.00	7.00	93.82	0.075	6.92	0.0	0.1	10.347	B
D-BC	0.00	0.00	36.90	0.000	0.00	0.0	0.0	0.000	A
C-ABD	4.30	4.30	155.87	0.028	4.27	0.0	0.0	5.937	A
C-D	0.00	0.00			0.00				
C-A	272.70	272.70			272.70				

07:45 - 08:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	23.00	23.00	77.62	0.296	22.98	0.4	0.4	16.479	C
A-BCD	2.04	2.04	92.13	0.022	2.07	0.0	0.0	9.998	A
A-B	1.00	1.00			1.00				
A-C	84.96	84.96			84.96				
D-AB	10.56	10.56	81.46	0.130	10.49	0.1	0.1	12.477	B
D-BC	5.44	5.44	42.77	0.127	5.30	0.0	0.1	23.933	C
C-ABD	2.09	2.09	144.65	0.014	2.10	0.0	0.0	6.306	A
C-D	2.00	2.00			2.00				
C-A	271.91	271.91			271.91				

08:00 - 08:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	29.00	29.00	87.95	0.330	28.93	0.4	0.5	15.192	C
A-BCD	2.03	2.03	103.82	0.020	2.04	0.0	0.0	8.844	A
A-B	0.00	0.00			0.00				
A-C	88.97	88.97			88.97				
D-AB	13.00	13.00	102.95	0.126	13.00	0.1	0.1	10.182	B
D-BC	6.00	6.00	53.90	0.111	6.01	0.1	0.1	19.323	C
C-ABD	2.07	2.07	142.99	0.014	2.07	0.0	0.0	6.387	A
C-D	2.00	2.00			2.00				
C-A	224.93	224.93			224.93				

08:15 - 08:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	31.00	31.00	98.65	0.314	31.02	0.5	0.5	13.247	B
A-BCD	4.15	4.15	113.18	0.037	4.13	0.0	0.0	8.249	A
A-B	0.00	0.00			0.00				
A-C	108.85	108.85			108.85				
D-AB	18.12	18.12	98.65	0.184	18.05	0.1	0.2	10.934	B
D-BC	7.88	7.88	54.32	0.145	7.85	0.1	0.2	18.702	C
C-ABD	2.07	2.07	136.67	0.015	2.07	0.0	0.0	6.685	A
C-D	12.00	12.00			12.00				
C-A	186.94	186.94			186.94				

2027 with dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		3.44	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D6	2027 with dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		A	B	C	D
From	A	0.00	1.00	59.00	4.00
	B	17.00	0.00	25.00	0.00
	C	273.00	13.00	0.00	0.00
	D	7.00	0.00	0.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		A	B	C	D
From	A	0.00	2.00	85.00	2.00
	B	17.00	0.00	22.00	0.00
	C	272.00	11.00	0.00	2.00
	D	10.00	1.00	5.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	89.00	2.00
	B	16.00	0.00	28.00	0.00
	C	225.00	11.00	0.00	2.00
	D	13.00	0.00	6.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	109.00	4.00
	B	10.00	0.00	35.00	1.00
	C	187.00	11.00	0.00	12.00
	D	17.00	2.00	7.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	6	0
	B	0	0	4	0
	C	4	11	0	0
	D	0	67	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.51	23.37	1.0	C	42.75	171.01
A-BCD	0.05	10.59	0.0	B	3.09	12.37
A-B					1.25	4.99
A-C					85.41	341.64
D-AB	0.19	12.68	0.2	B	12.18	48.71
D-BC	0.16	27.54	0.2	D	4.83	19.30
C-ABD	0.09	6.42	0.1	A	13.66	54.64
C-D					3.97	15.86
C-A					237.12	948.50

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	42.00	42.00	86.55	0.485	41.10	0.0	0.9	19.442	C
A-BCD	4.13	4.13	88.99	0.046	4.08	0.0	0.0	10.595	B
A-B	1.00	1.00			1.00				
A-C	58.87	58.87			58.87				
D-AB	7.00	7.00	93.82	0.075	6.92	0.0	0.1	10.347	B
D-BC	0.00	0.00	33.66	0.000	0.00	0.0	0.0	0.000	A
C-ABD	15.79	15.79	175.99	0.090	15.67	0.0	0.1	5.610	A
C-D	0.00	0.00			0.00				
C-A	270.21	270.21			270.21				

07:45 - 08:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	39.00	39.00	77.36	0.504	38.92	0.9	1.0	23.366	C
A-BCD	2.05	2.05	88.73	0.023	2.07	0.0	0.0	10.393	B
A-B	2.00	2.00			2.00				
A-C	84.95	84.95			84.95				
D-AB	10.56	10.56	80.33	0.132	10.50	0.1	0.1	12.677	B
D-BC	5.44	5.44	37.80	0.144	5.27	0.0	0.2	27.543	D
C-ABD	13.22	13.22	166.47	0.079	13.23	0.1	0.1	5.872	A
C-D	1.98	1.98			1.98				
C-A	269.80	269.80			269.80				

08:00 - 08:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	44.00	44.00	86.45	0.509	43.97	1.0	1.0	21.100	C
A-BCD	2.04	2.04	100.41	0.020	2.04	0.0	0.0	9.152	A
A-B	1.00	1.00			1.00				
A-C	88.96	88.96			88.96				
D-AB	13.00	13.00	102.58	0.127	13.00	0.1	0.1	10.226	B
D-BC	6.00	6.00	48.44	0.124	6.01	0.2	0.1	21.808	C
C-ABD	12.86	12.86	160.93	0.080	12.86	0.1	0.1	6.076	A
C-D	1.98	1.98			1.98				
C-A	223.16	223.16			223.16				

08:15 - 08:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	46.00	46.00	93.02	0.495	46.02	1.0	1.0	19.084	C
A-BCD	4.16	4.16	109.86	0.038	4.14	0.0	0.0	8.509	A
A-B	1.00	1.00			1.00				
A-C	108.84	108.84			108.84				
D-AB	18.14	18.14	97.51	0.186	18.06	0.1	0.2	11.089	B
D-BC	7.86	7.86	49.62	0.159	7.83	0.1	0.2	20.800	C
C-ABD	12.77	12.77	153.09	0.083	12.77	0.1	0.1	6.416	A
C-D	11.89	11.89			11.89				
C-A	185.34	185.34			185.34				

2037 no dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		2.34	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D7	2037 no dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		A	B	C	D
From	A	0.00	0.00	64.00	4.00
	B	12.00	0.00	16.00	0.00
	C	298.00	4.00	0.00	0.00
	D	8.00	0.00	0.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		A	B	C	D
From	A	0.00	1.00	93.00	3.00
	B	12.00	0.00	13.00	0.00
	C	297.00	3.00	0.00	3.00
	D	10.00	1.00	5.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	97.00	3.00
	B	12.00	0.00	20.00	0.00
	C	246.00	3.00	0.00	3.00
	D	14.00	0.00	7.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	0.00	119.00	4.00
	B	5.00	0.00	27.00	1.00
	C	204.00	3.00	0.00	13.00
	D	18.00	3.00	8.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	6	0
	B	0	0	4	0
	C	4	11	0	0
	D	0	67	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.39	19.28	0.6	C	29.50	118.00
A-BCD	0.05	10.92	0.1	B	3.63	14.54
A-B					0.25	1.00
A-C					93.12	372.46
D-AB	0.22	13.98	0.3	B	13.08	52.32
D-BC	0.19	30.19	0.2	D	5.42	21.70
C-ABD	0.03	6.74	0.0	A	3.47	13.89
C-D					4.75	18.99
C-A					261.03	1044.13

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	28.00	28.00	83.15	0.337	27.51	0.0	0.5	16.039	C
A-BCD	4.15	4.15	86.43	0.048	4.10	0.0	0.1	10.924	B
A-B	0.00	0.00			0.00				
A-C	63.85	63.85			63.85				
D-AB	8.00	8.00	87.33	0.092	7.90	0.0	0.1	11.318	B
D-BC	0.00	0.00	31.51	0.000	0.00	0.0	0.0	0.000	A
C-ABD	4.33	4.33	155.65	0.028	4.30	0.0	0.0	5.947	A
C-D	0.00	0.00			0.00				
C-A	297.67	297.67			297.67				

07:45 - 08:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	25.00	25.00	71.68	0.349	24.97	0.5	0.5	19.279	C
A-BCD	3.12	3.12	86.63	0.036	3.13	0.1	0.0	10.781	B
A-B	1.00	1.00			1.00				
A-C	92.88	92.88			92.88				
D-AB	10.57	10.57	73.75	0.143	10.51	0.1	0.2	13.976	B
D-BC	5.43	5.43	34.90	0.156	5.25	0.0	0.2	30.189	D
C-ABD	3.21	3.21	145.95	0.022	3.22	0.0	0.0	6.302	A
C-D	3.00	3.00			3.00				
C-A	296.79	296.79			296.79				

08:00 - 08:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	32.00	32.00	83.11	0.385	31.92	0.5	0.6	17.495	C
A-BCD	3.09	3.09	99.18	0.031	3.10	0.0	0.0	9.371	A
A-B	0.00	0.00			0.00				
A-C	96.91	96.91			96.91				
D-AB	14.00	14.00	96.51	0.145	13.99	0.2	0.2	11.098	B
D-BC	7.00	7.00	46.26	0.151	7.00	0.2	0.2	23.513	C
C-ABD	3.18	3.18	143.57	0.022	3.18	0.0	0.0	6.407	A
C-D	3.00	3.00			3.00				
C-A	245.82	245.82			245.82				

08:15 - 08:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	33.00	33.00	95.29	0.346	33.07	0.6	0.5	14.404	B
A-BCD	4.18	4.18	108.84	0.038	4.17	0.0	0.0	8.595	A
A-B	0.00	0.00			0.00				
A-C	118.83	118.83			118.83				
D-AB	19.74	19.74	88.24	0.224	19.64	0.2	0.3	12.719	B
D-BC	9.26	9.26	47.78	0.194	9.21	0.2	0.2	22.333	C
C-ABD	3.17	3.17	136.80	0.023	3.17	0.0	0.0	6.736	A
C-D	12.99	12.99			12.99				
C-A	203.84	203.84			203.84				

2037 with dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		4.15	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D8	2037 with dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		A	B	C	D
From	A	0.00	1.00	64.00	4.00
	B	18.00	0.00	27.00	0.00
	C	298.00	13.00	0.00	0.00
	D	8.00	0.00	0.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		A	B	C	D
From	A	0.00	2.00	93.00	3.00
	B	18.00	0.00	23.00	0.00
	C	297.00	12.00	0.00	3.00
	D	10.00	1.00	5.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	97.00	3.00
	B	17.00	0.00	30.00	0.00
	C	246.00	12.00	0.00	3.00
	D	14.00	0.00	7.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	119.00	4.00
	B	10.00	0.00	37.00	1.00
	C	204.00	12.00	0.00	13.00
	D	18.00	3.00	8.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	6	0
	B	0	0	4	0
	C	4	11	0	0
	D	0	67	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.58	29.31	1.3	D	45.25	181.01
A-BCD	0.05	11.38	0.1	B	3.65	14.59
A-B					1.25	4.99
A-C					93.10	372.42
D-AB	0.23	14.31	0.3	B	13.09	52.36
D-BC	0.21	36.22	0.3	E	5.41	21.65
C-ABD	0.09	6.41	0.1	A	14.98	59.92
C-D					4.70	18.80
C-A					258.57	1034.28

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	45.00	45.00	82.31	0.547	43.86	0.0	1.1	22.796	C
A-BCD	4.16	4.16	83.15	0.050	4.11	0.0	0.1	11.381	B
A-B	1.00	1.00			1.00				
A-C	63.84	63.84			63.84				
D-AB	8.00	8.00	87.33	0.092	7.90	0.0	0.1	11.318	B
D-BC	0.00	0.00	28.22	0.000	0.00	0.0	0.0	0.000	A
C-ABD	16.10	16.10	177.81	0.091	15.98	0.0	0.1	5.558	A
C-D	0.00	0.00			0.00				
C-A	294.90	294.90			294.90				

07:45 - 08:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	41.00	41.00	71.18	0.576	40.85	1.1	1.3	29.312	D
A-BCD	3.13	3.13	83.32	0.038	3.15	0.1	0.0	11.226	B
A-B	2.00	2.00			2.00				
A-C	92.87	92.87			92.87				
D-AB	10.58	10.58	72.26	0.146	10.52	0.1	0.2	14.307	B
D-BC	5.42	5.42	29.86	0.181	5.21	0.0	0.2	36.223	E
C-ABD	14.97	14.97	169.80	0.088	14.97	0.1	0.1	5.817	A
C-D	2.97	2.97			2.97				
C-A	294.06	294.06			294.06				

08:00 - 08:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	47.00	47.00	81.31	0.578	46.97	1.3	1.3	26.060	D
A-BCD	3.10	3.10	95.83	0.032	3.11	0.0	0.0	9.711	A
A-B	1.00	1.00			1.00				
A-C	96.90	96.90			96.90				
D-AB	14.00	14.00	95.94	0.146	13.99	0.2	0.2	11.179	B
D-BC	7.00	7.00	40.76	0.171	7.00	0.2	0.2	27.339	D
C-ABD	14.49	14.49	163.27	0.089	14.49	0.1	0.1	6.044	A
C-D	2.97	2.97			2.97				
C-A	243.54	243.54			243.54				

08:15 - 08:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	48.00	48.00	88.97	0.540	48.11	1.3	1.2	22.006	C
A-BCD	4.19	4.19	105.54	0.040	4.18	0.0	0.0	8.876	A
A-B	1.00	1.00			1.00				
A-C	118.81	118.81			118.81				
D-AB	19.77	19.77	86.60	0.228	19.66	0.2	0.3	13.026	B
D-BC	9.23	9.23	43.18	0.214	9.19	0.2	0.3	25.326	D
C-ABD	14.37	14.37	154.74	0.093	14.36	0.1	0.1	6.413	A
C-D	12.86	12.86			12.86				
C-A	201.77	201.77			201.77				

2022 no dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.18	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D9	2022 no dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		A	B	C	D
From	A	0.00	9.00	221.00	12.00
	B	3.00	0.00	11.00	1.00
	C	86.00	12.00	0.00	11.00
	D	5.00	0.00	2.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		A	B	C	D
From	A	0.00	9.00	222.00	12.00
	B	0.00	0.00	10.00	1.00
	C	93.00	13.00	0.00	12.00
	D	8.00	0.00	5.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	4.00	233.00	12.00
	B	2.00	0.00	5.00	0.00
	C	96.00	13.00	0.00	8.00
	D	4.00	0.00	3.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	4.00	192.00	10.00
	B	1.00	0.00	9.00	1.00
	C	123.00	9.00	0.00	9.00
	D	2.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	2
	B	0	0	3	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.20	14.82	0.2	B	11.00	44.00
A-BCD	0.09	7.07	0.1	A	13.45	53.82
A-B					6.44	25.77
A-C					215.10	860.41
D-AB	0.06	6.97	0.1	A	4.75	19.00
D-BC	0.08	15.45	0.1	C	2.75	11.00
C-ABD	0.12	8.41	0.1	A	12.95	51.79
C-D					9.89	39.54
C-A					98.42	393.67

Main Results for each time segment

17:30 - 17:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	15.00	15.00	75.23	0.199	14.76	0.0	0.2	14.824	B
A-BCD	14.07	14.07	151.77	0.093	13.95	0.0	0.1	6.527	A
A-B	8.92	8.92			8.92				
A-C	219.01	219.01			219.01				
D-AB	5.00	5.00	140.64	0.036	4.96	0.0	0.0	6.631	A
D-BC	2.00	2.00	64.83	0.031	1.97	0.0	0.0	14.310	B
C-ABD	13.13	13.13	121.54	0.108	13.00	0.0	0.1	8.283	A
C-D	10.87	10.87			10.87				
C-A	85.00	85.00			85.00				

17:45 - 18:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	11.00	11.00	85.47	0.129	11.09	0.2	0.1	12.076	B
A-BCD	14.16	14.16	149.94	0.094	14.15	0.1	0.1	6.631	A
A-B	8.92	8.92			8.92				
A-C	219.93	219.93			219.93				
D-AB	8.00	8.00	137.06	0.058	7.98	0.0	0.1	6.972	A
D-BC	5.00	5.00	63.16	0.079	4.95	0.0	0.1	15.448	C
C-ABD	14.45	14.45	123.05	0.117	14.43	0.1	0.1	8.285	A
C-D	11.83	11.83			11.83				
C-A	91.72	91.72			91.72				

18:00 - 18:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	7.00	7.00	70.93	0.099	7.04	0.1	0.1	14.149	B
A-BCD	14.21	14.21	150.71	0.094	14.20	0.1	0.1	6.593	A
A-B	3.96	3.96			3.96				
A-C	230.83	230.83			230.83				
D-AB	4.00	4.00	137.75	0.029	4.03	0.1	0.0	6.733	A
D-BC	3.00	3.00	62.38	0.048	3.03	0.1	0.1	15.172	C
C-ABD	14.48	14.48	121.44	0.119	14.47	0.1	0.1	8.415	A
C-D	7.89	7.89			7.89				
C-A	94.64	94.64			94.64				

18:15 - 18:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	11.00	11.00	85.94	0.128	10.97	0.1	0.1	11.983	B
A-BCD	11.39	11.39	138.77	0.082	11.40	0.1	0.1	7.067	A
A-B	3.97	3.97			3.97				
A-C	190.64	190.64			190.64				
D-AB	2.00	2.00	131.94	0.015	2.01	0.0	0.0	6.929	A
D-BC	1.00	1.00	62.55	0.016	1.03	0.1	0.0	14.641	B
C-ABD	9.73	9.73	131.07	0.074	9.79	0.1	0.1	7.429	A
C-D	8.95	8.95			8.95				
C-A	122.32	122.32			122.32				

2022 with dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.98	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D10	2022 with dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		A	B	C	D
From	A	0.00	15.00	221.00	12.00
	B	5.00	0.00	20.00	1.00
	C	86.00	22.00	0.00	11.00
	D	5.00	0.00	2.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		A	B	C	D
From	A	0.00	15.00	222.00	12.00
	B	2.00	0.00	19.00	1.00
	C	93.00	23.00	0.00	12.00
	D	8.00	0.00	5.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	9.00	233.00	12.00
	B	3.00	0.00	14.00	0.00
	C	96.00	23.00	0.00	8.00
	D	4.00	0.00	3.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	9.00	192.00	10.00
	B	2.00	0.00	18.00	1.00
	C	123.00	19.00	0.00	9.00
	D	2.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	2
	B	0	0	3	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.35	18.02	0.5	C	21.50	86.00
A-BCD	0.10	7.22	0.1	A	13.61	54.46
A-B					11.89	47.55
A-C					215.00	859.99
D-AB	0.06	6.98	0.1	A	4.75	19.00
D-BC	0.09	16.84	0.1	C	2.75	11.00
C-ABD	0.21	8.82	0.3	A	25.91	103.65
C-D					9.61	38.43
C-A					95.73	382.92

Main Results for each time segment

17:30 - 17:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	26.00	26.00	74.94	0.347	25.48	0.0	0.5	18.019	C
A-BCD	14.24	14.24	149.55	0.095	14.12	0.0	0.1	6.642	A
A-B	14.86	14.86			14.86				
A-C	218.90	218.90			218.90				
D-AB	5.00	5.00	140.55	0.036	4.96	0.0	0.0	6.636	A
D-BC	2.00	2.00	60.10	0.033	1.97	0.0	0.0	15.474	C
C-ABD	25.92	25.92	128.93	0.201	25.63	0.0	0.3	8.695	A
C-D	10.56	10.56			10.56				
C-A	82.52	82.52			82.52				

17:45 - 18:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	22.00	22.00	80.12	0.275	22.13	0.5	0.4	15.524	C
A-BCD	14.34	14.34	147.73	0.097	14.33	0.1	0.1	6.750	A
A-B	14.85	14.85			14.85				
A-C	219.81	219.81			219.81				
D-AB	8.00	8.00	136.82	0.058	7.98	0.0	0.1	6.985	A
D-BC	5.00	5.00	58.33	0.086	4.94	0.0	0.1	16.838	C
C-ABD	27.67	27.67	131.22	0.211	27.64	0.3	0.3	8.694	A
C-D	11.47	11.47			11.47				
C-A	88.87	88.87			88.87				

18:00 - 18:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	17.00	17.00	75.37	0.226	17.09	0.4	0.3	15.480	C
A-BCD	14.38	14.38	148.40	0.097	14.38	0.1	0.1	6.716	A
A-B	8.91	8.91			8.91				
A-C	230.71	230.71			230.71				
D-AB	4.00	4.00	137.60	0.029	4.03	0.1	0.0	6.741	A
D-BC	3.00	3.00	57.67	0.052	3.04	0.1	0.1	16.482	C
C-ABD	27.74	27.74	129.88	0.214	27.74	0.3	0.3	8.817	A
C-D	7.64	7.64			7.64				
C-A	91.62	91.62			91.62				

18:15 - 18:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	21.00	21.00	87.01	0.241	20.98	0.3	0.3	13.618	B
A-BCD	11.50	11.50	136.24	0.084	11.52	0.1	0.1	7.220	A
A-B	8.93	8.93			8.93				
A-C	190.56	190.56			190.56				
D-AB	2.00	2.00	131.89	0.015	2.01	0.0	0.0	6.929	A
D-BC	1.00	1.00	57.85	0.017	1.04	0.1	0.0	15.852	C
C-ABD	22.32	22.32	140.82	0.158	22.41	0.3	0.2	7.615	A
C-D	8.77	8.77			8.77				
C-A	119.91	119.91			119.91				

2027 no dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.33	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D11	2027 no dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		A	B	C	D
From	A	0.00	10.00	243.00	13.00
	B	4.00	0.00	12.00	1.00
	C	95.00	13.00	0.00	12.00
	D	6.00	0.00	2.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		A	B	C	D
From	A	0.00	10.00	244.00	13.00
	B	0.00	0.00	11.00	1.00
	C	102.00	14.00	0.00	13.00
	D	8.00	0.00	6.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	5.00	256.00	13.00
	B	2.00	0.00	6.00	0.00
	C	105.00	14.00	0.00	8.00
	D	5.00	0.00	4.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	5.00	211.00	11.00
	B	1.00	0.00	10.00	1.00
	C	135.00	10.00	0.00	10.00
	D	2.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	2
	B	0	0	3	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.25	17.78	0.3	C	12.25	49.00
A-BCD	0.10	7.12	0.1	A	15.15	60.60
A-B					7.42	29.67
A-C					235.93	943.72
D-AB	0.06	7.15	0.1	A	5.25	21.00
D-BC	0.11	17.64	0.1	C	3.25	13.00
C-ABD	0.14	8.88	0.2	A	14.49	57.97
C-D					10.59	42.35
C-A					107.67	430.68

Main Results for each time segment

17:30 - 17:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	17.00	17.00	66.98	0.254	16.67	0.0	0.3	17.778	C
A-BCD	15.79	15.79	153.81	0.103	15.65	0.0	0.1	6.509	A
A-B	9.89	9.89			9.89				
A-C	240.32	240.32			240.32				
D-AB	6.00	6.00	138.15	0.043	5.95	0.0	0.0	6.807	A
D-BC	2.00	2.00	58.37	0.034	1.97	0.0	0.0	15.947	C
C-ABD	14.66	14.66	117.62	0.125	14.51	0.0	0.2	8.719	A
C-D	11.81	11.81			11.81				
C-A	93.52	93.52			93.52				

17:45 - 18:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	12.00	12.00	80.02	0.150	12.15	0.3	0.2	13.237	B
A-BCD	15.90	15.90	152.09	0.105	15.90	0.1	0.1	6.612	A
A-B	9.89	9.89			9.89				
A-C	241.21	241.21			241.21				
D-AB	8.00	8.00	133.80	0.060	7.98	0.0	0.1	7.153	A
D-BC	6.00	6.00	56.79	0.106	5.92	0.0	0.1	17.638	C
C-ABD	16.09	16.09	119.42	0.135	16.07	0.2	0.2	8.709	A
C-D	12.76	12.76			12.76				
C-A	100.15	100.15			100.15				

18:00 - 18:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	8.00	8.00	65.80	0.122	8.04	0.2	0.1	15.642	C
A-BCD	15.96	15.96	153.20	0.104	15.96	0.1	0.1	6.561	A
A-B	4.94	4.94			4.94				
A-C	253.10	253.10			253.10				
D-AB	5.00	5.00	134.66	0.037	5.02	0.1	0.0	6.942	A
D-BC	4.00	4.00	55.96	0.071	4.04	0.1	0.1	17.346	C
C-ABD	16.13	16.13	117.48	0.137	16.12	0.2	0.2	8.883	A
C-D	7.85	7.85			7.85				
C-A	103.02	103.02			103.02				

18:15 - 18:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	12.00	12.00	81.26	0.148	11.97	0.1	0.2	12.969	B
A-BCD	12.95	12.95	139.41	0.093	12.97	0.1	0.1	7.120	A
A-B	4.95	4.95			4.95				
A-C	209.09	209.09			209.09				
D-AB	2.00	2.00	128.72	0.016	2.02	0.0	0.0	7.103	A
D-BC	1.00	1.00	55.92	0.018	1.06	0.1	0.0	16.421	C
C-ABD	11.09	11.09	127.90	0.087	11.17	0.2	0.1	7.720	A
C-D	9.92	9.92			9.92				
C-A	133.98	133.98			133.98				

2027 with dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		2.25	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D12	2027 with dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

17:30 - 17:45

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	16.00	243.00	13.00
	B	6.00	0.00	21.00	1.00
	C	95.00	23.00	0.00	12.00
	D	6.00	0.00	2.00	0.00

17:45 - 18:00

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	16.00	244.00	13.00
	B	2.00	0.00	20.00	1.00
	C	102.00	24.00	0.00	13.00
	D	8.00	0.00	6.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	10.00	256.00	13.00
	B	3.00	0.00	15.00	0.00
	C	105.00	24.00	0.00	8.00
	D	5.00	0.00	4.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	10.00	211.00	11.00
	B	2.00	0.00	19.00	1.00
	C	135.00	20.00	0.00	10.00
	D	2.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	2
	B	0	0	3	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.42	22.40	0.7	C	22.75	91.00
A-BCD	0.11	7.27	0.1	A	15.37	61.46
A-B					12.85	51.40
A-C					235.78	943.13
D-AB	0.06	7.17	0.1	A	5.25	21.00
D-BC	0.12	19.52	0.1	C	3.25	13.00
C-ABD	0.24	9.28	0.4	A	28.40	113.60
C-D					10.23	40.92
C-A					104.12	416.48

Main Results for each time segment

17:30 - 17:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	28.00	28.00	66.85	0.419	27.31	0.0	0.7	22.399	C
A-BCD	16.01	16.01	151.81	0.105	15.87	0.0	0.1	6.616	A
A-B	15.81	15.81			15.81				
A-C	240.18	240.18			240.18				
D-AB	6.00	6.00	138.04	0.043	5.95	0.0	0.0	6.812	A
D-BC	2.00	2.00	53.64	0.037	1.96	0.0	0.0	17.403	C
C-ABD	28.37	28.37	126.62	0.224	28.03	0.0	0.3	9.108	A
C-D	11.40	11.40			11.40				
C-A	90.23	90.23			90.23				

17:45 - 18:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	23.00	23.00	74.02	0.311	23.23	0.7	0.5	17.752	C
A-BCD	16.14	16.14	150.08	0.108	16.14	0.1	0.1	6.720	A
A-B	15.81	15.81			15.81				
A-C	241.05	241.05			241.05				
D-AB	8.00	8.00	133.45	0.060	7.98	0.0	0.1	7.173	A
D-BC	6.00	6.00	51.94	0.116	5.91	0.0	0.1	19.517	C
C-ABD	30.33	30.33	129.27	0.235	30.30	0.3	0.4	9.103	A
C-D	12.28	12.28			12.28				
C-A	96.39	96.39			96.39				

18:00 - 18:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	18.00	18.00	68.99	0.261	18.10	0.5	0.4	17.735	C
A-BCD	16.19	16.19	151.09	0.107	16.19	0.1	0.1	6.675	A
A-B	9.88	9.88			9.88				
A-C	252.93	252.93			252.93				
D-AB	5.00	5.00	134.41	0.037	5.02	0.1	0.0	6.959	A
D-BC	4.00	4.00	51.24	0.078	4.04	0.1	0.1	19.086	C
C-ABD	30.43	30.43	127.55	0.239	30.42	0.4	0.4	9.278	A
C-D	7.54	7.54			7.54				
C-A	99.03	99.03			99.03				

18:15 - 18:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	22.00	22.00	81.79	0.269	22.00	0.4	0.4	15.043	C
A-BCD	13.12	13.12	137.07	0.096	13.14	0.1	0.1	7.267	A
A-B	9.90	9.90			9.90				
A-C	208.98	208.98			208.98				
D-AB	2.00	2.00	128.64	0.016	2.02	0.0	0.0	7.108	A
D-BC	1.00	1.00	51.21	0.020	1.07	0.1	0.0	17.971	C
C-ABD	24.47	24.47	139.41	0.176	24.59	0.4	0.3	7.858	A
C-D	9.69	9.69			9.69				
C-A	130.84	130.84			130.84				

2037 no dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.49	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D13	2037 no dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

17:30 - 17:45

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	10.00	266.00	14.00
	B	4.00	0.00	13.00	1.00
	C	103.00	14.00	0.00	13.00
	D	7.00	0.00	3.00	0.00

17:45 - 18:00

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	10.00	267.00	14.00
	B	0.00	0.00	12.00	1.00
	C	111.00	16.00	0.00	14.00
	D	9.00	0.00	7.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	5.00	280.00	14.00
	B	3.00	0.00	7.00	0.00
	C	115.00	16.00	0.00	9.00
	D	5.00	0.00	4.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	5.00	230.00	12.00
	B	1.00	0.00	10.00	1.00
	C	148.00	10.00	0.00	10.00
	D	3.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	2
	B	0	0	3	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.30	20.69	0.4	C	13.25	53.00
A-BCD	0.12	7.14	0.2	A	17.03	68.14
A-B					7.40	29.60
A-C					257.32	1029.26
D-AB	0.07	7.42	0.1	A	6.00	24.00
D-BC	0.14	20.82	0.2	C	3.75	15.00
C-ABD	0.17	9.35	0.2	A	16.66	66.62
C-D					11.25	45.01
C-A					116.84	467.36

Main Results for each time segment

17:30 - 17:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	18.00	18.00	60.72	0.296	17.59	0.0	0.4	20.686	C
A-BCD	17.66	17.66	156.63	0.113	17.51	0.0	0.2	6.465	A
A-B	9.87	9.87			9.87				
A-C	262.47	262.47			262.47				
D-AB	7.00	7.00	135.23	0.052	6.95	0.0	0.1	7.012	A
D-BC	3.00	3.00	52.12	0.058	2.94	0.0	0.1	18.280	C
C-ABD	16.39	16.39	114.15	0.144	16.20	0.0	0.2	9.175	A
C-D	12.73	12.73			12.73				
C-A	100.88	100.88			100.88				

17:45 - 18:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	13.00	13.00	74.16	0.175	13.19	0.4	0.2	14.749	B
A-BCD	17.85	17.85	154.59	0.116	17.85	0.2	0.2	6.586	A
A-B	9.86	9.86			9.86				
A-C	263.28	263.28			263.28				
D-AB	9.00	9.00	130.30	0.069	8.98	0.1	0.1	7.418	A
D-BC	7.00	7.00	50.03	0.140	6.90	0.1	0.2	20.819	C
C-ABD	19.39	19.39	117.71	0.165	19.35	0.2	0.2	9.150	A
C-D	13.62	13.62			13.62				
C-A	107.99	107.99			107.99				

18:00 - 18:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	10.00	10.00	54.75	0.183	9.99	0.2	0.2	20.194	C
A-BCD	17.95	17.95	155.70	0.115	17.95	0.2	0.2	6.538	A
A-B	4.93	4.93			4.93				
A-C	276.12	276.12			276.12				
D-AB	5.00	5.00	131.66	0.038	5.03	0.1	0.0	7.111	A
D-BC	4.00	4.00	48.71	0.082	4.07	0.2	0.1	20.190	C
C-ABD	19.52	19.52	115.79	0.169	19.52	0.2	0.2	9.354	A
C-D	8.74	8.74			8.74				
C-A	111.73	111.73			111.73				

18:15 - 18:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	12.00	12.00	75.28	0.159	12.03	0.2	0.2	14.205	B
A-BCD	14.67	14.67	140.80	0.104	14.69	0.2	0.1	7.140	A
A-B	4.94	4.94			4.94				
A-C	227.39	227.39			227.39				
D-AB	3.00	3.00	125.33	0.024	3.02	0.0	0.0	7.357	A
D-BC	1.00	1.00	49.61	0.020	1.07	0.1	0.0	18.566	C
C-ABD	11.32	11.32	124.10	0.091	11.44	0.2	0.1	8.006	A
C-D	9.92	9.92			9.92				
C-A	146.77	146.77			146.77				

2037 with dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		2.57	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D14	2037 with dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		A	B	C	D
From	A	0.00	16.00	266.00	14.00
	B	6.00	0.00	22.00	1.00
	C	103.00	24.00	0.00	13.00
	D	7.00	0.00	3.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		A	B	C	D
From	A	0.00	16.00	267.00	14.00
	B	2.00	0.00	21.00	1.00
	C	111.00	26.00	0.00	14.00
	D	9.00	0.00	7.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	10.00	280.00	14.00
	B	4.00	0.00	16.00	0.00
	C	115.00	26.00	0.00	9.00
	D	5.00	0.00	4.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	10.00	230.00	12.00
	B	2.00	0.00	19.00	1.00
	C	148.00	20.00	0.00	10.00
	D	3.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	2
	B	0	0	3	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.48	27.56	0.9	D	23.75	95.00
A-BCD	0.12	7.28	0.2	A	17.32	69.28
A-B					12.82	51.27
A-C					257.11	1028.45
D-AB	0.07	7.45	0.1	A	6.00	24.00
D-BC	0.16	23.45	0.2	C	3.75	15.00
C-ABD	0.28	9.76	0.5	A	31.88	127.51
C-D					10.78	43.11
C-A					112.09	448.38

Main Results for each time segment

17:30 - 17:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	29.00	29.00	59.98	0.483	28.12	0.0	0.9	27.559	D
A-BCD	17.96	17.96	154.85	0.116	17.79	0.0	0.2	6.563	A
A-B	15.78	15.78			15.78				
A-C	262.27	262.27			262.27				
D-AB	7.00	7.00	135.03	0.052	6.95	0.0	0.1	7.023	A
D-BC	3.00	3.00	47.39	0.063	2.93	0.0	0.1	20.217	C
C-ABD	31.27	31.27	124.90	0.250	30.85	0.0	0.4	9.546	A
C-D	12.19	12.19			12.19				
C-A	96.54	96.54			96.54				

17:45 - 18:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	24.00	24.00	67.10	0.358	24.31	0.9	0.6	21.121	C
A-BCD	18.17	18.17	152.83	0.119	18.16	0.2	0.2	6.685	A
A-B	15.76	15.76			15.76				
A-C	263.06	263.06			263.06				
D-AB	9.00	9.00	129.76	0.069	8.98	0.1	0.1	7.451	A
D-BC	7.00	7.00	45.15	0.155	6.89	0.1	0.2	23.455	C
C-ABD	35.26	35.26	129.51	0.272	35.19	0.4	0.5	9.556	A
C-D	12.96	12.96			12.96				
C-A	102.78	102.78			102.78				

18:00 - 18:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	20.00	20.00	58.24	0.343	20.04	0.6	0.5	23.637	C
A-BCD	18.26	18.26	153.83	0.119	18.26	0.2	0.2	6.643	A
A-B	9.85	9.85			9.85				
A-C	275.89	275.89			275.89				
D-AB	5.00	5.00	131.32	0.038	5.03	0.1	0.0	7.130	A
D-BC	4.00	4.00	43.95	0.091	4.08	0.2	0.1	22.609	C
C-ABD	35.58	35.58	127.98	0.278	35.56	0.5	0.5	9.761	A
C-D	8.30	8.30			8.30				
C-A	106.11	106.11			106.11				

18:15 - 18:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	22.00	22.00	75.76	0.290	22.12	0.5	0.4	16.799	C
A-BCD	14.89	14.89	138.66	0.107	14.91	0.2	0.2	7.277	A
A-B	9.88	9.88			9.88				
A-C	227.23	227.23			227.23				
D-AB	3.00	3.00	125.23	0.024	3.02	0.0	0.0	7.366	A
D-BC	1.00	1.00	44.86	0.022	1.08	0.1	0.0	20.590	C
C-ABD	25.40	25.40	137.50	0.185	25.62	0.5	0.3	8.074	A
C-D	9.66	9.66			9.66				
C-A	142.95	142.95			142.95				

2037 Sensitivity, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		74.57	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D15	2037 Sensitivity	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		A	B	C	D
From	A	0.00	1.00	46.00	14.00
	B	18.00	0.00	23.00	4.00
	C	279.00	13.00	0.00	38.00
	D	35.00	0.00	44.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		A	B	C	D
From	A	0.00	2.00	75.00	13.00
	B	18.00	0.00	20.00	3.00
	C	278.00	12.00	0.00	38.00
	D	37.00	1.00	48.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	79.00	13.00
	B	17.00	0.00	27.00	3.00
	C	228.00	12.00	0.00	39.00
	D	40.00	0.00	48.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	1.00	101.00	13.00
	B	10.00	0.00	34.00	4.00
	C	186.00	12.00	0.00	48.00
	D	44.00	3.00	49.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	6	0
	B	0	0	4	0
	C	4	11	0	0
	D	0	67	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.68	43.86	1.9	E	45.25	181.01
A-BCD	0.19	13.04	0.2	B	15.11	60.43
A-B					1.22	4.87
A-C					73.42	293.70
D-AB	0.64	35.38	1.6	E	40.01	160.04
D-BC	1.53	764.93	39.3	F	47.25	189.00
C-ABD	0.09	6.27	0.1	A	15.11	60.45
C-D					40.34	161.34
C-A					240.30	961.21

Main Results for each time segment

07:30 - 07:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	45.00	45.00	72.32	0.622	43.49	0.0	1.5	29.878	D
A-BCD	15.62	15.62	84.18	0.186	15.37	0.0	0.2	13.043	B
A-B	0.97	0.97			0.97				
A-C	44.42	44.42			44.42				
D-AB	35.00	35.00	66.38	0.527	33.95	0.0	1.0	26.979	D
D-BC	44.00	44.00	34.50	1.275	31.87	0.0	12.1	211.401	F
C-ABD	16.25	16.25	180.91	0.090	16.12	0.0	0.1	5.458	A
C-D	37.61	37.61			37.61				
C-A	276.14	276.14			276.14				

07:45 - 08:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	41.00	41.00	60.66	0.676	40.63	1.5	1.9	43.856	E
A-BCD	15.25	15.25	89.11	0.171	15.25	0.2	0.2	12.180	B
A-B	1.94	1.94			1.94				
A-C	72.81	72.81			72.81				
D-AB	38.00	38.00	62.12	0.612	37.62	1.0	1.4	35.379	E
D-BC	48.00	48.00	31.39	1.529	31.19	12.1	28.9	569.959	F
C-ABD	15.08	15.08	172.44	0.087	15.08	0.1	0.1	5.721	A
C-D	37.63	37.63			37.63				
C-A	275.29	275.29			275.29				

08:00 - 08:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	47.00	47.00	70.56	0.666	46.97	1.9	1.9	37.773	E
A-BCD	14.73	14.73	100.28	0.147	14.77	0.2	0.2	10.549	B
A-B	0.98	0.98			0.98				
A-C	77.29	77.29			77.29				
D-AB	40.00	40.00	76.07	0.525	40.24	1.4	1.2	25.758	D
D-BC	48.00	48.00	41.16	1.166	40.97	28.9	36.0	709.607	F
C-ABD	14.63	14.63	166.20	0.088	14.63	0.1	0.1	5.934	A
C-D	38.62	38.62			38.62				
C-A	225.76	225.76			225.76				

08:15 - 08:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	48.00	48.00	79.58	0.603	48.31	1.9	1.6	28.959	D
A-BCD	14.84	14.84	110.53	0.134	14.86	0.2	0.2	9.411	A
A-B	0.98	0.98			0.98				
A-C	99.18	99.18			99.18				
D-AB	47.00	47.00	73.27	0.642	46.60	1.2	1.6	31.605	D
D-BC	49.00	49.00	45.97	1.066	45.69	36.0	39.3	764.930	F
C-ABD	14.50	14.50	157.94	0.092	14.50	0.1	0.1	6.274	A
C-D	47.49	47.49			47.49				
C-A	184.01	184.01			184.01				

2037 Sensitivity, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		19.49	C

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D16	2037 Sensitivity	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
A		DIRECT	✓	100.000
B		DIRECT	✓	100.000
C		DIRECT	✓	100.000
D		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		A	B	C	D
From	A	0.00	16.00	244.00	41.00
	B	6.00	0.00	20.00	3.00
	C	83.00	24.00	0.00	63.00
	D	27.00	0.00	38.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		A	B	C	D
From	A	0.00	16.00	246.00	37.00
	B	2.00	0.00	19.00	3.00
	C	91.00	26.00	0.00	64.00
	D	30.00	0.00	41.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	10.00	260.00	37.00
	B	5.00	0.00	14.00	2.00
	C	95.00	26.00	0.00	57.00
	D	26.00	0.00	38.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		A	B	C	D
From	A	0.00	10.00	210.00	35.00
	B	2.00	0.00	16.00	3.00
	C	129.00	20.00	0.00	58.00
	D	22.00	0.00	36.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A	B	C	D
From	A	0	0	2	2
	B	0	0	3	0
	C	2	0	0	0
	D	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
B-ACD	0.57	40.75	1.2	E	23.75	95.00
A-BCD	0.36	7.56	1.0	A	67.47	269.90
A-B					11.45	45.78
A-C					211.58	846.32
D-AB	0.30	12.58	0.4	B	26.25	105.00
D-BC	1.02	234.22	9.2	F	38.25	153.00
C-ABD	0.29	9.50	0.6	A	34.53	138.12
C-D					56.40	225.61
C-A					93.07	372.27

Main Results for each time segment

17:30 - 17:45

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	29.00	29.00	50.86	0.570	27.79	0.0	1.2	37.371	E
A-BCD	75.50	75.50	209.35	0.361	74.52	0.0	1.0	6.670	A
A-B	13.88	13.88			13.88				
A-C	211.63	211.63			211.63				
D-AB	27.00	27.00	106.04	0.255	26.66	0.0	0.3	11.292	B
D-BC	38.00	38.00	41.66	0.912	33.74	0.0	4.3	90.020	F
C-ABD	34.10	34.10	129.65	0.263	33.61	0.0	0.5	9.352	A
C-D	58.64	58.64			58.64				
C-A	77.26	77.26			77.26				

17:45 - 18:00

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	24.00	24.00	56.25	0.427	24.43	1.2	0.8	28.570	D
A-BCD	66.92	66.92	200.17	0.334	66.96	1.0	0.9	6.800	A
A-B	14.17	14.17			14.17				
A-C	217.91	217.91			217.91				
D-AB	30.00	30.00	101.40	0.296	29.92	0.3	0.4	12.577	B
D-BC	41.00	41.00	40.36	1.016	37.40	4.3	7.9	180.797	F
C-ABD	38.39	38.39	135.75	0.283	38.32	0.5	0.6	9.260	A
C-D	58.88	58.88			58.88				
C-A	83.72	83.72			83.72				

18:00 - 18:15

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	21.00	21.00	42.85	0.490	20.87	0.8	0.9	40.745	E
A-BCD	67.46	67.46	203.01	0.332	67.47	0.9	0.9	6.683	A
A-B	8.87	8.87			8.87				
A-C	230.67	230.67			230.67				
D-AB	26.00	26.00	101.15	0.257	26.06	0.4	0.4	11.996	B
D-BC	38.00	38.00	39.12	0.971	36.66	7.9	9.2	234.216	F
C-ABD	38.77	38.77	133.74	0.290	38.74	0.6	0.6	9.503	A
C-D	52.21	52.21			52.21				
C-A	87.02	87.02			87.02				

18:15 - 18:30

Stream	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-ACD	21.00	21.00	63.38	0.331	21.39	0.9	0.5	21.586	C
A-BCD	60.03	60.03	179.90	0.334	60.07	0.9	0.9	7.562	A
A-B	8.86	8.86			8.86				
A-C	186.11	186.11			186.11				
D-AB	22.00	22.00	94.57	0.233	22.04	0.4	0.3	12.419	B
D-BC	36.00	36.00	40.12	0.897	36.01	9.2	9.2	227.008	F
C-ABD	26.86	26.86	140.27	0.192	27.13	0.6	0.3	7.989	A
C-D	55.87	55.87			55.87				
C-A	124.27	124.27			124.27				

APPENDIX F – ARCADY RESULTS

Junctions 9

ARCADY 9 - Roundabout Module

Filename: Roundabout Junction.j9
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\ARCADY
Report generation date: 25/11/2020 14:13:12

Summary of junction performance

	AM				PM			
	Queue (Veh)	Delay (s)	RFC	LOS	Queue (Veh)	Delay (s)	RFC	LOS
	2020							
Arm 1	0.3	2.34	0.21	A	0.6	3.01	0.38	A
Arm 2	0.2	2.76	0.13	A	0.1	2.84	0.07	A
Arm 3	0.4	3.38	0.31	A	0.6	3.62	0.38	A
Arm 4	0.0	5.59	0.03	A	0.0	5.71	0.03	A
	2022 no dev							
Arm 1	0.3	2.37	0.22	A	0.7	3.13	0.40	A
Arm 2	0.2	2.83	0.14	A	0.1	2.92	0.08	A
Arm 3	0.5	3.47	0.32	A	0.7	3.78	0.41	A
Arm 4	0.0	5.72	0.03	A	0.0	5.88	0.03	A
	2022 with dev							
Arm 1	0.3	2.41	0.22	A	0.7	3.22	0.41	A
Arm 2	0.2	2.93	0.17	A	0.1	3.00	0.10	A
Arm 3	0.5	3.59	0.34	A	0.8	3.97	0.44	A
Arm 4	0.0	5.84	0.03	A	0.0	6.08	0.03	A
	2027 no dev							
Arm 1	0.3	2.45	0.24	A	0.8	3.35	0.44	A
Arm 2	0.2	2.93	0.16	A	0.1	3.06	0.08	A
Arm 3	0.6	3.68	0.36	A	0.8	4.03	0.45	A
Arm 4	0.0	6.01	0.03	A	0.0	6.14	0.04	A
	2027 with dev							
Arm 1	0.3	2.49	0.25	A	0.8	3.46	0.45	A
Arm 2	0.2	3.05	0.19	A	0.1	3.14	0.11	A
Arm 3	0.6	3.80	0.38	A	0.9	4.25	0.48	A
Arm 4	0.0	6.15	0.04	A	0.0	6.36	0.04	A
	2037 no dev							
Arm 1	0.4	2.52	0.27	A	0.9	3.66	0.49	A
Arm 2	0.2	3.06	0.18	A	0.1	3.22	0.10	A
Arm 3	0.6	3.88	0.39	A	1.0	4.37	0.49	A
Arm 4	0.0	6.28	0.04	A	0.0	6.46	0.05	A
	2037 with dev							
Arm 1	0.4	2.56	0.27	A	1.0	3.79	0.50	A
Arm 2	0.3	3.18	0.21	A	0.1	3.32	0.12	A
Arm 3	0.7	4.02	0.41	A	1.1	4.63	0.52	A
Arm 4	0.0	6.43	0.04	A	0.1	6.71	0.05	A

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	12/04/2019
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	ROADPLAN01\jbyrne
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perTimeSegment	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2020	AM	DIRECT	07:30	08:30	60	15	✓
D2	2020	PM	DIRECT	17:30	18:30	60	15	✓
D3	2022 no dev	AM	DIRECT	07:30	08:30	60	15	✓
D4	2022 with dev	AM	DIRECT	07:30	08:30	60	15	✓
D5	2027 no dev	AM	DIRECT	07:30	08:30	60	15	✓
D6	2027 with dev	AM	DIRECT	07:30	08:30	60	15	✓
D7	2037 no dev	AM	DIRECT	07:30	08:30	60	15	✓
D8	2037 with dev	AM	DIRECT	07:30	08:30	60	15	✓
D9	2022 no dev	PM	DIRECT	17:30	18:30	60	15	✓
D10	2022 with dev	PM	DIRECT	17:30	18:30	60	15	✓
D11	2027 no dev	PM	DIRECT	17:30	18:30	60	15	✓
D12	2027 with dev	PM	DIRECT	17:30	18:30	60	15	✓
D13	2037 no dev	PM	DIRECT	17:30	18:30	60	15	✓
D14	2037 with dev	PM	DIRECT	17:30	18:30	60	15	✓

Analysis Set Details

ID	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	✓	100.000	100.000

2020, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	2.91	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	untitled	
2	untitled	
3	untitled	
4	untitled	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1	4.10	8.00	18.0	33.0	42.0	23.0	
2	3.50	7.50	17.0	24.0	42.0	25.0	
3	3.50	7.50	14.0	17.0	42.0	37.0	
4	3.50	3.50	0.0	6.5	42.0	43.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/TS)
1	0.714	506.164
2	0.664	449.146
3	0.615	409.470
4	0.435	226.239

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D1	2020	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

07:30 - 07:45

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	6.00	66.00	1.00
	2	15.00	1.00	20.00	0.00
	3	82.00	3.00	0.00	1.00
	4	2.00	0.00	3.00	0.00

07:45 - 08:00

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	6.00	75.00	0.00
	2	17.00	0.00	16.00	0.00
	3	97.00	10.00	1.00	2.00
	4	2.00	0.00	2.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	14.00	82.00	0.00
	2	23.00	0.00	21.00	0.00
	3	80.00	5.00	1.00	1.00
	4	3.00	0.00	0.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	3.00	99.00	0.00
	2	19.00	0.00	31.00	0.00
	3	113.00	3.00	1.00	0.00
	4	3.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	4	3	0
	2	3	0	0	0
	3	3	10	67	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.21	2.34	0.3	A	88.00	352.00
2	0.13	2.76	0.2	A	40.75	163.00
3	0.31	3.38	0.4	A	100.00	400.00
4	0.03	5.59	0.0	A	4.00	16.00

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	73.00	73.00	6.97	486.19	0.150	72.82	98.67	0.0	0.2	2.176	A
2	36.00	36.00	69.82	396.54	0.091	35.90	9.97	0.0	0.1	2.495	A
3	86.00	86.00	16.95	386.37	0.223	85.72	88.77	0.0	0.3	2.990	A
4	5.00	5.00	100.67	181.02	0.028	4.97	1.99	0.0	0.0	5.112	A

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	81.00	81.00	12.98	480.92	0.168	80.97	115.91	0.2	0.2	2.250	A
2	33.00	33.00	77.98	389.45	0.085	33.01	15.98	0.1	0.1	2.526	A
3	110.00	110.00	17.00	382.78	0.287	109.88	93.98	0.3	0.4	3.295	A
4	4.00	4.00	124.88	169.66	0.024	4.00	2.00	0.0	0.0	5.434	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	96.00	96.00	6.03	485.74	0.198	95.96	106.05	0.2	0.2	2.308	A
2	44.00	44.00	82.99	385.94	0.114	43.96	19.00	0.1	0.1	2.631	A
3	87.00	87.00	22.98	379.35	0.229	87.10	103.97	0.4	0.3	3.079	A
4	3.00	3.00	109.08	176.89	0.017	3.01	1.00	0.0	0.0	5.175	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	102.00	102.00	5.00	487.14	0.209	101.98	134.86	0.2	0.3	2.336	A
2	50.00	50.00	100.95	375.45	0.133	49.98	6.03	0.1	0.2	2.764	A
3	117.00	117.00	19.01	383.16	0.305	116.86	131.91	0.3	0.4	3.378	A
4	4.00	4.00	135.87	164.94	0.024	3.99	0.00	0.0	0.0	5.591	A

2020, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.27	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D2	2020	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		1	2	3	4
From	1	0.00	12.00	169.00	1.00
	2	7.00	0.00	10.00	0.00
	3	124.00	23.00	1.00	6.00
	4	1.00	0.00	0.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		1	2	3	4
From	1	0.00	8.00	158.00	2.00
	2	11.00	0.00	12.00	0.00
	3	101.00	19.00	2.00	0.00
	4	0.00	0.00	0.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	11.00	135.00	2.00
	2	10.00	0.00	7.00	0.00
	3	118.00	13.00	0.00	2.00
	4	2.00	0.00	3.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	19.00	135.00	4.00
	2	3.00	0.00	2.00	0.00
	3	109.00	17.00	0.00	2.00
	4	0.00	0.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	2	0
	2	0	0	0	0
	3	1	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.38	3.01	0.6	A	164.00	656.00
2	0.07	2.84	0.1	A	15.50	62.00
3	0.38	3.62	0.6	A	134.25	537.00
4	0.03	5.71	0.0	A	1.50	6.00

Main Results for each time segment

17:30 - 17:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	182.00	182.00	23.90	480.17	0.379	181.39	131.47	0.0	0.6	3.005	A
2	17.00	17.00	170.43	333.81	0.051	16.95	34.87	0.0	0.1	2.840	A
3	154.00	154.00	7.97	401.34	0.384	153.38	179.40	0.0	0.6	3.620	A
4	1.00	1.00	154.38	158.49	0.006	0.99	6.97	0.0	0.0	5.714	A

17:45 - 18:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	168.00	168.00	21.02	482.08	0.348	168.07	112.12	0.6	0.5	2.866	A
2	23.00	23.00	162.05	339.50	0.068	22.98	27.04	0.1	0.1	2.842	A
3	122.00	122.00	12.98	398.19	0.306	122.17	172.05	0.6	0.4	3.261	A
4	0.00	0.00	133.14	167.84	0.000	0.01	2.02	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	148.00	148.00	16.01	485.86	0.305	148.10	129.92	0.5	0.4	2.664	A
2	17.00	17.00	140.09	354.38	0.048	17.02	24.01	0.1	0.1	2.667	A
3	133.00	133.00	12.01	398.56	0.334	132.95	145.11	0.4	0.5	3.388	A
4	5.00	5.00	140.96	164.36	0.030	4.97	3.99	0.0	0.0	5.647	A

18:15 - 18:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	158.00	158.00	17.00	485.72	0.325	157.96	112.08	0.4	0.5	2.745	A
2	5.00	5.00	139.00	355.11	0.014	5.04	35.96	0.1	0.0	2.572	A
3	128.00	128.00	7.01	401.74	0.319	128.03	137.03	0.5	0.5	3.290	A
4	0.00	0.00	129.05	169.58	0.000	0.03	5.99	0.0	0.0	0.000	A

2022 no dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	2.98	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D3	2022 no dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		1	2	3	4
From	1	0.00	7.00	70.00	1.00
	2	16.00	1.00	21.00	0.00
	3	87.00	3.00	0.00	1.00
	4	2.00	0.00	3.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		1	2	3	4
From	1	0.00	7.00	79.00	0.00
	2	19.00	0.00	17.00	0.00
	3	102.00	11.00	1.00	2.00
	4	2.00	0.00	2.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	15.00	87.00	0.00
	2	24.00	0.00	22.00	0.00
	3	85.00	5.00	1.00	1.00
	4	3.00	0.00	0.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	3.00	105.00	0.00
	2	20.00	0.00	33.00	0.00
	3	120.00	3.00	1.00	0.00
	4	3.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	4	3	0
	2	3	0	0	0
	3	3	10	67	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.22	2.37	0.3	A	93.50	374.00
2	0.14	2.83	0.2	A	43.25	173.00
3	0.32	3.47	0.5	A	105.75	423.00
4	0.03	5.72	0.0	A	4.00	16.00

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	78.00	78.00	6.97	486.14	0.160	77.81	104.65	0.0	0.2	2.203	A
2	38.00	38.00	73.81	393.80	0.097	37.89	10.97	0.0	0.1	2.529	A
3	91.00	91.00	17.95	385.80	0.236	90.69	93.75	0.0	0.3	3.047	A
4	5.00	5.00	106.65	178.34	0.028	4.97	1.99	0.0	0.0	5.191	A

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	86.00	86.00	13.97	480.13	0.179	85.97	122.90	0.2	0.2	2.283	A
2	36.00	36.00	81.97	386.61	0.093	36.00	17.97	0.1	0.1	2.568	A
3	116.00	116.00	19.00	381.57	0.304	115.87	98.98	0.3	0.4	3.385	A
4	4.00	4.00	132.87	166.05	0.024	4.00	2.00	0.0	0.0	5.555	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	102.00	102.00	6.04	485.73	0.210	101.95	112.06	0.2	0.3	2.344	A
2	46.00	46.00	87.99	382.59	0.120	45.97	20.00	0.1	0.1	2.673	A
3	92.00	92.00	23.98	378.96	0.243	92.11	109.97	0.4	0.3	3.138	A
4	3.00	3.00	115.09	174.20	0.017	3.01	1.00	0.0	0.0	5.259	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	108.00	108.00	5.00	487.15	0.222	107.98	142.84	0.3	0.3	2.373	A
2	53.00	53.00	106.94	371.43	0.143	52.97	6.04	0.1	0.2	2.825	A
3	124.00	124.00	20.01	382.70	0.324	123.85	139.91	0.3	0.5	3.475	A
4	4.00	4.00	143.85	161.36	0.025	3.99	0.00	0.0	0.0	5.718	A

2022 with dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.07	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D4	2022 with dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		1	2	3	4
From	1	0.00	7.00	70.00	1.00
	2	16.00	1.00	33.00	0.00
	3	87.00	11.00	0.00	1.00
	4	2.00	0.00	3.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		1	2	3	4
From	1	0.00	7.00	79.00	0.00
	2	19.00	0.00	29.00	0.00
	3	102.00	19.00	1.00	2.00
	4	2.00	0.00	2.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	15.00	87.00	0.00
	2	24.00	0.00	34.00	0.00
	3	85.00	12.00	1.00	1.00
	4	3.00	0.00	0.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	3.00	105.00	0.00
	2	20.00	0.00	45.00	0.00
	3	120.00	10.00	1.00	0.00
	4	3.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	4	3	0
	2	3	0	0	0
	3	3	10	67	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.22	2.41	0.3	A	93.50	374.00
2	0.17	2.93	0.2	A	55.25	221.00
3	0.34	3.59	0.5	A	113.25	453.00
4	0.03	5.84	0.0	A	4.00	16.00

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	78.00	78.00	14.94	480.06	0.162	77.81	104.64	0.0	0.2	2.236	A
2	50.00	50.00	73.81	394.98	0.127	49.86	18.94	0.0	0.1	2.606	A
3	99.00	99.00	17.95	383.76	0.258	98.65	105.71	0.0	0.3	3.152	A
4	5.00	5.00	114.61	174.53	0.029	4.97	1.99	0.0	0.0	5.308	A

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	86.00	86.00	21.97	474.04	0.181	85.97	122.90	0.2	0.2	2.318	A
2	48.00	48.00	81.97	388.12	0.124	48.00	25.97	0.1	0.1	2.645	A
3	124.00	124.00	19.00	380.19	0.326	123.86	110.98	0.3	0.5	3.509	A
4	4.00	4.00	140.86	162.22	0.025	4.00	2.00	0.0	0.0	5.690	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	102.00	102.00	13.04	480.39	0.212	101.95	112.07	0.2	0.3	2.378	A
2	58.00	58.00	87.99	383.81	0.151	57.96	27.01	0.1	0.2	2.761	A
3	99.00	99.00	23.98	377.43	0.262	99.12	121.97	0.5	0.4	3.237	A
4	3.00	3.00	122.10	170.84	0.018	3.01	1.00	0.0	0.0	5.364	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	108.00	108.00	12.00	481.81	0.224	107.98	142.84	0.3	0.3	2.407	A
2	65.00	65.00	106.94	372.20	0.175	64.97	13.04	0.2	0.2	2.929	A
3	131.00	131.00	20.01	381.45	0.343	130.84	151.90	0.4	0.5	3.589	A
4	4.00	4.00	150.84	158.02	0.025	3.99	0.00	0.0	0.0	5.842	A

2027 no dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.12	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D5	2027 no dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

07:30 - 07:45

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	7.00	77.00	1.00
	2	18.00	1.00	23.00	0.00
	3	96.00	4.00	0.00	1.00
	4	2.00	0.00	4.00	0.00

07:45 - 08:00

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	7.00	87.00	0.00
	2	20.00	0.00	19.00	0.00
	3	113.00	12.00	1.00	2.00
	4	2.00	0.00	2.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	17.00	96.00	0.00
	2	26.00	0.00	24.00	0.00
	3	93.00	6.00	1.00	1.00
	4	4.00	0.00	0.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	4.00	115.00	0.00
	2	22.00	0.00	36.00	0.00
	3	132.00	4.00	1.00	0.00
	4	4.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	4	3	0
	2	3	0	0	0
	3	3	10	67	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.24	2.45	0.3	A	102.75	411.00
2	0.16	2.93	0.2	A	47.25	189.00
3	0.36	3.68	0.6	A	116.75	467.00
4	0.03	6.01	0.0	A	4.75	19.00

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	85.00	85.00	8.96	484.71	0.175	84.79	115.60	0.0	0.2	2.249	A
2	42.00	42.00	81.78	388.35	0.108	41.88	11.97	0.0	0.1	2.598	A
3	101.00	101.00	19.94	384.40	0.263	100.64	103.72	0.0	0.4	3.167	A
4	6.00	6.00	118.59	172.95	0.035	5.96	1.99	0.0	0.0	5.388	A

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	94.00	94.00	14.98	479.40	0.196	93.97	134.89	0.2	0.2	2.334	A
2	39.00	39.00	89.98	381.39	0.102	39.01	18.97	0.1	0.1	2.630	A
3	128.00	128.00	20.00	381.15	0.336	127.85	108.98	0.4	0.5	3.551	A
4	4.00	4.00	145.85	160.19	0.025	4.01	2.00	0.0	0.0	5.762	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	113.00	113.00	7.04	484.95	0.233	112.94	123.07	0.2	0.3	2.419	A
2	50.00	50.00	96.98	376.56	0.133	49.96	23.00	0.1	0.2	2.755	A
3	101.00	101.00	25.98	377.83	0.267	101.14	120.96	0.5	0.4	3.253	A
4	4.00	4.00	126.11	169.23	0.024	4.00	1.00	0.0	0.0	5.446	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	119.00	119.00	6.00	486.36	0.245	118.98	157.81	0.3	0.3	2.449	A
2	58.00	58.00	116.94	364.65	0.159	57.96	8.04	0.2	0.2	2.934	A
3	137.00	137.00	22.01	381.53	0.359	136.81	152.90	0.4	0.6	3.678	A
4	5.00	5.00	158.81	154.62	0.032	4.99	0.00	0.0	0.0	6.014	A

2027 with dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.22	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D6	2027 with dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

07:30 - 07:45

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	7.00	77.00	1.00
	2	18.00	1.00	35.00	0.00
	3	96.00	12.00	0.00	1.00
	4	2.00	0.00	4.00	0.00

07:45 - 08:00

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	7.00	87.00	0.00
	2	20.00	0.00	31.00	0.00
	3	113.00	20.00	1.00	2.00
	4	2.00	0.00	2.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	17.00	96.00	0.00
	2	26.00	0.00	36.00	0.00
	3	93.00	13.00	1.00	1.00
	4	4.00	0.00	0.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	4.00	115.00	0.00
	2	22.00	0.00	48.00	0.00
	3	132.00	11.00	1.00	0.00
	4	4.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	4	3	0
	2	3	0	0	0
	3	3	10	67	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.25	2.49	0.3	A	102.75	411.00
2	0.19	3.05	0.2	A	59.25	237.00
3	0.38	3.80	0.6	A	124.25	497.00
4	0.04	6.15	0.0	A	4.75	19.00

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	85.00	85.00	16.93	478.63	0.178	84.78	115.59	0.0	0.2	2.284	A
2	54.00	54.00	81.78	389.45	0.139	53.84	19.94	0.0	0.2	2.680	A
3	109.00	109.00	19.94	382.56	0.285	108.60	115.68	0.0	0.4	3.281	A
4	6.00	6.00	126.55	169.14	0.035	5.96	1.99	0.0	0.0	5.513	A

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	94.00	94.00	22.97	473.30	0.199	93.97	134.88	0.2	0.2	2.372	A
2	51.00	51.00	89.98	382.76	0.133	51.01	26.96	0.2	0.2	2.712	A
3	136.00	136.00	20.00	379.89	0.358	135.84	120.98	0.4	0.6	3.686	A
4	4.00	4.00	153.84	156.37	0.026	4.01	2.00	0.0	0.0	5.909	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	113.00	113.00	14.05	479.61	0.236	112.94	123.08	0.2	0.3	2.454	A
2	62.00	62.00	96.98	377.68	0.164	61.96	30.01	0.2	0.2	2.850	A
3	108.00	108.00	25.98	376.43	0.287	108.15	132.96	0.6	0.4	3.355	A
4	4.00	4.00	133.12	165.87	0.024	4.00	1.00	0.0	0.0	5.561	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	119.00	119.00	13.00	481.02	0.247	118.98	157.80	0.3	0.3	2.485	A
2	70.00	70.00	116.94	365.36	0.192	69.96	15.04	0.2	0.2	3.046	A
3	144.00	144.00	22.01	380.40	0.379	143.80	164.89	0.4	0.6	3.800	A
4	5.00	5.00	165.80	151.28	0.033	4.99	0.00	0.0	0.0	6.152	A

2037 no dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.27	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D7	2037 no dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		1	2	3	4
From	1	0.00	8.00	84.00	1.00
	2	20.00	1.00	25.00	0.00
	3	105.00	4.00	0.00	1.00
	4	3.00	0.00	4.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		1	2	3	4
From	1	0.00	8.00	95.00	0.00
	2	22.00	0.00	21.00	0.00
	3	123.00	13.00	1.00	3.00
	4	3.00	0.00	3.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	18.00	105.00	0.00
	2	29.00	0.00	26.00	0.00
	3	102.00	7.00	1.00	1.00
	4	4.00	0.00	0.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	4.00	126.00	0.00
	2	24.00	0.00	39.00	0.00
	3	144.00	4.00	1.00	0.00
	4	4.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	4	3	0
	2	3	0	0	0
	3	3	10	67	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.27	2.52	0.4	A	112.25	449.00
2	0.18	3.06	0.2	A	51.75	207.00
3	0.39	3.88	0.6	A	127.50	510.00
4	0.04	6.28	0.0	A	5.50	22.00

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	93.00	93.00	8.96	484.68	0.192	92.76	127.54	0.0	0.2	2.295	A
2	46.00	46.00	88.76	383.57	0.120	45.86	12.96	0.0	0.1	2.663	A
3	110.00	110.00	21.94	383.25	0.287	109.60	112.69	0.0	0.4	3.285	A
4	7.00	7.00	129.54	168.04	0.042	6.96	1.99	0.0	0.0	5.585	A

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	103.00	103.00	16.96	477.93	0.216	102.96	147.86	0.2	0.3	2.399	A
2	43.00	43.00	98.96	375.38	0.115	43.01	20.96	0.1	0.1	2.707	A
3	140.00	140.00	22.00	380.18	0.368	139.82	119.97	0.4	0.6	3.743	A
4	6.00	6.00	158.83	154.35	0.039	6.00	2.99	0.0	0.0	6.068	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	123.00	123.00	8.05	484.20	0.254	122.93	135.09	0.3	0.3	2.491	A
2	55.00	55.00	105.98	370.42	0.148	54.96	25.00	0.1	0.2	2.852	A
3	111.00	111.00	28.97	376.12	0.295	111.16	131.96	0.6	0.4	3.398	A
4	4.00	4.00	139.12	163.36	0.024	4.02	1.01	0.0	0.0	5.650	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	130.00	130.00	6.00	486.37	0.267	129.98	171.78	0.3	0.4	2.524	A
2	63.00	63.00	127.93	357.21	0.176	62.96	8.05	0.2	0.2	3.058	A
3	149.00	149.00	24.01	380.50	0.392	148.78	166.88	0.4	0.6	3.881	A
4	5.00	5.00	172.79	148.36	0.034	4.99	0.00	0.0	0.0	6.277	A

2037 with dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.38	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D8	2037 with dev	AM	DIRECT	07:30	08:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

07:30 - 07:45

		To			
		1	2	3	4
From	1	0.00	8.00	84.00	1.00
	2	20.00	1.00	37.00	0.00
	3	105.00	12.00	0.00	1.00
	4	3.00	0.00	4.00	0.00

Demand (Veh/TS)

07:45 - 08:00

		To			
		1	2	3	4
From	1	0.00	8.00	95.00	0.00
	2	22.00	0.00	33.00	0.00
	3	123.00	21.00	1.00	3.00
	4	3.00	0.00	3.00	0.00

08:00 - 08:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	18.00	105.00	0.00
	2	29.00	0.00	38.00	0.00
	3	102.00	14.00	1.00	1.00
	4	4.00	0.00	0.00	0.00

08:15 - 08:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	4.00	126.00	0.00
	2	24.00	0.00	51.00	0.00
	3	144.00	11.00	1.00	0.00
	4	4.00	0.00	1.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	4	3	0
	2	3	0	0	0
	3	3	10	67	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.27	2.56	0.4	A	112.25	449.00
2	0.21	3.18	0.3	A	63.75	255.00
3	0.41	4.02	0.7	A	135.00	540.00
4	0.04	6.43	0.0	A	5.50	22.00

Main Results for each time segment

07:30 - 07:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	93.00	93.00	16.93	478.60	0.194	92.76	127.52	0.0	0.2	2.331	A
2	58.00	58.00	88.75	384.60	0.151	57.82	20.93	0.0	0.2	2.752	A
3	118.00	118.00	21.93	381.56	0.309	117.56	124.64	0.0	0.4	3.403	A
4	7.00	7.00	137.49	164.23	0.043	6.96	1.99	0.0	0.0	5.721	A

07:45 - 08:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	103.00	103.00	24.96	471.84	0.218	102.96	147.86	0.2	0.3	2.439	A
2	55.00	55.00	98.96	376.62	0.146	55.01	28.96	0.2	0.2	2.797	A
3	148.00	148.00	22.00	379.01	0.391	147.81	131.97	0.4	0.6	3.889	A
4	6.00	6.00	166.81	150.52	0.040	6.00	2.99	0.0	0.0	6.229	A

08:00 - 08:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	123.00	123.00	15.06	478.86	0.257	122.93	135.10	0.3	0.3	2.528	A
2	67.00	67.00	105.98	371.45	0.180	66.95	32.01	0.2	0.2	2.955	A
3	118.00	118.00	28.97	374.83	0.315	118.17	143.96	0.6	0.5	3.508	A
4	4.00	4.00	146.14	160.00	0.025	4.02	1.01	0.0	0.0	5.769	A

08:15 - 08:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	130.00	130.00	13.00	481.04	0.270	129.98	171.77	0.3	0.4	2.563	A
2	75.00	75.00	127.93	357.86	0.210	74.96	15.05	0.2	0.3	3.181	A
3	156.00	156.00	24.01	379.45	0.411	155.77	178.87	0.5	0.7	4.019	A
4	5.00	5.00	179.78	145.01	0.034	4.99	0.00	0.0	0.0	6.427	A

2022 no dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.41	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D9	2022 no dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		1	2	3	4
From	1	0.00	13.00	179.00	1.00
	2	8.00	0.00	11.00	0.00
	3	132.00	24.00	1.00	7.00
	4	1.00	0.00	0.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		1	2	3	4
From	1	0.00	9.00	168.00	2.00
	2	12.00	0.00	13.00	0.00
	3	107.00	20.00	2.00	0.00
	4	0.00	0.00	0.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	12.00	143.00	2.00
	2	11.00	0.00	8.00	0.00
	3	125.00	14.00	0.00	2.00
	4	2.00	0.00	3.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	20.00	143.00	4.00
	2	3.00	0.00	2.00	0.00
	3	115.00	19.00	0.00	2.00
	4	0.00	0.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	2	0
	2	0	0	0	0
	3	1	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.40	3.13	0.7	A	174.00	696.00
2	0.08	2.92	0.1	A	17.00	68.00
3	0.41	3.78	0.7	A	142.50	570.00
4	0.03	5.88	0.0	A	1.50	6.00

Main Results for each time segment

17:30 - 17:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	193.00	193.00	24.90	479.49	0.403	192.33	140.41	0.0	0.7	3.128	A
2	19.00	19.00	180.37	327.08	0.058	18.94	36.85	0.0	0.1	2.920	A
3	164.00	164.00	8.97	400.73	0.409	163.31	190.34	0.0	0.7	3.780	A
4	1.00	1.00	164.32	154.13	0.006	0.99	7.97	0.0	0.0	5.876	A

17:45 - 18:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	179.00	179.00	22.02	481.40	0.372	179.07	119.15	0.7	0.6	2.979	A
2	25.00	25.00	172.06	332.73	0.075	24.98	29.04	0.1	0.1	2.923	A
3	129.00	129.00	13.98	397.58	0.324	129.21	183.05	0.7	0.5	3.355	A
4	0.00	0.00	141.16	164.32	0.000	0.01	2.03	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	157.00	157.00	17.01	485.18	0.324	157.11	137.91	0.6	0.5	2.745	A
2	19.00	19.00	148.11	348.95	0.054	19.02	26.01	0.1	0.1	2.727	A
3	141.00	141.00	13.01	397.95	0.354	140.94	154.13	0.5	0.5	3.501	A
4	5.00	5.00	149.95	160.41	0.031	4.97	3.99	0.0	0.0	5.788	A

18:15 - 18:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	167.00	167.00	19.00	484.30	0.345	166.96	118.09	0.5	0.5	2.835	A
2	5.00	5.00	147.00	349.69	0.014	5.04	38.96	0.1	0.0	2.611	A
3	136.00	136.00	7.02	401.76	0.339	136.03	145.03	0.5	0.5	3.386	A
4	0.00	0.00	137.06	166.07	0.000	0.03	5.99	0.0	0.0	0.000	A

2022 with dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.54	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D10	2022 with dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		1	2	3	4
From	1	0.00	13.00	179.00	1.00
	2	8.00	0.00	19.00	0.00
	3	132.00	36.00	1.00	7.00
	4	1.00	0.00	0.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		1	2	3	4
From	1	0.00	9.00	168.00	2.00
	2	12.00	0.00	21.00	0.00
	3	107.00	32.00	2.00	0.00
	4	0.00	0.00	0.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	12.00	143.00	2.00
	2	11.00	0.00	16.00	0.00
	3	125.00	26.00	0.00	2.00
	4	2.00	0.00	3.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	20.00	143.00	4.00
	2	3.00	0.00	9.00	0.00
	3	115.00	30.00	0.00	2.00
	4	0.00	0.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	2	0
	2	0	0	0	0
	3	1	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.41	3.22	0.7	A	174.00	696.00
2	0.10	3.00	0.1	A	24.75	99.00
3	0.44	3.97	0.8	A	154.25	617.00
4	0.03	6.08	0.0	A	1.50	6.00

Main Results for each time segment

17:30 - 17:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	193.00	193.00	36.84	471.11	0.410	192.31	140.38	0.0	0.7	3.220	A
2	27.00	27.00	180.35	327.09	0.083	26.91	48.79	0.0	0.1	2.998	A
3	176.00	176.00	8.97	400.95	0.439	175.22	198.29	0.0	0.8	3.974	A
4	1.00	1.00	176.23	148.95	0.007	0.99	7.97	0.0	0.0	6.082	A

17:45 - 18:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	179.00	179.00	34.03	472.98	0.378	179.08	119.16	0.7	0.6	3.064	A
2	33.00	33.00	172.06	332.73	0.099	32.98	41.05	0.1	0.1	3.002	A
3	141.00	141.00	13.98	397.86	0.354	141.22	191.06	0.8	0.6	3.509	A
4	0.00	0.00	153.18	159.09	0.000	0.01	2.03	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	157.00	157.00	29.01	476.76	0.329	157.12	137.90	0.6	0.5	2.818	A
2	27.00	27.00	148.11	348.95	0.077	27.03	38.01	0.1	0.1	2.797	A
3	153.00	153.00	13.01	398.22	0.384	152.93	162.13	0.6	0.6	3.669	A
4	5.00	5.00	161.95	155.19	0.032	4.97	3.99	0.0	0.0	5.989	A

18:15 - 18:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	167.00	167.00	30.01	476.57	0.350	166.96	118.09	0.5	0.5	2.906	A
2	12.00	12.00	147.00	349.69	0.034	12.05	49.96	0.1	0.0	2.665	A
3	147.00	147.00	7.02	402.01	0.366	147.04	152.03	0.6	0.6	3.532	A
4	0.00	0.00	148.07	161.28	0.000	0.03	5.99	0.0	0.0	0.000	A

2027 no dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.64	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D11	2027 no dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

Demand (Veh/TS)

17:30 - 17:45

		To			
		1	2	3	4
From	1	0.00	14.00	196.00	1.00
	2	8.00	0.00	12.00	0.00
	3	145.00	26.00	1.00	7.00
	4	1.00	0.00	0.00	0.00

Demand (Veh/TS)

17:45 - 18:00

		To			
		1	2	3	4
From	1	0.00	10.00	185.00	2.00
	2	13.00	0.00	14.00	0.00
	3	117.00	22.00	2.00	0.00
	4	0.00	0.00	0.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	13.00	157.00	2.00
	2	12.00	0.00	8.00	0.00
	3	138.00	16.00	0.00	2.00
	4	2.00	0.00	4.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	22.00	157.00	5.00
	2	4.00	0.00	2.00	0.00
	3	127.00	20.00	0.00	2.00
	4	0.00	0.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	2	0
	2	0	0	0	0
	3	1	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.44	3.35	0.8	A	191.00	764.00
2	0.08	3.06	0.1	A	18.25	73.00
3	0.45	4.03	0.8	A	156.25	625.00
4	0.04	6.14	0.0	A	1.75	7.00

Main Results for each time segment

17:30 - 17:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	211.00	211.00	26.88	478.08	0.441	210.21	153.32	0.0	0.8	3.350	A
2	20.00	20.00	197.26	315.64	0.063	19.93	39.83	0.0	0.1	3.043	A
3	179.00	179.00	8.97	400.71	0.447	178.20	208.23	0.0	0.8	4.030	A
4	1.00	1.00	179.20	147.59	0.007	0.99	7.96	0.0	0.0	6.138	A

17:45 - 18:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	197.00	197.00	24.03	479.99	0.410	197.08	130.18	0.8	0.7	3.181	A
2	27.00	27.00	189.06	321.22	0.084	26.98	32.05	0.1	0.1	3.058	A
3	141.00	141.00	14.98	396.97	0.355	141.25	201.06	0.8	0.6	3.524	A
4	0.00	0.00	154.20	158.60	0.000	0.01	2.03	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	172.00	172.00	20.00	483.06	0.356	172.14	151.88	0.7	0.6	2.895	A
2	20.00	20.00	163.13	338.80	0.059	20.03	29.01	0.1	0.1	2.823	A
3	156.00	156.00	14.01	397.35	0.393	155.91	169.15	0.6	0.6	3.728	A
4	6.00	6.00	165.93	153.40	0.039	5.96	3.99	0.0	0.0	6.102	A

18:15 - 18:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	184.00	184.00	20.01	483.61	0.380	183.94	131.10	0.6	0.6	3.003	A
2	6.00	6.00	162.00	339.55	0.018	6.04	41.95	0.1	0.0	2.698	A
3	149.00	149.00	9.02	400.52	0.372	149.05	159.03	0.6	0.6	3.581	A
4	0.00	0.00	151.07	159.92	0.000	0.04	6.99	0.0	0.0	0.000	A

2027 with dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.79	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D12	2027 with dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

17:30 - 17:45

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	14.00	196.00	1.00
	2	8.00	0.00	20.00	0.00
	3	145.00	38.00	1.00	7.00
	4	1.00	0.00	0.00	0.00

17:45 - 18:00

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	10.00	185.00	2.00
	2	13.00	0.00	22.00	0.00
	3	117.00	34.00	2.00	0.00
	4	0.00	0.00	0.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	13.00	157.00	2.00
	2	12.00	0.00	16.00	0.00
	3	138.00	28.00	0.00	2.00
	4	2.00	0.00	4.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	22.00	157.00	5.00
	2	4.00	0.00	9.00	0.00
	3	127.00	31.00	0.00	2.00
	4	0.00	0.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	2	0
	2	0	0	0	0
	3	1	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.45	3.46	0.8	A	191.00	764.00
2	0.11	3.14	0.1	A	26.00	104.00
3	0.48	4.25	0.9	A	168.00	672.00
4	0.04	6.36	0.0	A	1.75	7.00

Main Results for each time segment

17:30 - 17:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	211.00	211.00	38.82	469.71	0.449	210.19	153.28	0.0	0.8	3.458	A
2	28.00	28.00	197.24	315.66	0.089	27.90	51.77	0.0	0.1	3.127	A
3	191.00	191.00	8.97	400.91	0.476	190.10	216.17	0.0	0.9	4.251	A
4	1.00	1.00	191.10	142.41	0.007	0.99	7.96	0.0	0.0	6.363	A

17:45 - 18:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	197.00	197.00	36.04	471.57	0.418	197.09	130.19	0.8	0.7	3.281	A
2	35.00	35.00	189.07	321.22	0.109	34.98	44.06	0.1	0.1	3.143	A
3	153.00	153.00	14.98	397.22	0.385	153.27	209.06	0.9	0.6	3.695	A
4	0.00	0.00	166.22	153.36	0.000	0.01	2.03	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	172.00	172.00	32.00	474.64	0.362	172.15	151.88	0.7	0.6	2.978	A
2	28.00	28.00	163.14	338.80	0.083	28.03	41.01	0.1	0.1	2.895	A
3	168.00	168.00	14.01	397.60	0.423	167.90	177.16	0.6	0.7	3.916	A
4	6.00	6.00	177.92	148.18	0.040	5.96	3.99	0.0	0.0	6.326	A

18:15 - 18:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	184.00	184.00	31.02	475.89	0.387	183.94	131.11	0.6	0.6	3.082	A
2	13.00	13.00	162.00	339.55	0.038	13.05	52.96	0.1	0.0	2.758	A
3	160.00	160.00	9.02	400.75	0.399	160.06	166.04	0.7	0.7	3.739	A
4	0.00	0.00	162.08	155.12	0.000	0.04	6.99	0.0	0.0	0.000	A

2037 no dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	3.95	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D13	2037 no dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

17:30 - 17:45

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	16.00	215.00	1.00
	2	9.00	0.00	13.00	0.00
	3	158.00	29.00	1.00	8.00
	4	1.00	0.00	0.00	0.00

17:45 - 18:00

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	10.00	201.00	3.00
	2	14.00	0.00	16.00	0.00
	3	128.00	24.00	3.00	0.00
	4	0.00	0.00	0.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	14.00	171.00	3.00
	2	13.00	0.00	9.00	0.00
	3	150.00	17.00	0.00	3.00
	4	3.00	0.00	4.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	24.00	171.00	5.00
	2	4.00	0.00	3.00	0.00
	3	139.00	22.00	0.00	3.00
	4	0.00	0.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	2	0
	2	0	0	0	0
	3	1	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.49	3.66	0.9	A	208.50	834.00
2	0.10	3.22	0.1	A	20.25	81.00
3	0.49	4.37	1.0	A	171.25	685.00
4	0.05	6.46	0.0	A	2.00	8.00

Main Results for each time segment

17:30 - 17:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	232.00	232.00	29.85	476.02	0.487	231.06	167.19	0.0	0.9	3.661	A
2	22.00	22.00	216.12	302.88	0.073	21.92	44.79	0.0	0.1	3.203	A
3	196.00	196.00	9.96	400.12	0.490	195.05	228.07	0.0	1.0	4.369	A
4	1.00	1.00	196.06	140.20	0.007	0.99	8.96	0.0	0.0	6.464	A

17:45 - 18:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	214.00	214.00	27.03	477.88	0.448	214.13	142.22	0.9	0.8	3.415	A
2	30.00	30.00	207.09	309.04	0.097	29.97	34.07	0.1	0.1	3.224	A
3	155.00	155.00	16.97	395.77	0.392	155.30	220.09	1.0	0.6	3.749	A
4	0.00	0.00	169.25	152.00	0.000	0.01	3.03	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	188.00	188.00	21.01	482.38	0.390	188.17	165.86	0.8	0.6	3.062	A
2	22.00	22.00	178.17	328.63	0.067	22.04	31.02	0.1	0.1	2.935	A
3	170.00	170.00	16.01	396.14	0.429	169.90	184.19	0.6	0.7	3.976	A
4	7.00	7.00	179.92	147.26	0.048	6.95	5.99	0.0	0.0	6.413	A

18:15 - 18:30

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	200.00	200.00	22.01	482.20	0.415	199.94	143.12	0.6	0.7	3.188	A
2	7.00	7.00	176.00	330.07	0.021	7.05	45.94	0.1	0.0	2.786	A
3	164.00	164.00	9.02	400.53	0.409	164.05	174.03	0.7	0.7	3.805	A
4	0.00	0.00	165.08	153.77	0.000	0.05	7.99	0.0	0.0	0.000	A

2037 with dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4	4.13	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)	Run automatically
D14	2037 with dev	PM	DIRECT	17:30	18:30	60	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)	O-D data varies over time
✓	✓	HV Percentages	2.00	✓

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Scaling Factor (%)
1		DIRECT	✓	100.000
2		DIRECT	✓	100.000
3		DIRECT	✓	100.000
4		DIRECT	✓	100.000

Origin-Destination Data

17:30 - 17:45

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	16.00	215.00	1.00
	2	9.00	0.00	21.00	0.00
	3	158.00	41.00	1.00	8.00
	4	1.00	0.00	0.00	0.00

17:45 - 18:00

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	10.00	201.00	3.00
	2	14.00	0.00	24.00	0.00
	3	128.00	36.00	3.00	0.00
	4	0.00	0.00	0.00	0.00

18:00 - 18:15

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	14.00	171.00	3.00
	2	13.00	0.00	17.00	0.00
	3	150.00	29.00	0.00	3.00
	4	3.00	0.00	4.00	0.00

18:15 - 18:30

Demand (Veh/TS)

		To			
		1	2	3	4
From	1	0.00	24.00	171.00	5.00
	2	4.00	0.00	10.00	0.00
	3	139.00	33.00	0.00	3.00
	4	0.00	0.00	0.00	0.00

Vehicle Mix

Heavy Vehicle Percentages

		To			
		1	2	3	4
From	1	0	0	2	0
	2	0	0	0	0
	3	1	0	0	0
	4	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS	Average Demand (Veh/TS)	Total Junction Arrivals (Veh)
1	0.50	3.79	1.0	A	208.50	834.00
2	0.12	3.32	0.1	A	28.00	112.00
3	0.52	4.63	1.1	A	183.00	732.00
4	0.05	6.71	0.1	A	2.00	8.00

Main Results for each time segment

17:30 - 17:45

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	232.00	232.00	41.78	467.65	0.496	231.02	167.15	0.0	1.0	3.788	A
2	30.00	30.00	216.08	302.90	0.099	29.89	56.72	0.0	0.1	3.294	A
3	208.00	208.00	9.96	400.30	0.520	206.93	236.01	0.0	1.1	4.630	A
4	1.00	1.00	207.94	135.03	0.007	0.99	8.95	0.0	0.0	6.714	A

17:45 - 18:00

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	214.00	214.00	39.04	469.46	0.456	214.13	142.24	1.0	0.8	3.528	A
2	38.00	38.00	207.10	309.04	0.123	37.97	46.08	0.1	0.1	3.319	A
3	167.00	167.00	16.97	396.00	0.422	167.34	228.09	1.1	0.7	3.941	A
4	0.00	0.00	181.28	146.76	0.000	0.01	3.03	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	188.00	188.00	33.01	473.97	0.397	188.18	165.85	0.8	0.7	3.153	A
2	30.00	30.00	178.18	328.63	0.091	30.04	43.01	0.1	0.1	3.016	A
3	182.00	182.00	16.01	396.36	0.459	181.89	192.21	0.7	0.8	4.194	A
4	7.00	7.00	191.91	142.04	0.049	6.95	5.99	0.0	0.1	6.661	A

18:15 - 18:30

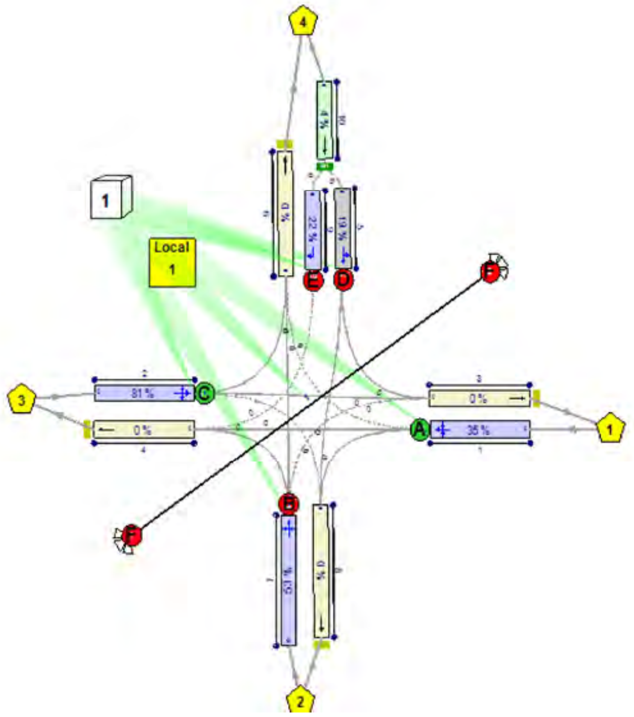
Arm	Total Demand (Veh/TS)	Junction Arrivals (Veh)	Circulating flow (Veh/TS)	Capacity (Veh/TS)	RFC	Throughput (Veh/TS)	Throughput (exit side) (Veh/TS)	Start queue (Veh)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	200.00	200.00	33.02	474.47	0.422	199.94	143.13	0.7	0.7	3.278	A
2	14.00	14.00	176.00	330.07	0.042	14.06	56.95	0.1	0.0	2.850	A
3	175.00	175.00	9.02	400.74	0.437	175.06	181.04	0.8	0.8	3.988	A
4	0.00	0.00	176.09	148.97	0.000	0.05	7.99	0.1	0.0	0.000	A

APPENDIX F – TRANSYT RESULTS

TRANSYT 15

Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 25/11/2020 11:18:01

Network Diagrams



A5 - 2020 am
D5 - 2020 am*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

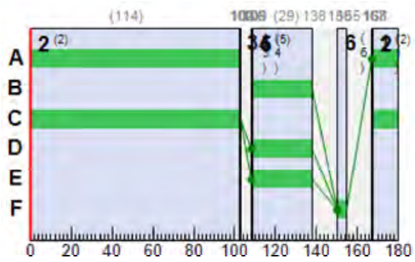
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	168	1	1	1
	2	✓	2	A,C	168	102	114	1	1
	3	✓	3	C	102	103	1	1	1
	4	✓	4	E,D	108	109	1	1	1
	5	✓	5	E,D,B	109	138	29	1	7
	6	✓	6	F	150	155	5	1	5

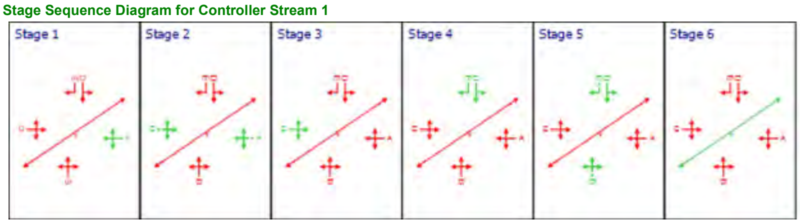
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	102	115
2	1		1	C	168	103	115
5	1		1	D	108	138	30
7	1		1	B	109	138	29
9	1		1	E	108	138	30

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	76			0.00	35	157	26.74	14.74	43.28	9.04	100	100	0.00	19.33
2	1	R403 Clane		1	C	211 <			0.00	81	11	38.47	26.48	68.82	36.59 +	100	100	0.00	95.31
3	1					223			18.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					92			20.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	11			29.00	19	364	69.57	64.17	84.42	2.76	100	100	0.00	11.08
6	1					6			180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	23			0.00	53	70	91.76	77.44	94.84	5.11	100	100	0.00	28.88
8	1					3			180.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00

9	1	Capdoo Park Flare		1	E	4			31.00	22	310	70.90	66.12	84.69	1.49	100	100	0.00	4.07
10	1	Capdoo Park Main				14			180.00	4	1910	8.49	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	524.39	27.90	10.43	148.06	10.61	0.00	158.67
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	524.39	27.90	10.43	148.06	10.61	0.00	158.67

Time segment: 07:30-07:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	53	386	115	0.00	21	322	25.66	13.66	40.56	4.39	100	100	0.00	12.50
2	1	R403 Clane		1	C	237 <	455	115	0.00	81	11	41.81	29.81	75.64	36.59 +	100	100	0.00	120.46
3	1					249	Unrestricted	180	18.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					62	Unrestricted	180	20.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	6	479	30	29.00	7	1136	68.30	62.90	82.91	1.00	100	100	0.00	6.20
6	1					3	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	21	266	29	0.00	47	90	91.15	76.84	94.47	4.01	100	100	0.00	26.45
8	1					3	Unrestricted	180	180.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	0	173	30	31.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00
10	1	Capdoo Park Main				6	491	180	180.00	1	7269	8.46	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	513.25	27.97	18.35	10.87	154.30	11.31	0.00	165.61
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	513.25	27.97	18.35	10.87	154.30	11.31	0.00	165.61

Time segment: 07:45-08:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	76	427	115	0.00	28	226	26.47	14.47	42.50	6.64	100	100	0.00	18.98
2	1	R403 Clane		1	C	237 <	458	115	0.00	80	12	41.90	29.93	75.31	36.39 +	100	100	0.00	120.87
3	1					250	Unrestricted	180	17.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					87	Unrestricted	180	19.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	9	479	30	28.00	11	724	68.94	63.54	83.60	1.52	100	100	0.00	9.40
6	1					4	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	19	250	29	0.00	46	98	91.90	77.36	94.47	3.62	100	100	0.00	24.09
8	1					4	Unrestricted	180	180.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	4	175	30	29.00	13	580	69.31	64.51	84.02	1.47	100	100	0.00	4.24
10	1	Capdoo Park Main				13	491	180	180.00	3	3301	8.48	0.02	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	558.30	30.27	18.45	11.66	165.57	12.02	0.00	177.58
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	558.30	30.27	18.45	11.66	165.57	12.02	0.00	177.58

Time segment: 08:00-08:15

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	78	433	115	0.00	28	222	26.55	14.55	42.85	6.81	100	100	0.00	19.58
2	1	R403 Clane		1	C	197 <	456	115	0.00	67	34	35.35	23.36	62.86	25.21 +	100	100	0.00	78.82
3	1					213	Unrestricted	180	16.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00

4	**1**					96	Unrestricted	180	15.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	11	479	30	27.00	13	574	69.39	63.99	84.25	1.87	100	100	0.00	11.57
6	**1**					4	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	24	272	29	0.00	53	70	94.11	80.06	96.59	4.68	100	100	0.00	31.48
8	**1**					2	Unrestricted	180	180.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	5	169	30	28.00	17	424	70.49	65.71	84.52	1.48	100	100	0.00	5.40
10	**1**	Capdoo Park Main				16	491	180	0.00	3	2663	8.48	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	510.19	26.65	19.14	9.66	137.12	9.73	0.00	146.85
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	510.19	26.65	19.14	9.66	137.12	9.73	0.00	146.85

Time segment: 08:15-08:30

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	97	430	115	0.00	35	157	27.69	15.70	45.73	9.04	100	100	0.00	26.25
2	**1**	R403 Clane		1	C	172 <	454	115	0.00	59	53	32.70	20.70	57.28	20.11 +	100	100	0.00	61.11
3	**1**					178	Unrestricted	180	18.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					122	Unrestricted	180	12.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	16	479	30	0.00	19	364	70.52	65.12	85.57	2.76	100	100	0.00	17.13
6	**1**					14	Unrestricted	180	122.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	27	345	29	0.00	47	92	90.06	75.65	93.83	5.11	100	100	0.00	33.50
8	**1**					4	Unrestricted	180	172.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	6	159	30	26.00	22	310	72.30	67.53	85.27	1.49	100	100	0.00	6.65
10	**1**	Capdoo Park Main				22	491	180	0.00	4	1910	8.50	0.04	0.00	0.00	100	100	0.00	0.01

Network Results

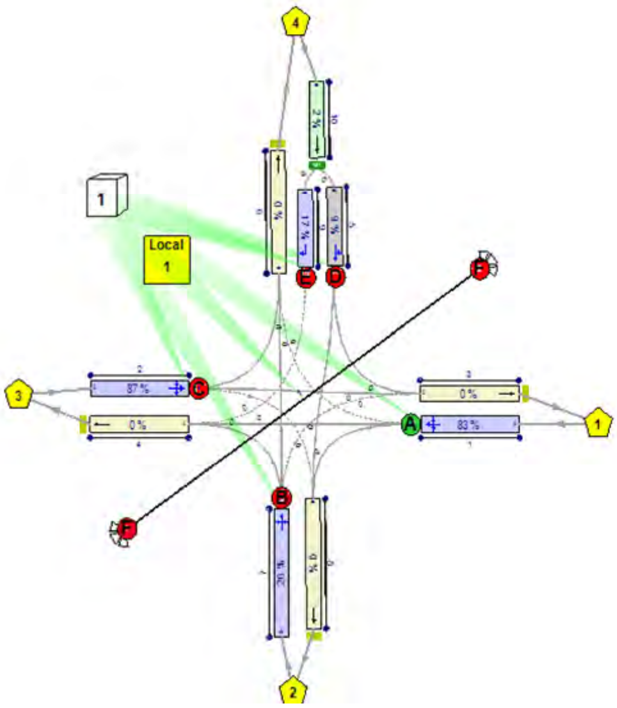
	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	515.79	26.72	19.30	9.53	135.27	9.38	0.00	144.65
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	515.79	26.72	19.30	9.53	135.27	9.38	0.00	144.65

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

TRANSYT 15

Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 25/11/2020 11:18:52

Network Diagrams



A6 - 2020 pm
D6 - 2020 pm*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

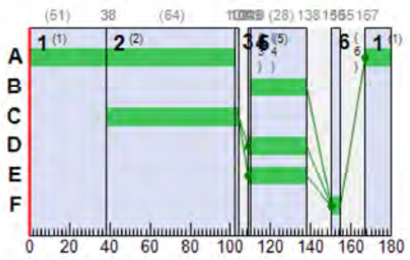
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	38	51	1	1
	2	✓	2	A,C	38	102	64	1	1
	3	✓	3	C	102	104	2	1	1
	4	✓	4	E,D	109	110	1	1	1
	5	✓	5	E,D,B	110	138	28	1	7
	6	✓	6	F	150	155	5	1	5

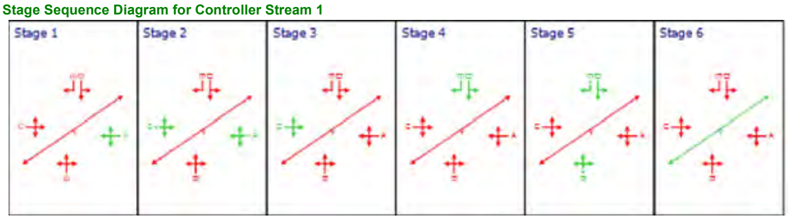
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	102	115
2	1		1	C	38	104	66
5	1		1	D	109	138	29
7	1		1	B	110	138	28
9	1		1	E	109	138	29

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

			SIGNALS			FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	222 <			0.00	83	8	39.71	27.84	70.38	36.10 +	100	100	0.00	105.12
2	1	R403 Clane		1	C	114 <			0.00	87	4	77.42	66.00	97.10	26.84 +	100	100	0.00	123.72
3	1					100			81.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					216			24.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	5			29.00	9	925	69.05	63.65	83.61	1.19	100	100	0.00	4.71
6	1					20			71.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	10			25.00	26	244	81.54	67.23	86.58	2.49	100	100	0.00	11.32
8	1					17			117.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	3			29.00	17	426	70.18	65.39	84.51	1.48	100	100	0.00	2.95

10	1	Capdoo Park Main				7			180.00	2	3584	8.47	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	568.20	35.29	16.46	233.72	14.10	0.00	247.81
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	568.20	35.29	16.46	233.72	14.10	0.00	247.81

Time segment: 17:30-17:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	228 <	439	115	0.00	81	12	40.16	28.16	71.70	33.46 +	100	100	0.00	109.52
2	1	R403 Clane		1	C	102 <	361	66	0.00	76	19	71.68	59.68	92.02	18.98 +	100	100	0.00	100.75
3	1					89	Unrestricted	180	76.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					221	Unrestricted	180	20.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	5	479	29	28.00	6	1336	69.00	63.60	83.44	0.84	100	100	0.00	5.23
6	1					22	Unrestricted	180	60.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	14	332	28	22.00	26	244	83.50	69.19	88.19	2.49	100	100	0.00	15.90
8	1					19	Unrestricted	180	84.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	2	174	29	29.00	7	1205	68.86	64.06	83.97	0.34	100	100	0.00	2.11
10	1	Capdoo Park Main				7	491	180	180.00	1	6216	8.47	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	566.10	34.34	16.49	15.47	219.68	13.82	0.00	233.50
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	566.10	34.34	16.49	15.47	219.68	13.82	0.00	233.50

Time segment: 17:45-18:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	229 <	438	115	0.00	81	11	40.73	28.94	72.34	33.98 +	100	100	0.00	112.86
2	1	R403 Clane		1	C	110 <	360	66	0.00	82	10	77.21	65.74	96.91	21.55 +	100	100	0.00	119.44
3	1					94	Unrestricted	180	77.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					224	Unrestricted	180	20.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	7	479	29	27.00	9	925	69.40	64.00	84.09	1.19	100	100	0.00	7.36
6	1					23	Unrestricted	180	60.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	10	440	28	25.00	14	538	80.20	65.89	85.48	1.72	100	100	0.00	10.82
8	1					20	Unrestricted	180	82.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	5	175	29	25.00	17	426	71.60	66.80	85.07	1.48	100	100	0.00	5.48
10	1	Capdoo Park Main				12	491	180	180.00	2	3584	8.48	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	582.22	36.29	16.04	17.00	241.39	14.59	0.00	255.98
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	582.22	36.29	16.04	17.00	241.39	14.59	0.00	255.98

Time segment: 18:00-18:15

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	235 <	439	115	0.00	83	8	42.07	30.35	75.00	36.10 +	100	100	0.00	121.36
2	1	R403 Clane		1	C	110 <	356	66	0.00	83	8	79.31	68.11	98.35	21.88 +	100	100	0.00	123.63
3	1					97	Unrestricted	180	78.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					228	Unrestricted	180	24.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight		1	D	4	479	29	28.00	5	1694	68.79	63.39	83.40	0.67	100	100	0.00	4.17

		Right																	
6	**1**					18	Unrestricted	180	71.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	7	309	28	25.00	14	540	80.68	66.37	85.72	1.21	100	100	0.00	7.63
8	**1**					16	Unrestricted	180	111.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	3	182	29	29.00	10	810	69.36	64.56	84.24	0.51	100	100	0.00	3.18
10	**1**	Capdoo Park Main				7	491	180	180.00	1	6216	8.47	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	578.06	36.36	15.90	17.26	245.12	14.86	0.00	259.98
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	578.06	36.36	15.90	17.26	245.12	14.86	0.00	259.98

Time segment: 18:15-18:30

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	194 <	433	115	0.00	69	30	35.11	23.13	60.93	24.10 +	100	100	0.00	76.72
2	**1**	R403 Clane		1	C	132 <	409	66	0.00	87	4	80.44	69.34	100.15	26.84 +	100	100	0.00	151.04
3	**1**					119	Unrestricted	180	81.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					190	Unrestricted	180	23.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	2	479	29	29.00	3	3489	68.46	63.06	82.76	0.33	100	100	0.00	2.07
6	**1**					18	Unrestricted	180	64.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	10	384	28	24.00	16	457	80.74	66.43	86.02	1.74	100	100	0.00	10.91
8	**1**					12	Unrestricted	180	117.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	1	177	29	29.00	3	2549	68.26	63.46	83.63	0.17	100	100	0.00	1.04
10	**1**	Capdoo Park Main				3	491	180	180.00	1	14638	8.46	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	546.42	34.18	15.99	16.10	228.68	13.11	0.00	241.79
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	546.42	34.18	15.99	16.10	228.68	13.11	0.00	241.79

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

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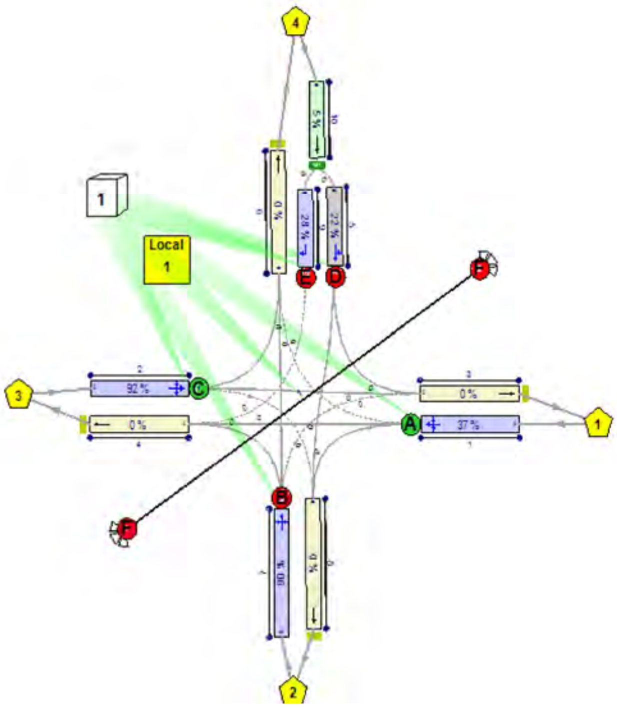
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 25/11/2020 11:19:52

Network Diagrams



A7 - 2022 with dev am
D7 - 2022 with dev am*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

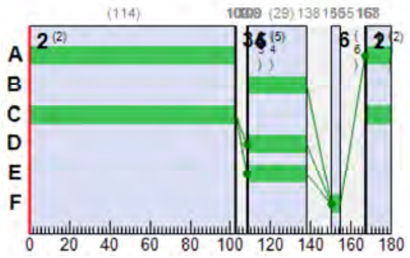
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	168	1	1	1
	2	✓	2	A,C	168	102	114	1	1
	3	✓	3	C	102	103	1	1	1
	4	✓	4	E,D	108	109	1	1	1
	5	✓	5	E,D,B	109	138	29	1	7
	6	✓	6	F	150	155	5	1	5

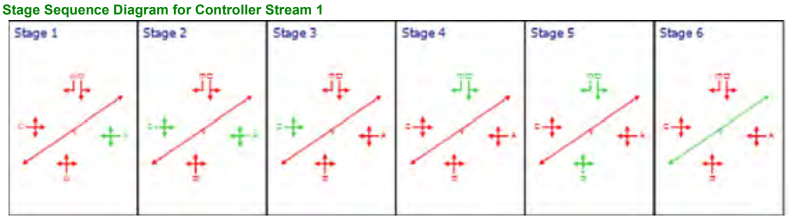
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	102	115
2	1		1	C	168	103	115
5	1		1	D	108	138	30
7	1		1	B	109	138	29
9	1		1	E	108	138	30

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	82			0.00	37	143	26.94	14.94	43.77	9.74	100	100	0.00	21.01
2	1	R403 Clane		1	C	233 <			0.00	92	-2	47.80	36.12	82.82	49.47 +	100	100	0.00	142.19
3	1					242			12.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					108			8.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	11			28.00	22	309	70.04	64.64	84.76	2.90	100	100	0.00	12.02
6	1					7			180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	40			0.00	90	0	137.09	124.59	121.87	10.64	100	100	0.00	81.58
8	1					13			109.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	4			31.00	28	221	72.56	67.79	85.49	1.51	100	100	0.00	4.59

10	1	Capdoo Park Main				15			180.00	5	1762	8.49	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	599.97	37.22	17.38	246.83	14.57	0.00	261.40
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	599.97	37.22	17.38	246.83	14.57	0.00	261.40

Time segment: 07:30-07:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	57	386	115	0.00	23	291	25.81	13.81	40.71	4.74	100	100	0.00	13.64
2	1	R403 Clane		1	C	260 <	441	115	0.00	91	-2	52.54	40.54	91.49	48.65 +	100	100	0.00	178.25
3	1					271	Unrestricted	180	9.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					77	Unrestricted	180	7.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	7	443	30	28.00	9	880	68.70	63.30	83.56	1.18	100	100	0.00	7.28
6	1					3	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	40	271	29	0.00	89	2	126.62	112.31	117.04	9.54	100	100	0.00	73.23
8	1					13	Unrestricted	180	81.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	0	158	30	31.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00
10	1	Capdoo Park Main				7	491	180	180.00	1	6216	8.47	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	590.97	37.77	15.64	18.07	256.66	15.74	0.00	272.40
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	590.97	37.77	15.64	18.07	256.66	15.74	0.00	272.40

Time segment: 07:45-08:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	81	427	115	0.00	29	205	26.68	14.68	43.05	7.10	100	100	0.00	20.57
2	1	R403 Clane		1	C	260 <	440	115	0.00	92	-2	55.48	44.45	93.30	49.47 +	100	100	0.00	194.70
3	1					272	Unrestricted	180	9.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					102	Unrestricted	180	8.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	10	443	30	27.00	13	586	69.41	64.01	84.28	1.70	100	100	0.00	10.52
6	1					4	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	37	258	29	0.00	86	5	141.99	131.64	124.32	9.42	100	100	0.00	79.16
8	1					14	Unrestricted	180	75.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	4	161	30	29.00	15	489	70.00	65.20	84.37	1.47	100	100	0.00	4.55
10	1	Capdoo Park Main				14	491	180	180.00	3	3003	8.48	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	636.77	41.39	15.38	20.61	292.67	16.84	0.00	309.51
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	636.77	41.39	15.38	20.61	292.67	16.84	0.00	309.51

Time segment: 08:00-08:15

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	84	435	115	0.00	30	200	26.78	14.79	43.46	7.46	100	100	0.00	21.49
2	1	R403 Clane		1	C	218 <	433	115	0.00	78	15	41.87	30.09	74.12	33.03 +	100	100	0.00	111.74
3	1					231	Unrestricted	180	9.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					112	Unrestricted	180	5.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight		1	D	12	443	30	27.00	15	496	69.76	64.36	84.37	1.96	100	100	0.00	12.17

Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
		Right																	
6	1					4	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	41	273	29	0.00	90	0	146.04	136.33	126.60	10.64	100	100	0.00	90.80
8	1					12	Unrestricted	180	109.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	5	155	30	27.00	20	358	71.46	66.68	85.01	1.48	100	100	0.00	5.75
10	1	Capdoo Park Main				17	491	180	0.00	3	2540	8.49	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	584.49	35.32	16.55	16.10	228.69	13.26	0.00	241.95
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	584.49	35.32	16.55	16.10	228.69	13.26	0.00	241.95

Time segment: 08:15-08:30

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	103	433	115	0.00	37	143	27.91	15.91	46.29	9.74	100	100	0.00	28.32
2	1	R403 Clane		1	C	192 <	424	115	0.00	70	28	37.68	25.67	66.75	26.21 +	100	100	0.00	84.09
3	1					194	Unrestricted	180	12.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					139	Unrestricted	180	4.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	17	443	30	0.00	22	309	71.15	65.76	85.81	2.90	100	100	0.00	18.10
6	1					15	Unrestricted	180	101.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	43	317	29	0.00	81	11	134.08	118.76	119.76	10.50	100	100	0.00	83.15
8	1					14	Unrestricted	180	106.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	7	145	30	25.00	28	221	74.93	70.18	86.52	1.51	100	100	0.00	8.06
10	1	Capdoo Park Main				24	491	180	0.00	5	1762	8.50	0.05	0.00	0.00	100	100	0.00	0.02

Network Results

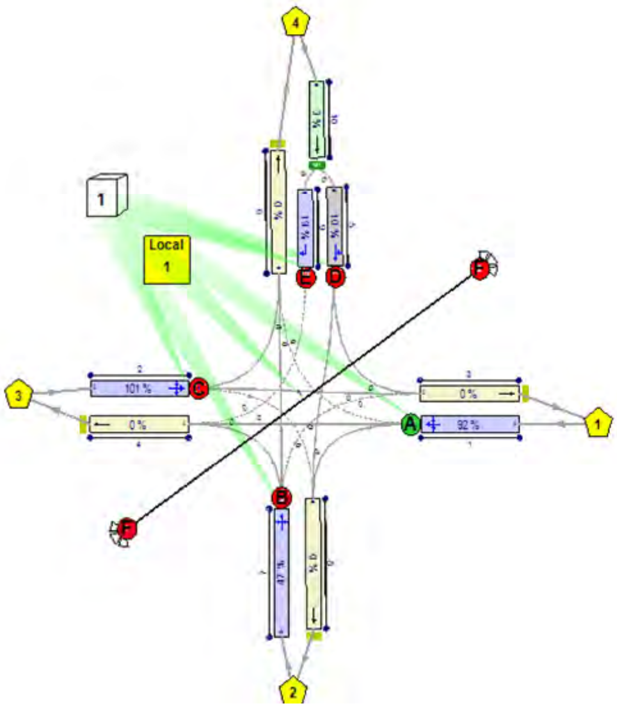
	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	587.66	34.38	17.09	14.74	209.31	12.42	0.00	221.74
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	587.66	34.38	17.09	14.74	209.31	12.42	0.00	221.74

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

TRANSYT 15

Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 25/11/2020 11:20:39

Network Diagrams



A8 - 2022 with dev pm
D8 - 2022 with dev pm*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

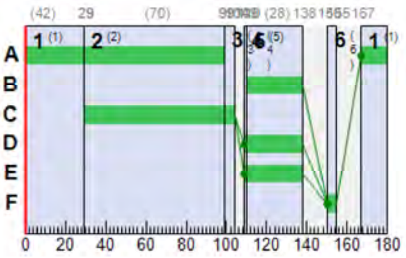
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	29	42	1	1
	2	✓	2	A,C	29	99	70	1	1
	3	✓	3	C	99	104	5	1	1
	4	✓	4	E,D	109	110	1	1	1
	5	✓	5	E,D,B	110	138	28	1	7
	6	✓	6	F	150	155	5	1	5

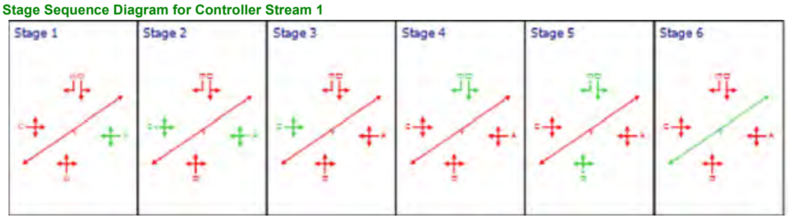
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	99	112
2	1		1	C	29	104	75
5	1		1	D	109	138	29
7	1		1	B	110	138	28
9	1		1	E	109	138	29

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	240 <			0.00	92	-2	49.58	38.07	84.86	47.55 +	100	100	0.00	154.60
2	1	R403 Clane		1	C	131 <			0.00	101	-11	127.72	118.81	129.92	44.30 +	100	100	0.00	254.55
3	1					107			66.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					238			17.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	5			29.00	10	797	69.17	63.77	83.65	1.36	100	100	0.00	5.04
6	1					22			66.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	22			0.00	47	90	86.62	72.31	91.00	4.91	100	100	0.00	25.51
8	1					34			68.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	3			29.00	19	386	70.53	65.73	84.74	1.48	100	100	0.00	3.04

10	1	Capdoo Park Main				8			180.00	3	3301	8.47	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	646.34	50.73	29.77	422.70	20.05	0.00	442.75
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	646.34	50.73	29.77	422.70	20.05	0.00	442.75

Time segment: 17:30-17:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	248 <	440	112	0.00	90	0	50.01	38.01	87.06	44.13 +	100	100	0.00	159.56
2	1	R403 Clane		1	C	119 <	299	75	0.00	94	-4	90.93	78.93	110.73	26.74 +	100	100	0.00	154.81
3	1					96	Unrestricted	180	63.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					243	Unrestricted	180	13.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	5	479	29	28.00	6	1336	69.00	63.60	83.44	0.84	100	100	0.00	5.23
6	1					24	Unrestricted	180	55.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	26	341	28	0.00	47	90	90.03	75.72	93.76	4.91	100	100	0.00	32.29
8	1					37	Unrestricted	180	55.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	2	161	29	29.00	7	1106	69.06	64.26	84.08	0.34	100	100	0.00	2.11
10	1	Capdoo Park Main				7	491	180	180.00	1	6216	8.47	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	646.11	45.13	14.32	23.59	335.04	18.95	0.00	354.00
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	646.11	45.13	14.32	23.59	335.04	18.95	0.00	354.00

Time segment: 17:45-18:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	249 <	441	112	0.00	90	0	51.96	40.70	88.33	45.05 +	100	100	0.00	170.76
2	1	R403 Clane		1	C	128 <	302	75	0.00	100	-10	116.94	107.19	125.43	32.51 +	100	100	0.00	224.49
3	1					103	Unrestricted	180	63.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					246	Unrestricted	180	14.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	8	479	29	27.00	10	797	69.63	64.23	84.14	1.36	100	100	0.00	8.44
6	1					25	Unrestricted	180	56.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	22	384	28	0.00	36	153	85.83	71.52	90.49	4.01	100	100	0.00	25.82
8	1					38	Unrestricted	180	52.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	5	162	29	26.00	19	386	72.01	67.21	85.39	1.48	100	100	0.00	5.52
10	1	Capdoo Park Main				13	491	180	180.00	3	3301	8.48	0.02	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	664.37	50.81	13.08	29.19	414.46	20.58	0.00	435.05
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	664.37	50.81	13.08	29.19	414.46	20.58	0.00	435.05

Time segment: 18:00-18:15

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	254 <	441	112	0.00	92	-2	54.32	43.27	91.48	47.55 +	100	100	0.00	184.90
2	1	R403 Clane		1	C	127 <	298	75	0.00	101	-11	145.90	138.03	139.71	36.24 +	100	100	0.00	285.38
3	1					102	Unrestricted	180	64.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					250	Unrestricted	180	17.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight		1	D	4	479	29	28.00	5	1589	68.85	63.45	83.41	0.71	100	100	0.00	4.43

		Right																	
6	**1**					20	Unrestricted	180	66.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	17	348	28	0.00	30	197	84.51	70.18	89.08	3.05	100	100	0.00	19.58
8	**1**					32	Unrestricted	180	68.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	3	170	29	28.00	11	685	69.83	65.03	84.48	1.47	100	100	0.00	3.47
10	**1**	Capdoo Park Main				8	491	180	180.00	2	5795	8.47	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	651.76	54.41	11.98	33.54	476.24	21.52	0.00	497.76
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	651.76	54.41	11.98	33.54	476.24	21.52	0.00	497.76

Time segment: 18:15-18:30

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	211 <	435	112	0.00	77	16	40.54	28.77	70.21	30.24 +	100	100	0.00	103.19
2	**1**	R403 Clane		1	C	151 <	358	75	0.00	100	-10	150.56	143.92	140.60	44.30 +	100	100	0.00	353.53
3	**1**					127	Unrestricted	180	66.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					211	Unrestricted	180	16.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	2	479	29	29.00	3	3489	68.46	63.06	82.76	0.33	100	100	0.00	2.07
6	**1**					20	Unrestricted	180	58.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	21	386	28	0.00	34	167	84.91	70.64	89.67	3.79	100	100	0.00	24.35
8	**1**					28	Unrestricted	180	62.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	1	163	29	29.00	4	2351	68.35	63.55	83.68	0.17	100	100	0.00	1.04
10	**1**	Capdoo Park Main				3	491	180	180.00	1	14638	8.46	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	623.12	52.57	11.85	32.75	465.04	19.15	0.00	484.19
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	623.12	52.57	11.85	32.75	465.04	19.15	0.00	484.19

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

TRANSYT 15

Version: 15.5.2.7994

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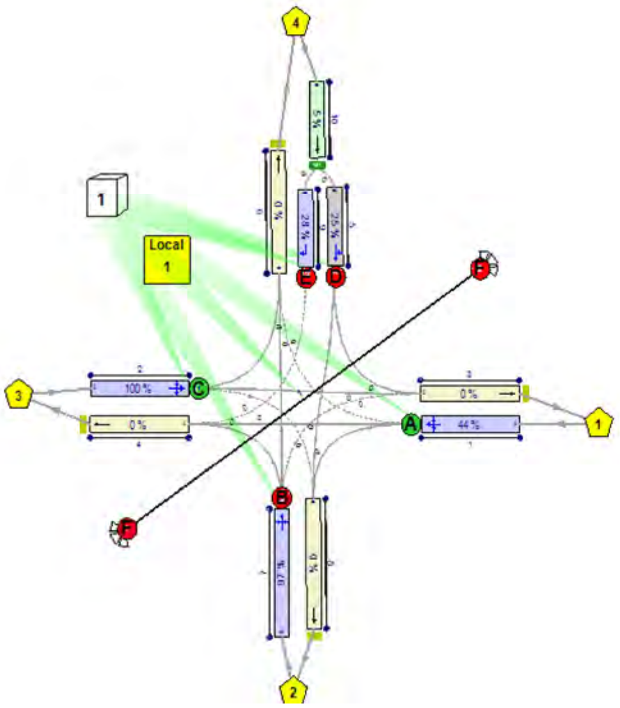
Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 25/11/2020 11:21:33

Network Diagrams



A9 - 2027 with dev am
D9 - 2027 with dev am*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

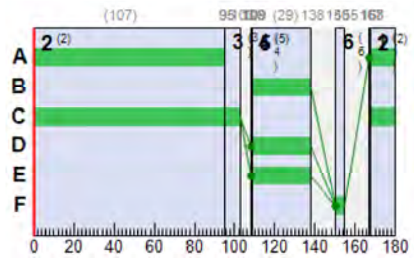
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	168	1	1	1
	2	✓	2	A,C	168	95	107	1	1
	3	✓	3	C	95	103	8	1	1
	4	✓	4	E,D	108	109	1	1	1
	5	✓	5	E,D,B	109	138	29	1	7
	6	✓	6	F	150	155	5	1	5

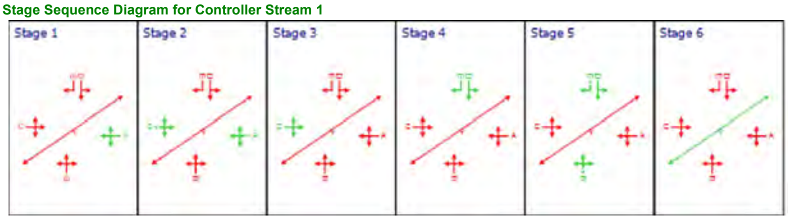
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	95	108
2	1		1	C	168	103	115
5	1		1	D	108	138	30
7	1		1	B	109	138	29
9	1		1	E	108	138	30

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	90			0.00	44	103	30.98	18.98	50.13	12.46	100	100	0.00	29.13
2	1	R403 Clane		1	C	255 <			0.00	100	-10	64.61	54.96	99.62	70.55 +	100	100	0.00	233.61
3	1					266			10.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					117			7.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	12			28.00	25	261	70.45	65.05	85.23	3.31	100	100	0.00	13.30
6	1					7			180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	43			0.00	97	-7	162.73	150.24	134.47	13.53	100	100	0.00	104.22
8	1					13			100.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	4			31.00	28	227	72.75	67.99	85.59	1.51	100	100	0.00	4.74

10	1	Capdoo Park Main				17			180.00	5	1617	8.49	0.04	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	655.11	46.89	25.81	366.44	18.57	0.00	385.02
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	655.11	46.89	25.81	366.44	18.57	0.00	385.02

Time segment: 07:30-07:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	64	373	108	0.00	28	217	29.54	17.54	46.99	6.10	100	100	0.00	19.22
2	1	R403 Clane		1	C	286 <	443	115	0.00	100	-10	70.36	58.36	111.98	64.90 +	100	100	0.00	279.35
3	1					296	Unrestricted	180	8.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					84	Unrestricted	180	6.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	7	443	30	28.00	9	880	68.70	63.30	83.56	1.18	100	100	0.00	7.28
6	1					4	Unrestricted	180	175.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	42	270	29	0.00	93	-4	135.00	120.69	121.78	10.42	100	100	0.00	82.55
8	1					14	Unrestricted	180	70.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	0	156	30	31.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00
10	1	Capdoo Park Main				7	491	180	180.00	1	6216	8.47	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	646.33	47.46	13.62	25.92	368.00	20.39	0.00	388.39
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	646.33	47.46	13.62	25.92	368.00	20.39	0.00	388.39

Time segment: 07:45-08:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	89	433	108	0.00	34	165	30.43	18.43	48.81	8.89	100	100	0.00	28.06
2	1	R403 Clane		1	C	285 <	444	115	0.00	100	-10	89.35	80.07	120.52	70.55 +	100	100	0.00	377.62
3	1					299	Unrestricted	180	7.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					111	Unrestricted	180	7.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	11	443	30	27.00	14	524	69.65	64.25	84.34	1.87	100	100	0.00	11.62
6	1					4	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	39	256	29	0.00	91	-2	161.51	153.28	133.97	10.83	100	100	0.00	96.94
8	1					14	Unrestricted	180	64.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	5	160	30	28.00	16	451	70.33	65.53	84.51	1.47	100	100	0.00	4.84
10	1	Capdoo Park Main				16	491	180	0.00	3	2752	8.48	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	694.98	57.00	12.19	34.96	496.39	22.70	0.00	519.09
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	694.98	57.00	12.19	34.96	496.39	22.70	0.00	519.09

Time segment: 08:00-08:15

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	92	439	108	0.00	35	160	30.57	18.57	49.18	9.19	100	100	0.00	29.23
2	1	R403 Clane		1	C	238 <	437	115	0.00	85	6	49.05	43.80	83.56	40.51 +	100	100	0.00	174.61
3	1					254	Unrestricted	180	7.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					123	Unrestricted	180	3.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight		1	D	13	443	30	26.00	17	438	70.10	64.70	85.00	2.18	100	100	0.00	13.56

Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
		Right																	
6	**1**					4	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	44	272	29	0.00	97	-7	175.06	166.46	140.55	12.88	100	100	0.00	118.66
8	**1**					12	Unrestricted	180	100.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	6	152	30	27.00	22	311	72.28	67.51	85.37	1.49	100	100	0.00	6.37
10	**1**	Capdoo Park Main				19	491	180	0.00	4	2290	8.49	0.04	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	637.12	42.15	15.12	22.98	326.30	16.15	0.00	342.44
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	637.12	42.15	15.12	22.98	326.30	16.15	0.00	342.44

Time segment: 08:15-08:30

Traffic Stream Results

			SIGNALS			FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	114	425	108	0.00	44	103	32.54	20.55	53.69	12.46	100	100	0.00	40.03
2	**1**	R403 Clane		1	C	210 <	428	115	0.00	76	19	40.80	28.81	72.58	31.06 +	100	100	0.00	102.86
3	**1**					214	Unrestricted	180	10.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					151	Unrestricted	180	2.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	19	443	30	0.00	25	261	71.79	66.39	86.53	3.31	100	100	0.00	20.73
6	**1**					16	Unrestricted	180	75.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	46	311	29	0.00	89	1	177.28	159.14	140.65	13.53	100	100	0.00	118.75
8	**1**					14	Unrestricted	180	100.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	7	142	30	26.00	28	227	74.77	70.04	86.50	1.51	100	100	0.00	7.75
10	**1**	Capdoo Park Main				26	491	180	0.00	5	1617	8.50	0.05	0.00	0.00	100	100	0.00	0.02

Network Results

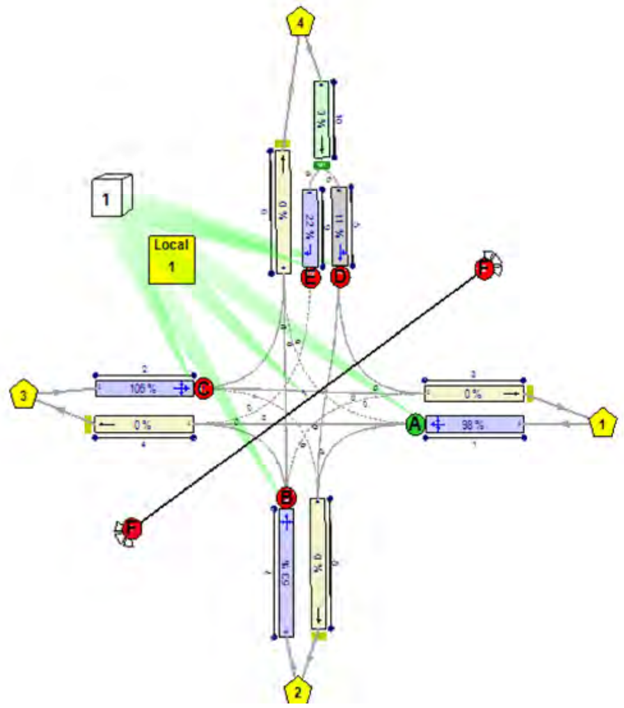
	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	642.02	40.96	15.67	19.37	275.08	15.06	0.00	290.14
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	642.02	40.96	15.67	19.37	275.08	15.06	0.00	290.14

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

TRANSYT 15

Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 25/11/2020 11:27:30

Network Diagrams



A10 - 2027 with dev pm
D10 - 2027 with dev pm*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

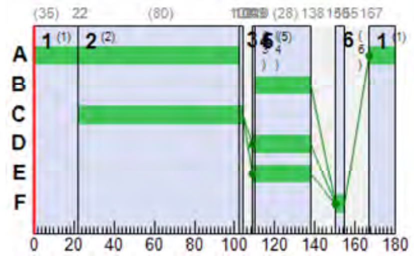
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	22	35	1	1
	2	✓	2	A,C	22	102	80	1	1
	3	✓	3	C	102	104	2	1	1
	4	✓	4	E,D	109	110	1	1	1
	5	✓	5	E,D,B	110	138	28	1	7
	6	✓	6	F	150	155	5	1	5

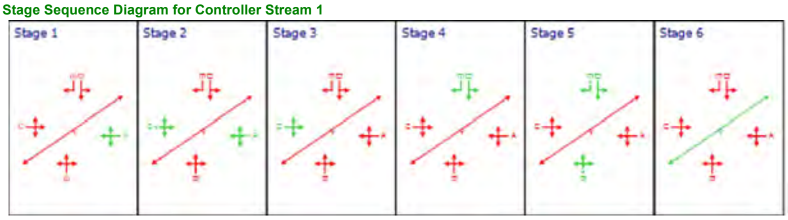
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	102	115
2	1		1	C	22	104	82
5	1		1	D	109	138	29
7	1		1	B	110	138	28
9	1		1	E	109	138	29

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	264 <			0.00	98	-8	62.06	51.91	99.28	64.05 +	100	100	0.00	229.26
2	1	R403 Clane		1	C	143 <			0.00	106	-15	159.42	149.97	148.49	58.62 +	100	100	0.00	347.88
3	1					114			59.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					261			15.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	5			29.00	11	705	69.37	63.97	83.70	1.40	100	100	0.00	5.52
6	1					23			67.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	23			0.00	53	71	87.69	73.39	91.87	5.41	100	100	0.00	27.39
8	1					35			68.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	3			29.00	22	302	71.48	66.68	85.12	1.49	100	100	0.00	3.69

10	1	Capdoo Park Main				9			180.00	3	3003	8.47	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	701.08	63.90	41.47	588.94	24.81	0.00	613.75
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	701.08	63.90	41.47	588.94	24.81	0.00	613.75

Time segment: 17:30-17:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	272 <	438	115	0.00	96	-7	58.77	46.77	100.12	55.73 +	100	100	0.00	214.37
2	**1**	R403 Clane		1	C	130 <	284	82	0.00	99	-9	95.63	83.63	116.37	30.71 +	100	100	0.00	178.77
3	**1**					107	Unrestricted	180	54.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					266	Unrestricted	180	12.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	6	443	29	28.00	8	1054	69.24	63.84	83.52	0.97	100	100	0.00	6.03
6	**1**					26	Unrestricted	180	54.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	28	331	28	0.00	53	71	92.53	78.22	95.65	5.41	100	100	0.00	35.90
8	**1**					39	Unrestricted	180	54.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	2	159	29	29.00	8	963	69.27	64.47	84.20	0.38	100	100	0.00	2.38
10	**1**	Capdoo Park Main				8	491	180	180.00	2	5427	8.47	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	707.02	52.76	13.40	29.19	414.55	22.91	0.00	437.46
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	707.02	52.76	13.40	29.19	414.55	22.91	0.00	437.46

Time segment: 17:45-18:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	273 <	439	115	0.00	96	-7	67.00	57.01	104.66	58.65 +	100	100	0.00	259.65
2	**1**	R403 Clane		1	C	139 <	287	82	0.00	105	-14	134.05	124.24	139.25	37.76 +	100	100	0.00	281.22
3	**1**					107	Unrestricted	180	56.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					270	Unrestricted	180	12.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	8	443	29	27.00	11	705	69.87	64.47	84.21	1.40	100	100	0.00	8.74
6	**1**					26	Unrestricted	180	56.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	23	385	28	0.00	37	143	86.25	71.95	90.64	4.20	100	100	0.00	27.16
8	**1**					39	Unrestricted	180	53.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	6	161	29	24.00	22	302	73.50	68.70	85.94	1.49	100	100	0.00	6.76
10	**1**	Capdoo Park Main				14	491	180	180.00	3	3003	8.48	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	716.60	62.26	11.51	39.32	558.34	25.20	0.00	583.53
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	716.60	62.26	11.51	39.32	558.34	25.20	0.00	583.53

Time segment: 18:00-18:15

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	279 <	440	115	0.00	98	-8	75.35	65.67	111.79	64.05 +	100	100	0.00	304.45
2	**1**	R403 Clane		1	C	137 <	281	82	0.00	106	-15	188.63	179.68	164.03	45.58 +	100	100	0.00	399.76
3	**1**					107	Unrestricted	180	57.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					275	Unrestricted	180	15.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight		1	D	5	443	29	28.00	6	1297	69.06	63.66	83.47	0.80	100	100	0.00	4.97

		Right																	
6	**1**					21	Unrestricted	180	67.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	18	351	28	0.00	32	183	84.95	70.62	89.72	3.26	100	100	0.00	20.87
8	**1**					33	Unrestricted	180	68.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	4	169	29	27.00	14	533	70.61	65.81	84.82	1.47	100	100	0.00	4.32
10	**1**	Capdoo Park Main				9	491	180	180.00	2	4953	8.47	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	704.62	72.09	9.77	49.78	706.89	27.48	0.00	734.37
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	704.62	72.09	9.77	49.78	706.89	27.48	0.00	734.37

Time segment: 18:15-18:30

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	232 <	432	115	0.00	83	8	44.14	35.41	76.94	36.44 +	100	100	0.00	138.58
2	**1**	R403 Clane		1	C	165 <	347	82	0.00	103	-13	206.63	199.06	168.58	58.62 +	100	100	0.00	531.76
3	**1**					135	Unrestricted	180	59.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					231	Unrestricted	180	15.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	2	443	29	29.00	3	2850	68.51	63.11	82.78	0.38	100	100	0.00	2.33
6	**1**					22	Unrestricted	180	58.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	22	388	28	0.00	35	156	85.28	71.01	90.10	4.00	100	100	0.00	25.64
8	**1**					29	Unrestricted	180	63.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	1	162	29	29.00	5	1845	68.53	63.73	83.78	0.21	100	100	0.00	1.31
10	**1**	Capdoo Park Main				4	491	180	180.00	1	12532	8.46	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	676.10	68.49	9.87	47.61	675.99	23.64	0.00	699.63
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	676.10	68.49	9.87	47.61	675.99	23.64	0.00	699.63

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

TRANSYT 15

Version: 15.5.2.7994

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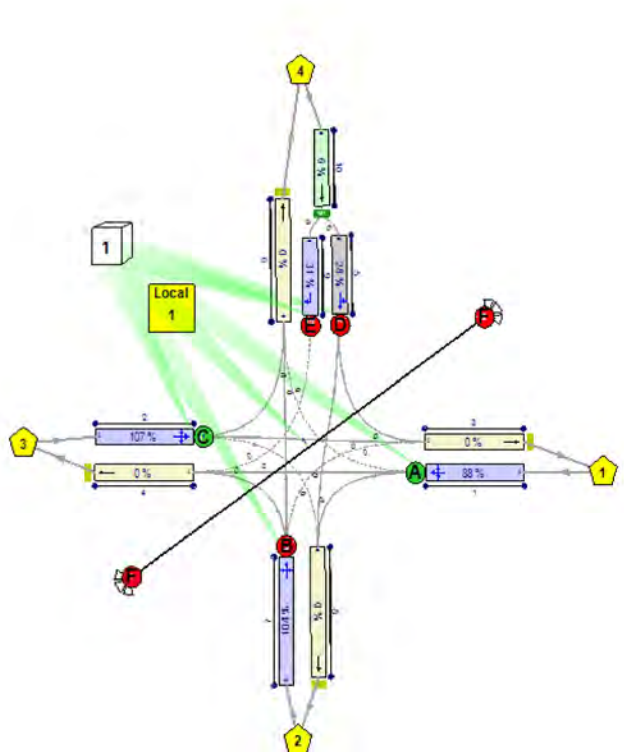
Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 25/11/2020 11:23:10

Network Diagrams



A1 - 2037 am with dev
D1 - 2037 with dev am*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

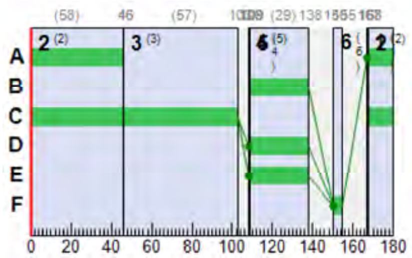
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	168	1	1	1
	2	✓	2	A,C	168	46	58	1	1
	3	✓	3	C	46	103	57	1	1
	4	✓	4	E,D	108	109	1	1	1
	5	✓	5	E,D,B	109	138	29	1	7
	6	✓	6	F	150	155	5	1	5

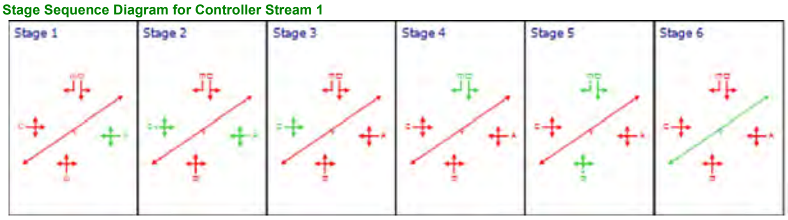
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	46	59
2	1		1	C	168	103	115
5	1		1	D	108	138	30
7	1		1	B	109	138	29
9	1		1	E	108	138	30

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	98 <			0.00	88	2	74.21	62.36	91.87	25.64 +	100	100	0.00	100.69
2	1	R403 Clane		1	C	278 <			0.00	107	-16	105.69	94.46	124.22	90.85 +	100	100	0.00	430.95
3	1					281			10.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					127			51.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	14			28.00	28	227	70.81	65.41	85.55	3.69	100	100	0.00	14.51
6	1					8			180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	45			0.00	104	-14	201.37	189.09	152.40	17.41	100	100	0.00	138.42
8	1					14			85.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	5			31.00	31	189	74.22	69.49	86.22	1.53	100	100	0.00	5.56

10	1	Capdoo Park Main				18			180.00	6	1451	8.50	0.04	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	701.21	69.83	46.81	664.72	25.42	0.00	690.14
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	701.21	69.83	46.81	664.72	25.42	0.00	690.14

Time segment: 07:30-07:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	69	380	59	0.00	54	65	64.72	52.72	82.24	11.51	100	100	0.00	60.24
2	1	R403 Clane		1	C	311 <	457	115	0.00	106	-15	82.56	70.56	121.42	71.92 +	100	100	0.00	364.18
3	1					308	Unrestricted	180	6.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					91	Unrestricted	180	51.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	8	443	30	28.00	10	785	68.87	63.47	83.60	1.31	100	100	0.00	8.09
6	1					4	Unrestricted	180	162.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	45	270	29	0.00	100	-10	148.10	133.79	128.83	11.87	100	100	0.00	97.90
8	1					13	Unrestricted	180	72.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	0	154	30	31.00	0	Unrestricted	0.00	0.00	0.00	0.00	100	100	0.00	0.00
10	1	Capdoo Park Main				8	491	180	180.00	2	5605	8.47	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	681.99	58.39	11.68	35.66	506.38	24.02	0.00	530.41
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	681.99	58.39	11.68	35.66	506.38	24.02	0.00	530.41

Time segment: 07:45-08:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	98	429	59	0.00	68	32	69.97	58.03	88.31	17.37	100	100	0.00	93.59
2	1	R403 Clane		1	C	312 <	453	115	0.00	107	-16	138.56	127.81	149.25	90.85 +	100	100	0.00	650.05
3	1					307	Unrestricted	180	6.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					121	Unrestricted	180	44.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	11	443	30	27.00	15	510	69.71	64.31	84.35	1.91	100	100	0.00	11.89
6	1					5	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	41	255	29	0.00	97	-7	195.28	188.87	149.14	12.93	100	100	0.00	125.25
8	1					14	Unrestricted	180	64.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	5	159	30	28.00	18	392	70.94	66.14	84.78	1.48	100	100	0.00	5.43
10	1	Capdoo Park Main				16	491	180	0.00	3	2621	8.48	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	732.18	83.91	8.73	60.30	856.27	29.95	0.00	886.22
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	732.18	83.91	8.73	60.30	856.27	29.95	0.00	886.22

Time segment: 08:00-08:15

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	101 <	432	59	0.00	70	29	70.87	59.07	89.24	18.19 +	100	100	0.00	98.17
2	1	R403 Clane		1	C	261 <	448	115	0.00	90	0	146.18	128.47	135.61	75.38 +	100	100	0.00	545.73
3	1					276	Unrestricted	180	6.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					133	Unrestricted	180	41.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight		1	D	14	443	30	26.00	18	390	70.41	65.02	85.08	2.40	100	100	0.00	14.96

		Right																	
6	**1**					5	Unrestricted	180	180.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	47	270	29	0.00	104	-14	219.65	211.00	164.37	15.89	100	100	0.00	160.18
8	**1**					13	Unrestricted	180	85.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	7	151	30	26.00	27	235	74.14	69.38	86.15	1.51	100	100	0.00	7.97
10	**1**	Capdoo Park Main				21	491	180	0.00	4	2005	8.49	0.04	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	693.55	80.80	8.58	56.35	800.19	26.83	0.00	827.02
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	693.55	80.80	8.58	56.35	800.19	26.83	0.00	827.02

Time segment: 08:15-08:30

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	124 <	423	59	0.00	88	2	85.52	73.81	102.17	25.64 +	100	100	0.00	150.75
2	**1**	R403 Clane		1	C	229 <	440	115	0.00	81	11	46.25	42.82	80.97	37.82 +	100	100	0.00	163.85
3	**1**					232	Unrestricted	180	10.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					163	Unrestricted	180	34.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	21	443	30	0.00	28	227	72.38	66.98	87.24	3.69	100	100	0.00	23.11
6	**1**					18	Unrestricted	180	87.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	48	312	29	0.00	92	-3	238.61	219.68	165.55	17.41	100	100	0.00	170.35
8	**1**					16	Unrestricted	180	80.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	8	140	30	25.00	31	189	76.47	71.81	87.25	1.53	100	100	0.00	8.83
10	**1**	Capdoo Park Main				29	491	180	0.00	6	1451	8.51	0.06	0.00	0.00	100	100	0.00	0.03

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	697.13	56.20	12.41	34.93	496.04	20.88	0.00	516.92
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	697.13	56.20	12.41	34.93	496.04	20.88	0.00	516.92

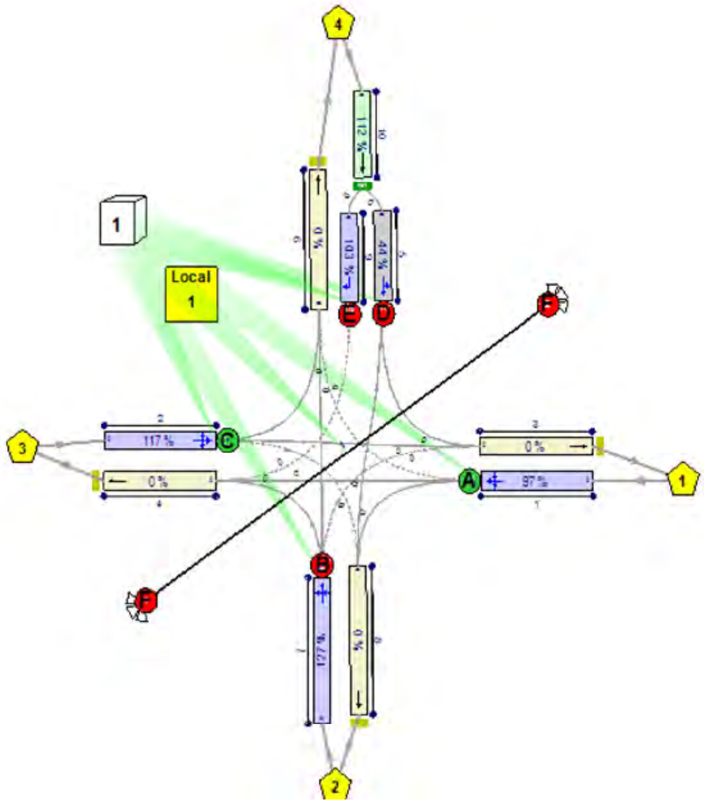
- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

TRANSYT 15

Version: 15.5.2.7994

Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 01/12/2020 11:04:20

Network Diagrams



A3 - 2037 am sensitivity
D3 - 2037 am Sensitivity*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

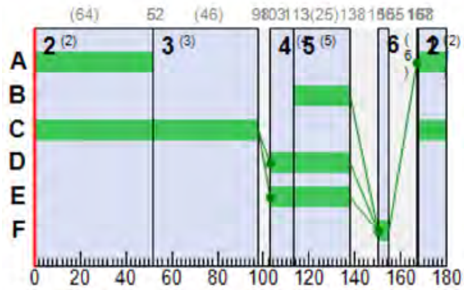
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	168	1	1	1
	2	✓	2	A,C	168	52	64	1	1
	3	✓	3	C	52	98	46	1	1
	4	✓	4	E,D	103	113	10	1	1
	5	✓	5	E,D,B	113	138	25	1	7
	6	✓	6	F	150	155	5	1	5

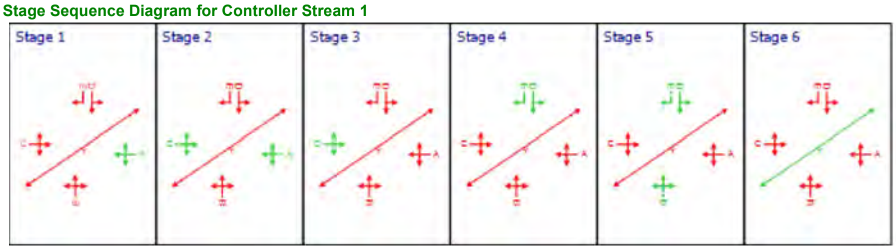
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	52	65
2	1		1	C	168	98	110
5	1		1	D	103	138	35
7	1		1	B	113	138	25
9	1		1	E	103	138	35

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	90 <			0.00	97	-7	88.45	77.38	104.18	27.17 +	100	100	0.00	114.26
2	**1**	R403 Clane		1	C	296 <			0.00	117	-23	267.72	257.72	190.90	156.35 +	100	100	0.00	1228.73
3	**1**					273			3.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					142			37.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	39 <			2.00	44	105	55.84	50.47	47.02	8.57 +	100	100	0.00	31.77
6	**1**					54			29.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	45 <			0.00	127	-29	413.16	401.40	234.18	37.11 +	100	100	0.00	291.03
8	**1**					13			86.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	46 <			0.00	103	-12	194.68	195.74	129.48	14.47 +	100	100	0.00	144.82
10	**1**	Capdoo Park Main				87 <			150.70	112	-20	53.34	44.89	65.89	24.69 +	100	100	0.00	64.51

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	802.23	154.67	129.10	1833.27	41.85	0.00	1875.12
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	802.23	154.67	129.10	1833.27	41.85	0.00	1875.12

Time segment: 07:30-07:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	61	235	65	0.00	71	27	71.36	59.36	89.97	11.07	100	100	0.00	59.88
2	**1**	R403 Clane		1	C	330 <	456	110	0.00	117	-23	115.96	103.96	143.38	82.87 +	100	100	0.00	561.52
3	**1**					288	Unrestricted	180	3.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					109	Unrestricted	180	37.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	35	479	35	0.00	37	146	67.13	61.73	68.61	4.80	100	100	0.00	35.30
6	**1**					50	Unrestricted	180	25.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	45	260	25	0.00	120	-25	183.41	169.10	160.35	12.70	100	100	0.00	123.09
8	**1**					12	Unrestricted	180	80.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	44 <	235	35	0.00	94	-4	112.18	107.38	108.69	8.05 +	100	100	0.00	76.95
10	**1**	Capdoo Park Main				79	491	180	35.68	20	349	12.68	4.23	22.18	3.71	100	100	0.00	6.15

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	772.34	84.37	9.15	58.62	832.41	30.47	0.00	862.88
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	772.34	84.37	9.15	58.62	832.41	30.47	0.00	862.88

Time segment: 07:45-08:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
									Wasted				**Mean**	**Mean**					

Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Delay per Veh (s)	stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	90 <	289	65	0.00	85	6	82.40	70.86	100.34	18.34 +	100	100	0.00	105.15
2	1	R403 Clane		1	C	328 <	453	110	0.00	117	-23	250.60	238.88	202.97	131.44 +	100	100	0.00	1264.67
3	1					289	Unrestricted	180	2.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					139	Unrestricted	180	29.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	38	479	35	1.00	40	127	61.57	56.20	54.85	4.17	100	100	0.00	34.74
6	1					48	Unrestricted	180	28.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	41	241	25	0.00	118	-24	354.54	344.08	225.62	19.43	100	100	0.00	226.52
8	1					13	Unrestricted	180	79.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	48 <	238	35	0.00	101	-11	161.00	160.35	121.62	10.34 +	100	100	0.00	124.30
10	1	Capdoo Park Main				86	491	180	60.70	26	241	20.96	12.51	39.61	7.02	100	100	0.00	18.68

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	821.14	148.77	5.52	121.94	1731.51	42.56	0.00	1774.07
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	821.14	148.77	5.52	121.94	1731.51	42.56	0.00	1774.07

Time segment: 08:00-08:15

Traffic Stream Results

			SIGNALS			FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	93 <	296	65	0.00	86	5	85.69	75.09	102.35	19.27 +	100	100	0.00	114.95
2	1	R403 Clane		1	C	279 <	449	110	0.00	101	-11	374.49	372.78	219.06	156.35 +	100	100	0.00	1671.41
3	1					280	Unrestricted	180	1.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					146	Unrestricted	180	28.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	40	479	35	2.00	42	115	56.43	51.07	46.47	3.70	100	100	0.00	33.16
6	1					54	Unrestricted	180	29.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	47 <	256	25	0.00	127	-29	473.01	460.75	270.08	28.13 +	100	100	0.00	346.68
8	1					13	Unrestricted	180	78.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	48 <	234	35	0.00	103	-12	218.31	219.97	142.73	12.88 +	100	100	0.00	169.89
10	1	Capdoo Park Main				88	491	180	76.60	31	189	28.43	19.98	50.61	9.16	100	100	0.00	29.97

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	811.05	186.58	4.35	163.34	2319.39	46.67	0.00	2366.06
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	811.05	186.58	4.35	163.34	2319.39	46.67	0.00	2366.06

Time segment: 08:15-08:30

Traffic Stream Results

			SIGNALS			FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	115 <	323	65	0.00	97	-7	104.49	93.89	116.19	27.17 +	100	100	0.00	177.06
2	1	R403 Clane		1	C	246 <	442	110	0.00	90	0	373.01	358.60	206.60	133.45 +	100	100	0.00	1417.35
3	1					234	Unrestricted	180	0.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00

4	**1**					175	Unrestricted	180	21.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	42 <	479	35	0.00	44	105	40.66	35.31	22.46	8.57 +	100	100	0.00	23.86
6	**1**					65	Unrestricted	180	24.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	48 <	294	25	0.00	113	-20	620.03	610.02	275.56	37.11 +	100	100	0.00	467.85
8	**1**					16	Unrestricted	180	86.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	44 <	222	35	0.00	98	-9	288.65	296.77	144.49	14.47 +	100	100	0.00	208.13
10	**1**	Capdoo Park Main				96 <	491	180	150.70	112	-20	138.64	130.21	139.42	24.69 +	100	100	0.00	203.21

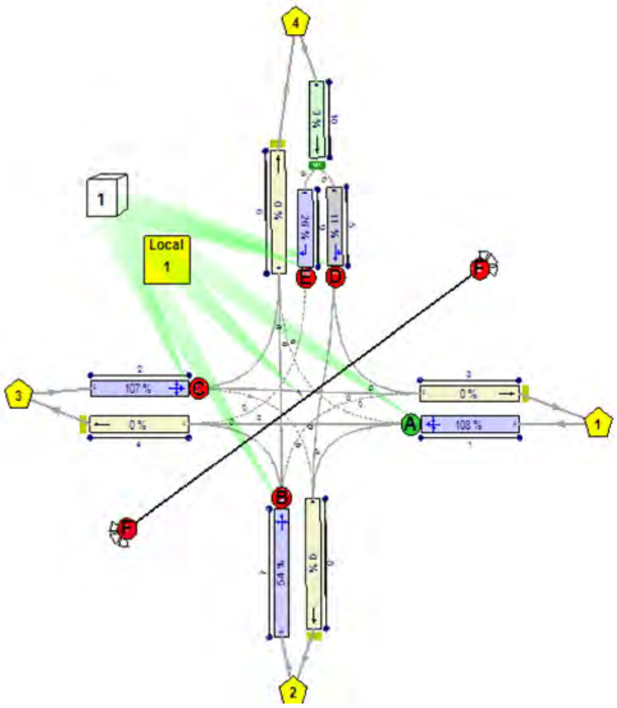
Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	804.41	198.95	4.04	172.52	2449.78	47.69	0.00	2497.47
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	804.41	198.95	4.04	172.52	2449.78	47.69	0.00	2497.47

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 25/11/2020 11:24:31

Network Diagrams



A2 - 2037 pm with dev
D2 - 2037 with dev pm*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

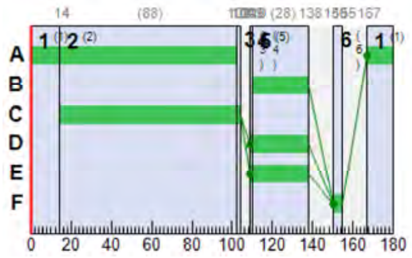
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	14	27	1	1
	2	✓	2	A,C	14	102	88	1	1
	3	✓	3	C	102	104	2	1	1
	4	✓	4	E,D	109	110	1	1	1
	5	✓	5	E,D,B	110	138	28	1	7
	6	✓	6	F	150	155	5	1	5

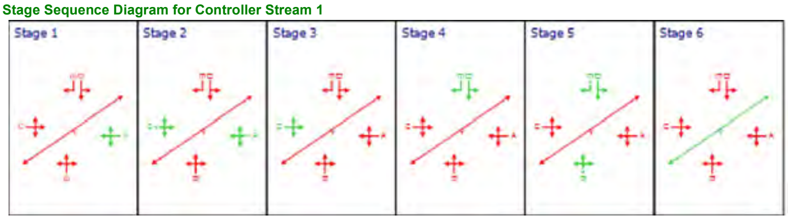
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	102	115
2	1		1	C	14	104	90
5	1		1	D	109	138	29
7	1		1	B	110	138	28
9	1		1	E	109	138	29

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	287 <			0.00	108	-17	158.66	146.45	153.11	108.29 +	100	100	0.00	684.70
2	1	R403 Clane		1	C	155 <			0.00	107	-16	165.78	155.83	153.51	67.27 +	100	100	0.00	391.84
3	1					123			51.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					271			15.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	6			29.00	11	697	69.38	63.98	83.85	1.53	100	100	0.00	6.18
6	1					25			65.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	24			0.00	54	66	88.43	74.09	92.43	5.62	100	100	0.00	28.87
8	1					35			74.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	4			29.00	26	242	72.38	67.58	85.47	1.50	100	100	0.00	4.02

10	1	Capdoo Park Main				10			180.00	3	2663	8.48	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	741.50	100.61	76.18	1081.77	33.83	0.00	1115.60
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	741.50	100.61	76.18	1081.77	33.83	0.00	1115.60

Time segment: 17:30-17:45

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	296 <	434	115	0.00	106	-15	80.99	68.99	122.25	68.76 +	100	100	0.00	339.34
2	1	R403 Clane		1	C	140 <	279	90	0.00	99	-9	89.86	77.86	115.77	32.93 +	100	100	0.00	179.79
3	1					116	Unrestricted	180	45.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					276	Unrestricted	180	11.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	7	479	29	27.00	9	925	69.40	64.00	84.09	1.19	100	100	0.00	7.36
6	1					27	Unrestricted	180	54.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	29	332	28	0.00	54	66	93.31	79.00	96.11	5.62	100	100	0.00	37.55
8	1					39	Unrestricted	180	55.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	3	158	29	29.00	9	849	69.49	64.69	84.32	0.42	100	100	0.00	2.66
10	1	Capdoo Park Main				10	491	180	180.00	2	4554	8.47	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	746.13	62.87	11.87	38.00	539.64	27.06	0.00	566.70
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	746.13	62.87	11.87	38.00	539.64	27.06	0.00	566.70

Time segment: 17:45-18:00

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	297 <	434	115	0.00	106	-15	136.55	125.95	149.53	87.18 +	100	100	0.00	611.20
2	1	R403 Clane		1	C	151 <	279	90	0.00	107	-16	133.85	123.57	142.57	41.38 +	100	100	0.00	304.46
3	1					115	Unrestricted	180	47.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					279	Unrestricted	180	11.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	9	479	29	27.00	11	697	69.83	64.43	84.18	1.53	100	100	0.00	9.53
6	1					27	Unrestricted	180	55.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	24	387	28	0.00	39	134	86.74	72.44	91.28	4.42	100	100	0.00	28.53
8	1					39	Unrestricted	180	55.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	7	159	29	23.00	26	242	75.16	70.37	86.57	1.50	100	100	0.00	8.08
10	1	Capdoo Park Main				16	491	180	0.00	3	2663	8.48	0.03	0.00	0.00	100	100	0.00	0.01

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	754.81	89.83	8.40	65.42	928.96	32.83	0.00	961.80
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	754.81	89.83	8.40	65.42	928.96	32.83	0.00	961.80

Time segment: 18:00-18:15

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	304 <	435	115	0.00	108	-17	195.90	184.85	176.09	108.29 +	100	100	0.00	911.38
2	1	R403 Clane		1	C	150 <	277	90	0.00	107	-16	199.60	190.13	171.08	52.11 +	100	100	0.00	462.00
3	1					116	Unrestricted	180	48.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					278	Unrestricted	180	14.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight		1	D	5	479	29	28.00	6	1336	69.00	63.60	83.44	0.84	100	100	0.00	5.23

		Right																	
6	1					21	Unrestricted	180	65.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	20	338	28	0.00	37	145	86.67	72.29	90.94	3.66	100	100	0.00	23.72
8	1					34	Unrestricted	180	74.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	4	167	29	28.00	13	570	70.39	65.60	84.74	1.47	100	100	0.00	4.04
10	1	Capdoo Park Main				9	491	180	180.00	2	4953	8.47	0.02	0.00	0.00	100	100	0.00	0.00

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	737.87	120.21	6.14	96.36	1368.30	38.07	0.00	1406.37
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	737.87	120.21	6.14	96.36	1368.30	38.07	0.00	1406.37

Time segment: 18:15-18:30

Traffic Stream Results

				SIGNALS		FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	1	R403 Clebridge		1	A	252 <	427	115	0.00	92	-2	231.02	215.27	165.86	96.84 +	100	100	0.00	876.88
2	1	R403 Clane		1	C	178 <	339	90	0.00	104	-14	223.90	215.42	177.59	67.27 +	100	100	0.00	621.10
3	1					147	Unrestricted	180	51.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					250	Unrestricted	180	15.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	3	479	29	29.00	3	2771	68.50	63.10	82.78	0.42	100	100	0.00	2.59
6	1					23	Unrestricted	180	58.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	22	388	28	0.00	35	156	85.43	71.07	90.19	4.01	100	100	0.00	25.66
8	1					29	Unrestricted	180	66.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	1	162	29	29.00	5	1845	68.53	63.73	83.78	0.21	100	100	0.00	1.31
10	1	Capdoo Park Main				4	491	180	180.00	1	11690	8.46	0.01	0.00	0.00	100	100	0.00	0.00

Network Results

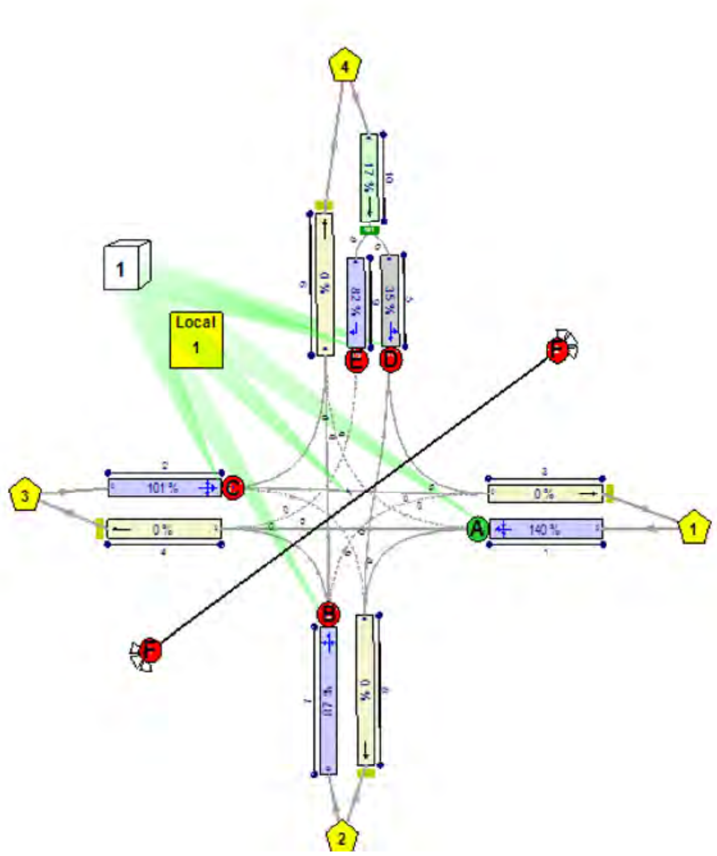
	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	727.17	129.54	5.61	104.94	1490.18	37.36	0.00	1527.54
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	727.17	129.54	5.61	104.94	1490.18	37.36	0.00	1527.54

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

TRANSYT 15

Filename: Signalised Junction.t15
Path: S:\Jobs\2020\20076 (18039-01) Clane Res Devlpmt TIA+RSA\20076-02\TRANSYT
Report generation date: 01/12/2020 11:05:47

Network Diagrams



A4 - 2037 pm sensitivity
D4 - 2037 pm Sensitivity*

Signal Timings

Network Default: 180s cycle time; 180 steps

Intergreen Matrix for Controller Stream 1

		To					
		A	B	C	D	E	F
From	A		5		5	5	12
	B	5		5			12
	C		5		5	5	12
	D	5		5			12
	E	5		5			12
	F	12	12	12	12	12	

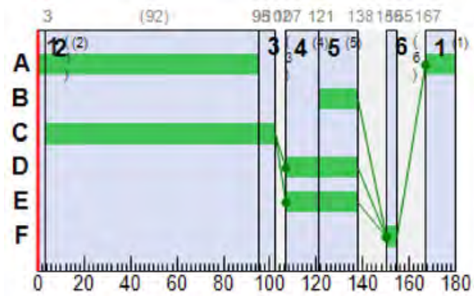
Resultant Stages

Controller Stream	Resultant Stage	Is base stage	Library Stage ID	Phases in this stage	Stage start (s)	Stage end (s)	Stage duration (s)	User stage minimum (s)	Stage minimum (s)
1	1	✓	1	A	167	3	16	1	1
	2	✓	2	A,C	3	95	92	1	1
	3	✓	3	C	95	102	7	1	1
	4	✓	4	E,D	107	121	14	1	1
	5	✓	5	E,D,B	121	138	17	1	7
	6	✓	6	F	150	155	5	1	5

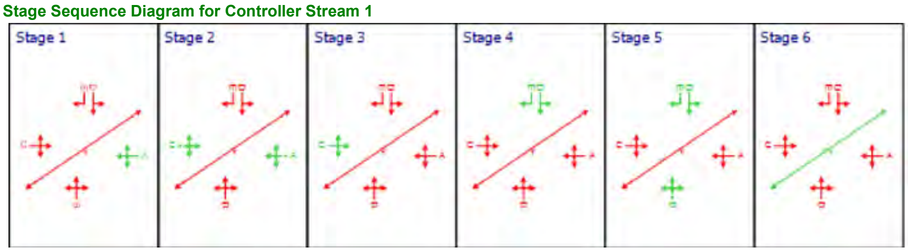
Traffic Stream Green Times

Arm	Traffic Stream	Traffic Node	Controller Stream	Phase	Green Period 1		
					Start	End	Duration
1	1		1	A	167	95	108
2	1		1	C	3	102	99
5	1		1	D	107	138	31
7	1		1	B	121	138	17
9	1		1	E	107	138	31

Phase Timings Diagram for Controller Stream 1



Stage Sequence Diagram for Controller Stream 1



Final Prediction Table

Time segment: Summary

Traffic Stream Results

			SIGNALS			FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	291 <			0.00	140	-36	543.04	531.09	277.85	316.32 +	100	100	0.00	2464.51
2	1	R403 Clane		1	C	184 <			0.00	101	-11	90.60	80.62	116.67	53.60 +	100	100	0.00	244.79
3	1					129			29.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					234			3.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	26			2.00	35	155	71.21	65.81	78.20	4.41	100	100	0.00	28.29
6	1					91			30.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	24			0.00	87	3	120.62	106.92	110.58	7.14	100	100	0.00	41.38
8	1					34			68.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	38 <			0.00	82	9	97.45	92.75	95.92	7.29 +	100	100	0.00	57.81
10	1	Capdoo Park Main				65			30.82	17	416	10.15	1.70	12.53	2.86	100	100	0.00	2.14

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	825.24	223.77	196.71	2793.29	45.63	0.00	2838.92
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	825.24	223.77	196.71	2793.29	45.63	0.00	2838.92

Time segment: 17:30-17:45

Traffic Stream Results

			SIGNALS			FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	301 <	356	108	0.00	140	-36	167.16	155.16	185.50	86.83 +	100	100	0.00	756.94
2	1	R403 Clane		1	C	170 <	335	99	0.00	91	-1	65.93	53.93	100.04	34.71 +	100	100	0.00	153.18
3	1					116	Unrestricted	180	24.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					233	Unrestricted	180	0.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	27	479	31	1.00	32	184	71.53	66.13	78.94	4.26	100	100	0.00	29.24
6	1					95	Unrestricted	180	25.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	29	332	17	0.00	87	3	138.94	124.63	121.01	7.14	100	100	0.00	58.79
8	1					35	Unrestricted	180	63.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	38	278	31	0.00	77	17	93.01	88.21	89.20	6.81	100	100	0.00	54.59
10	1	Capdoo Park Main				65	491	180	20.84	15	501	9.87	1.42	11.79	1.75	100	100	0.00	1.84

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	816.46	99.12	8.24	71.91	1021.08	33.49	0.00	1054.57
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TOTAL	816.46	99.12	8.24	71.91	1021.08	33.49	0.00	1054.57

Time segment: 17:45-18:00

Traffic Stream Results

				SIGNALS		**FLOWS**		**PERFORMANCE**				**PER PCU**			**QUEUES**	**WEIGHTS**		**PENALTIES**	**P.I.**
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	299 <	363	108	0.00	136	-34	416.66	404.73	277.39	170.08 +	100	100	0.00	1939.92
2	**1**	R403 Clane		1	C	181 <	331	99	0.00	98	-9	85.55	74.99	114.88	42.41 +	100	100	0.00	224.57
3	**1**					123	Unrestricted	180	26.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					241	Unrestricted	180	1.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	30	479	31	0.00	35	155	71.05	65.67	73.55	4.41	100	100	0.00	32.19
6	**1**					94	Unrestricted	180	26.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	24	387	17	0.00	62	45	113.88	100.95	106.65	5.17	100	100	0.00	39.51
8	**1**					38	Unrestricted	180	59.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	41 <	280	31	0.00	82	9	100.73	97.93	106.18	7.29 +	100	100	0.00	65.53
10	**1**	Capdoo Park Main				71	491	180	30.82	17	416	11.57	3.12	18.54	2.86	100	100	0.00	4.15

Network Results

	Distance travelled (PCU-km/hr)	**Time spent (PCU-hr/hr)**	**Mean journey speed (kph)**	**Total delay (Veh-hr/hr)**	**Weighted cost of delay (£ per hr)**	**Weighted cost of stops (£ per hr)**	**Excess queue penalty (£ per hr)**	**Performance Index (£ per hr)**
Normal traffic	840.19	186.70	4.50	159.13	2259.62	46.26	0.00	2305.88
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	840.19	186.70	4.50	159.13	2259.62	46.26	0.00	2305.88

Time segment: 18:00-18:15

Traffic Stream Results

				SIGNALS		**FLOWS**		**PERFORMANCE**				**PER PCU**			**QUEUES**	**WEIGHTS**		**PENALTIES**	**P.I.**
Arm	**Traffic Stream**	**Name**	**Traffic node**	**Controller stream**	**Phase**	**Calculated flow entering (Veh/TS)**	**Calculated sat flow (Veh/TS)**	**Actual green (s (per cycle))**	**Wasted time total (s (per cycle))**	**Degree of saturation (%)**	**Practical reserve capacity (%)**	**JourneyTime (s)**	**Mean Delay per Veh (s)**	**Mean stops per Veh (%)**	**Mean max queue (Veh)**	**Delay weighting multiplier (%)**	**Stop weighting multiplier (%)**	**Cost of traffic penalties (£ per hr)**	**P.I.**
1	**1**	R403 Clebridge		1	A	307 <	366	108	0.00	139	-35	647.62	635.66	326.50	252.71 +	100	100	0.00	3115.25
2	**1**	R403 Clane		1	C	178 <	329	99	0.00	98	-8	99.05	90.64	121.26	44.26 +	100	100	0.00	265.38
3	**1**					126	Unrestricted	180	25.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	**1**					240	Unrestricted	180	3.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	**1**	Capdoo Park Straight Right		1	D	26	479	31	1.00	31	194	71.35	65.94	78.90	4.10	100	100	0.00	28.08
6	**1**					86	Unrestricted	180	30.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	**1**	Brooklands		1	B	21	321	17	0.00	65	37	116.80	103.77	108.55	4.61	100	100	0.00	35.53
8	**1**					33	Unrestricted	180	67.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	**1**	Capdoo Park Flare		1	E	38 <	287	31	0.00	74	21	99.99	94.31	92.80	7.10 +	100	100	0.00	58.31
10	**1**	Capdoo Park Main				64	491	180	20.87	15	511	9.87	1.41	11.76	1.65	100	100	0.00	1.81

Network Results

	Distance travelled (PCU-km/hr)	**Time spent (PCU-hr/hr)**	**Mean journey speed (kph)**	**Total delay (Veh-hr/hr)**	**Weighted cost of delay (£ per hr)**	**Weighted cost of stops (£ per hr)**	**Excess queue penalty (£ per hr)**	**Performance Index (£ per hr)**
Normal traffic	823.19	269.89	3.05	243.16	3452.94	51.42	0.00	3504.35
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	823.19	269.89	3.05	243.16	3452.94	51.42	0.00	3504.35

Time segment: 18:15-18:30

Traffic Stream Results

			SIGNALS			FLOWS		PERFORMANCE				PER PCU			QUEUES	WEIGHTS		PENALTIES	P.I.
Arm	Traffic Stream	Name	Traffic node	Controller stream	Phase	Calculated flow entering (Veh/TS)	Calculated sat flow (Veh/TS)	Actual green (s (per cycle))	Wasted time total (s (per cycle))	Degree of saturation (%)	Practical reserve capacity (%)	JourneyTime (s)	Mean Delay per Veh (s)	Mean stops per Veh (%)	Mean max queue (Veh)	Delay weighting multiplier (%)	Stop weighting multiplier (%)	Cost of traffic penalties (£ per hr)	P.I.
1	1	R403 Clebridge		1	A	255 <	343	108	0.00	123	-27	1009.02	997.10	328.84	316.32 +	100	100	0.00	4045.94
2	1	R403 Clane		1	C	207 <	370	99	0.00	101	-11	108.01	98.85	127.92	53.60 +	100	100	0.00	336.01
3	1					152	Unrestricted	180	29.00	0	Unrestricted	36.47	0.00	0.00	0.00	100	100	0.00	0.00
4	1					223	Unrestricted	180	3.00	0	Unrestricted	35.92	0.00	0.00	0.00	100	100	0.00	0.00
5	1	Capdoo Park Straight Right		1	D	22	479	31	2.00	26	248	70.87	65.47	82.83	3.65	100	100	0.00	23.64
6	1					89	Unrestricted	180	26.00	0	Unrestricted	38.36	0.00	0.00	0.00	100	100	0.00	0.00
7	1	Brooklands		1	B	21	384	17	0.00	55	65	106.81	92.41	102.68	4.35	100	100	0.00	31.70
8	1					28	Unrestricted	180	68.00	0	Unrestricted	36.80	0.00	0.00	0.00	100	100	0.00	0.00
9	1	Capdoo Park Flare		1	E	36	283	31	0.00	71	26	95.71	89.99	94.63	6.85	100	100	0.00	52.82
10	1	Capdoo Park Main				58	491	180	13.74	13	604	9.05	0.59	6.85	0.98	100	100	0.00	0.74

Network Results

	Distance travelled (PCU-km/hr)	Time spent (PCU-hr/hr)	Mean journey speed (kph)	Total delay (Veh-hr/hr)	Weighted cost of delay (£ per hr)	Weighted cost of stops (£ per hr)	Excess queue penalty (£ per hr)	Performance Index (£ per hr)
Normal traffic	821.12	339.37	2.42	312.64	4439.50	51.36	0.00	4490.86
Bus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tram	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pedestrians	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	821.12	339.37	2.42	312.64	4439.50	51.36	0.00	4490.86

- *< = adjusted flow warning (upstream links/traffic streams are over-saturated)*
- ** = Traffic Stream - Normal, Bus or Tram Stop or Delay weighting has been set to a value other than 100%*
- *^ = Traffic Stream - Normal, Bus or Tram Stop or Delay Path weighting has been set to a value other than 100%*
- *+ = average link/traffic stream excess queue is greater than 0*
- ***P.I. = PERFORMANCE INDEX***

Appendix 10.2 ESB Networks Plan

ESB Networks

TITLE:

20190718-005_A0

COLOUR CODE:
- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 18-Jul-2019

** SCALE: 1:1000

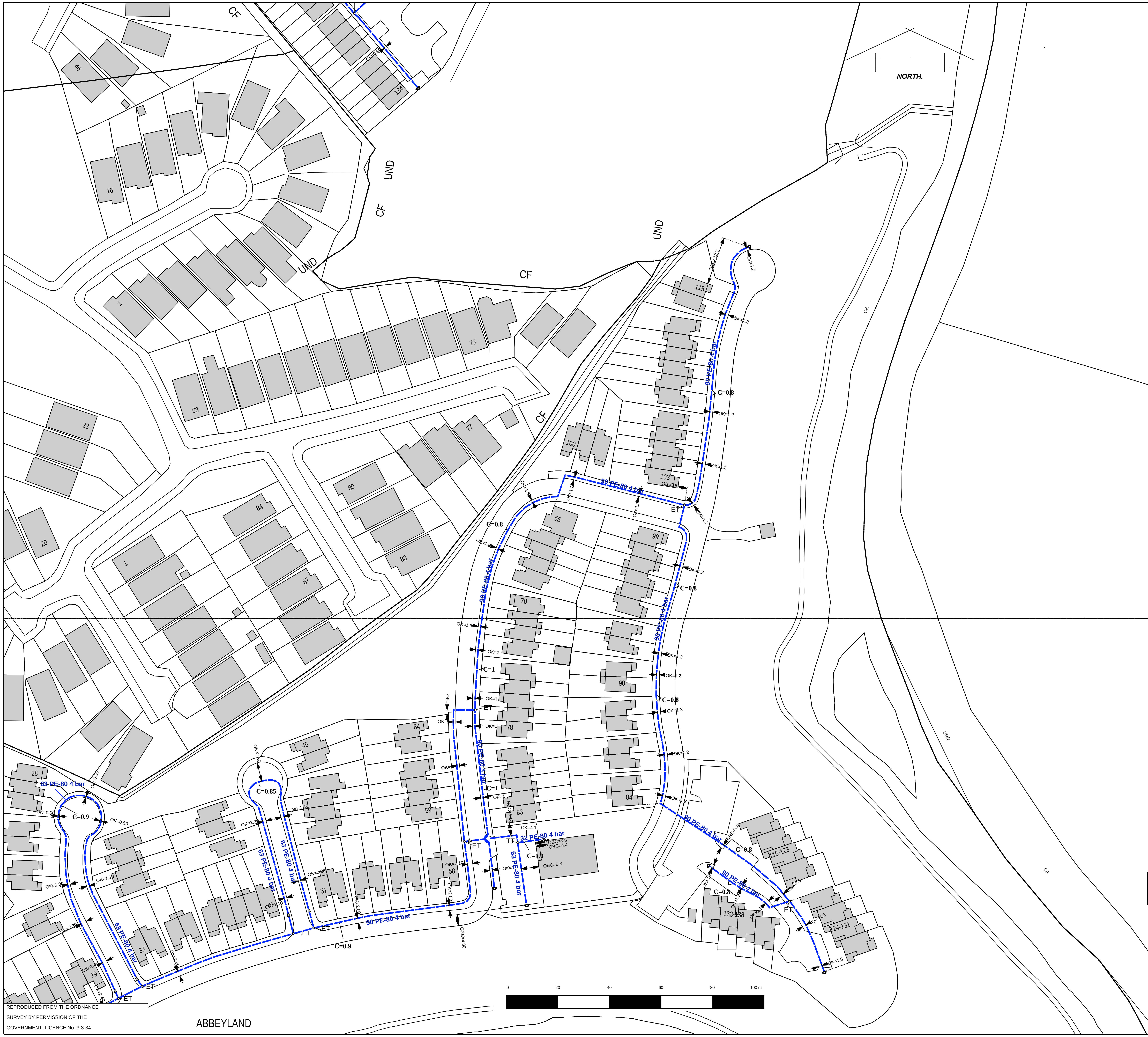
** SCALE WHEN PRINTED ON AN A0 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING:
(A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES;
(C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A0 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.

Appendix 10.3 Gas Networks Ireland Plan



Important Safety Notice:

Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1850 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (1890 289 389) or can be downloaded at www.hsa.ie.

Legal Notice:

Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

- Aurora Telecom Fibre Optic Cable
- Aurora Telecom Duct
- Aurora Telecom Sub-duct
- Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

.C=? Cover (depth in meters)	Pressure Monitor
CP Test Point	Protection (Sleeve)
End Cap	Protection (Slabbing)
Hot Tap	Reducer
Installation	Service Terminator
Valve	Tee
Mains Verification **	Transition

** Please contact GNI on 1850-427747 for specific information.

Design Department - CORK

Gas Networks Ireland

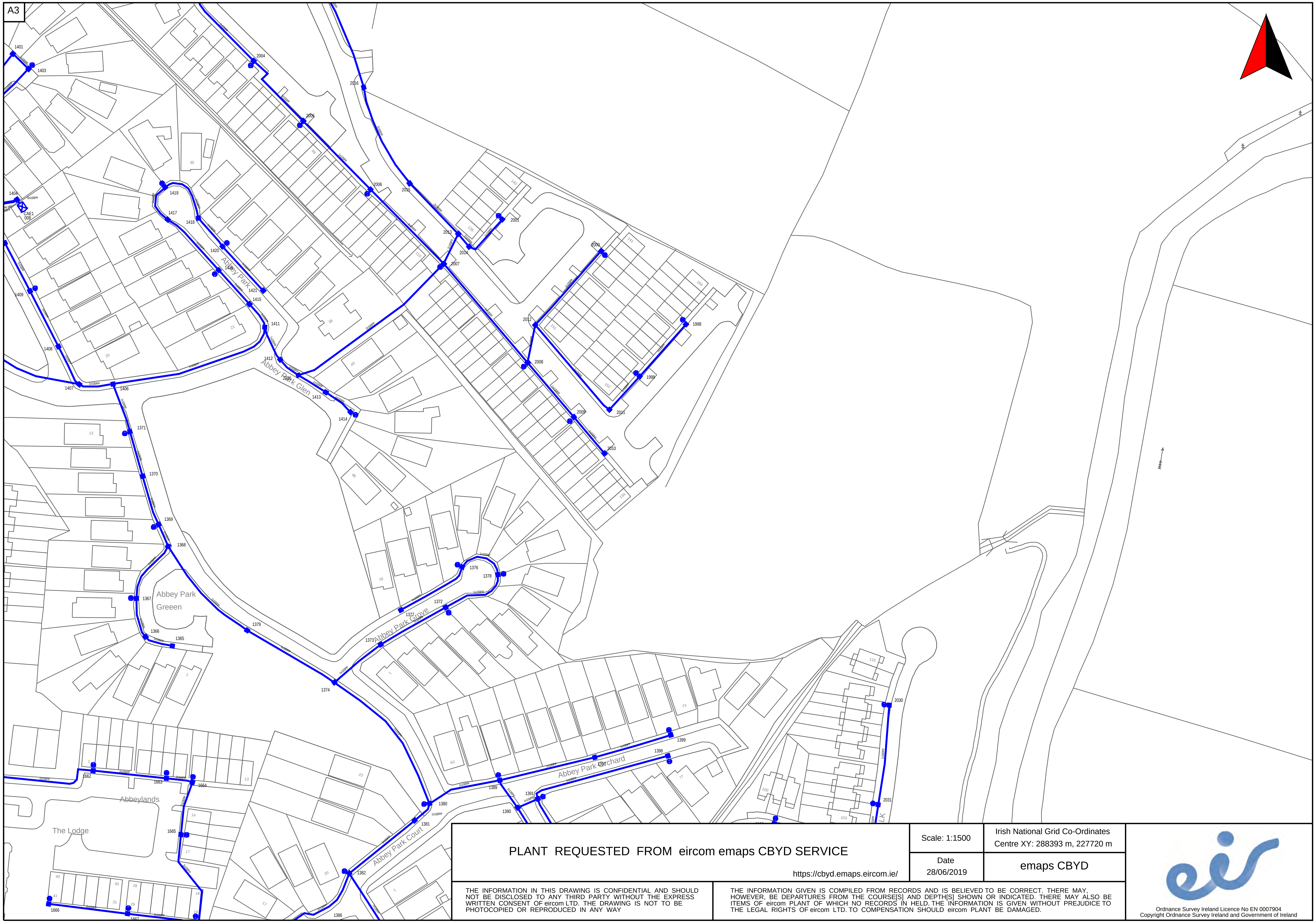
GAS NETWORK INFORMATION

Issue:
Westar Group

Location:
Alexandra Walk Clane

Plot Date: 16/05/2019	Contact: P Fadden
Plotted by: KOC	Scale: 1:1000

Appendix 10.4 Eir Networks Plan



PLANT REQUESTED FROM eircom emaps CBYD SERVICE

https://cbyd.emaps.eircom.ie/

Scale: 1:1500	Irish National Grid Co-Ordinates Centre XY: 288393 m, 227720 m
Date 28/06/2019	emaps CBYD

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Appendix 11.1 Results of Programme of Archaeological Testing

Appendix 11.1 Results of Programme of Archaeological Testing

A programme of Archaeological Testing was undertaken within the proposed development extents of the subject lands from 12th – 16th August 2019 under licence (Ref: 19E0500) from the Department of Culture, Heritage and the Gaeltacht.

The subject lands are subdivided into four separate fields – Plate 1 – and most of the associated boundaries are planted with bushes and trees.

Field 1 slopes gently from north to south and is under meadow. Field 2 was planted with trees and bushes until early 2019 when such were removed and the field –'de-stumped', resulting in significant surface disturbance and surface rutting/scaring Field 3 is under meadow, and slopes gently from west to east, with a slight depression in the centre; the surface is partially rutted/scarred due to its use associated with the construction of the residential estate to the immediate east and south.. Field 4 is very overgrown and contains some surface disturbance (rutting and scarring) associated with its use during the construction of the adjacent residential estate; some construction-related materials, including spoil are stored in the field, particularly along the southern, western and northern areas.

Plate 11.1 Aerial view of site and immediate environs

A total of 30 test trenches were excavated within the overall extents of the proposed development site, the locations of which are illustrated below in Figure 1. The locations of the trenches were largely based on the existing topographical nature of the site, together the preliminary proposed development layout.

The lengths of the trenches were:

T1 – 175m	**T12-T15– 30m**	**T26 – 85m**
T2-T9 – 45m	**T16-T20 – 45m**	**T27-T29– 130m**
T10 – 85m	**T21 – 115m**	**T30 – 65m**
T11 – 210m	**T22-T25 – 110m**	

Table 11.1 Length of test trenches.

Figure 11.1 Locations of archaeological test trenches

All trenches were excavated by machine fitted with a toothless ditching bucket (approx. Width 1.5). All resultant spoil was 'raked through' in an effort to increase the chances of artefact recovery. The trenches were excavated in spits of approx. 10cm depth, with the surface of each spit examined before excavation of the next spit. In addition, the trenches terminated at the surface of the underlying subsoil.

Field No. 1

A total of 10 trenches (T1 – T 10) were excavated in this field (Figure 11.1).

The results were largely similar. The topsoil, with a maximum depth of 220mm, comprised moderately loose mid-brown silty clay with moderate amounts of pebbles and small-medium cobbles, and very occasional large cobbles/small stones, dispersed randomly throughout. This lay directly upon firm brown clay subsoil with a grey or orange hue. This was excavated to a depth of 500mm at a number of locations to prove that it was 'in-situ' subsoil and archaeologically-sterile in form and nature.

Selections of the trenches excavated in Field 1 are illustrated below in Plates 11.2-11.7.

Plate 11.2 T1 from east Plate 11.3 T2 from north

Plate 11.4 T4 from south Plate 11.5 T6 from north

Plate 11.6 T8 from north Plate 11.7 T10 from south

Field No. 2

A total of 6 trenches (T21 – T26) were excavated in this field (Figure 11.1).

The results were largely similar. The topsoil, with a maximum depth of 310mm, comprised moderately loose mid-brown silty clay with moderate amounts of pebbles and cobbles and occasional small stones, dispersed randomly throughout. This lay directly upon firm brown clay subsoil with a grey or orange hue. This was excavated to a depth of 500mm at a number of locations to prove that it was 'in-situ' subsoil and archaeologically-sterile in form and nature.

Selections of the trenches excavated in Field 2 are illustrated below in Plates 11.8 – 11.11

Plate 11.8 T21 from east Plate 11.9 T22 from south

Plate 11.10 T24 from south Plate 11.11 T26 from east

Field No. 3

A total of 10 trenches (T11 – T20) were excavated in this field (Figure 11.1). The results were largely similar. The topsoil, with a maximum depth of 260mm, comprised moderately loose mid-brown silty clay with moderate amounts of pebbles and small-medium cobbles and occasional large stones, dispersed randomly throughout. This lay directly upon firm brown clay subsoil with a grey or orange hue. This was excavated to a depth of 500mm at a number of locations to prove that it was ‘in-situ’ subsoil and archaeologically-sterile in form and nature.

Selections of the trenches excavated in Field 2 are illustrated below in Plates 11.12 – 11.18

Plate 11.13 T11 from east

Plate 11.14 T12 from north

Plate 11.15 T14 from north Plate 11.16 T16 from north

Plate 11.17 T18 from south Plate 11.18 T20 from south

Field No. 4

A total of 4 trenches (T27 – T30) were excavated in this field (Figure 1).

The results were largely similar. The topsoil, with a maximum depth of 290mm, comprised moderately loose mid-brown silty clay with moderate amounts of pebbles and small-medium cobbles and occasional large stones, dispersed randomly throughout. This lay directly upon firm brown clay subsoil with a grey or orange hue. This was excavated to a depth of 500mm at a number of locations to prove that it was 'in-situ' subsoil and archaeologically-sterile in form and nature. In addition, there were localised areas of previous model disturbance noted, particularly in the southern area of T29 and in the north-eastern area of T30.

Selections of the trenches excavated in Field 2 are illustrated below in Plates 20 - 22.


Plate 11.19 T27 from south

Plate 11.20 T29 from north

Plate 11.21 T30 from northeast

No subsurface features of archaeological interest or potential were uncovered and no artefacts of archaeological or historical interest were recovered during the course of the Archaeological Testing.

Appendix 12.1 Photomontages

Photomontages
PROPOSED DEVELOPMENT ON LANDS AT
CAPDOO & ABBEYLANDS, CELBRIDGE ROAD, CLANE, CO. KILDARE.

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Chris Shackleton Consulting Ltd.
19 Waterside Crescent
Swords Road, Malahide, Co. Dublin, K36 DF74

email: chris@shackleton.ie
Tel: +353-1-5653239
Mob: +353-86-8206374

Photomontage Views

Rev: 0

PM01 From the front of 91 Brooklands looking to entrance East
- Existing
- Proposed


PM02 From the rear of 34 Brooklands looking South East
- Existing
- Proposed


PM03 From park in front of 114 Brooklands looking North East
- Existing
- Proposed


PM04 From park in front of 131 Brooklands looking North
- Existing
- Proposed


PM05 From park in front of 107 Alexandra Walk looking North
- Existing
- Proposed


PM06 From Lidl Carpark looking South East
- Existing
- Proposed


Photomontage Views

Rev: 0

PM07 Local road East across Liffey looking West
- Existing
- Proposed

PM08 On R403 looking South
- Existing
- Proposed

Name	Camera Locations
Status	Photomontage View Locationsi
Scale	Not to Scale

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: 0

Westar Investments Limited

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name	PM01
Status	Existing
Reference:	From the front of 91 Brooklands looking to entrance East

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: 0

Westar Investments Limited

Camera location
688144, 727929, 67.1

Target Direction
688294, 727930, 67.2

Camera	Canon 6D Mk 2
Lens	Canon EF 50mm
HView Angle	Nominal 40 degrees
Date/Time:	01/11/2018 13:31

Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Recommended viewing distance with both eyes is 500mm.

Name PM01
Status Proposed
Reference: From the front of 91 Brooklands looking to entrance East

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: **0**

Westar Investments Limited

Camera location
688144, 727929, 67.1

Target Direction
688294, 727930, 67.2

Camera Canon 6D Mk 2
Lens Canon EF 50mm
HView Angle Nominal 40 degrees

Date/Time: 01/11/2018 13:31

Recommended viewing distance with both eyes is 500mm.

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name PM02 Status Existing Reference: From the rear of 34 Brooklands looking South East	**Westar Investments Limited**	**Camera location** 688179, 728042, 67.3 **Target Direction** 688296, 727948, 67.9	Camera Canon 6D Mk 2 Lens Canon EF 50mm HView Angle Nominal 40 degrees Date/Time: 01/11/2018 13:52 Recommended viewing distance with both eyes is 500mm.
Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. Rev: 0			

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name	PM02
Status	Proposed
Reference:	From the rear of 34 Brooklands looking South East

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: 0

Westar Investments Limited

Camera location
688179, 728042, 67.3

Target Direction
688296, 727948, 67.9

Camera	Canon 6D Mk 2
Lens	Canon EF 50mm
HView Angle	Nominal 40 degrees
Date/Time:	01/11/2018 13:52

Recommended viewing distance with both eyes is 500mm.

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name	PM03	
Status	Existing	
Reference:	From park in front of 114 Brooklands looking North East	

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: 0

Westar Investments Limited

Camera location
688255, 727827, 67.5

Target Direction
688345, 727947, 67.1

Camera	Canon 6D Mk 2
Lens	Canon EF 50mm
HView Angle	Nominal 40 degrees
Date/Time:	01/11/2018 14:02

Recommended viewing distance with both eyes is 500mm.

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name: PM03 Status: Proposed Reference: From park in front of 114 Brooklands looking North East	**Westar Investments Limited**	**Camera location** 688255, 727827, 67.5 **Target Direction** 688345, 727947, 67.1	Camera: Canon 6D Mk 2 Lens: Canon EF 50mm HView Angle: Nominal 40 degrees Date/Time: 01/11/2018 14:02
Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. Rev: 0			Recommended viewing distance with both eyes is 500mm.

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name	PM04
Status	Existing
Reference:	From park in front of 131 Brooklands looking North

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: **0**

Westar Investments Limited

Camera location
688324, 727759, 67.7

Target Direction
688380, 727898, 68.3

Camera	Canon 6D Mk 2
Lens	Canon EF 50mm
HView Angle	Nominal 40 degrees
Date/Time:	01/11/2018 14:17

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Recommended viewing distance with both eyes is 500mm.

Name	PM04
Status	Proposed
Reference:	From park in front of 131 Brooklands looking North

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: **0**

Westar Investments Limited

Camera location
688324, 727759, 67.7

Target Direction
688380, 727898, 68.3

Camera	Canon 6D Mk 2
Lens	Canon EF 50mm
HView Angle	Nominal 40 degrees
Date/Time:	01/11/2018 14:17

Recommended viewing distance with both eyes is 500mm.

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name PM05 Status Existing Reference: From park in front of 107 Alexandra Walk looking North	**Westar Investments Limited**	**Camera location** 688435, 727598, 67.6 **Target Direction** 688427, 727752, 67.8	Camera Canon 6D Mk 2 Lens Canon EF 50mm HView Angle Nominal 40 degrees Date/Time: 21/10/2019 10:46 Recommended viewing distance with both eyes is 500mm.	CSC Chris Shackleton Consulting www.shackleton.ie info@shackleton.ie
Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. Rev: 0				

Name PM05 Status Proposed Reference: From park in front of 107 Alexandra Walk looking North	Westar Investments Limited	**Camera location** 688435, 727598, 67.6 **Target Direction** 688427, 727752, 67.8	Camera Canon 6D Mk 2 Lens Canon EF 50mm HView Angle Nominal 40 degrees Date/Time: 21/10/2019 10:46 Recommended viewing distance with both eyes is 500mm.
Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. Rev: 0			

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name	PM06
Status	Existing
Reference:	From Lidl Carpark looking South East

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: 0

Westar Investments Limited

Camera location
688109, 728293, 67.1

Target Direction
688180, 728161, 68.1

Camera	Canon 6D Mk 2
Lens	Canon EF 50mm
HView Angle	Nominal 40 degrees
Date/Time:	01/11/2018 15:58

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Recommended viewing distance with both eyes is 500mm.

Name	PM06		
Status	Proposed		
Reference:	From Lidl Carpark looking South East		

Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare.

Rev: 0

Westar Investments Limited

Camera location
688109, 728293, 67.1

Target Direction
688180, 728161, 68.1

Camera	Canon 6D Mk 2
Lens	Canon EF 50mm
HView Angle	Nominal 40 degrees
Date/Time:	01/11/2018 15:58

Recommended viewing distance with both eyes is 500mm.

CSC Chris Shackleton Consulting
www.shackleton.ie info@shackleton.ie

Name: PM07 Status: Existing Reference: Local road East across Liffey looking West	**Westar Investments Limited**	**Camera location** 688798, 727703, 67.1 **Target Direction** 688283, 727794, 68.1	Camera: Canon 6D Mk 2 Lens: Canon EF 50mm HView Angle: Nominal 40 degrees Date/Time: 11/10/2019 10:15	CSC Chris Shackleton Consulting www.shackleton.ie info@shackleton.ie
Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. Rev: **0**			Recommended viewing distance with both eyes is 500mm.	

Name: PM07 Status: Proposed Reference: Local road East across Liffey looking West	**Westar Investments Limited**	**Camera location** 688798, 727703, 67.1 **Target Direction** 688283, 727794, 68.1	Camera: Canon 6D Mk 2 Lens: Canon EF 50mm HView Angle: Nominal 40 degrees Date/Time: 11/10/2019 10:15	CSC Chris Shackleton Consulting www.shackleton.ie info@shackleton.ie
Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. Rev: 0			Recommended viewing distance with both eyes is 500mm.	

Name PM08 Status Existing Reference: On R403 looking South	**Westar Investments Limited**	**Camera location** 688409, 728547, 66.1 **Target Direction** 688481, 728164, 67.0	Camera Canon 6D Mk 2 Lens Canon EF 50mm HView Angle Nominal 40 degrees Date/Time: 11/10/2019 10:41	CSC Chris Shackleton Consulting www.shackleton.ie info@shackleton.ie
Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. Rev: 0			Recommended viewing distance with both eyes is 500mm.	

Name: PM08 Status: Proposed Reference: On R403 looking South	**Westar Investments Limited**	**Camera location** 688409, 728547, 66.1 **Target Direction** 688481, 728164, 67.0	Camera: Canon 6D Mk 2 Lens: Canon EF 50mm HView Angle: Nominal 40 degrees Date/Time: 11/10/2019 10:41	CSC Chris Shackleton Consulting www.shackleton.ie info@shackleton.ie
Proposed development on lands at Capdoo & Abbeylands, Celbridge Road, Clane, Co. Kildare. Rev: 0			Recommended viewing distance with both eyes is 500mm.	

Photomontage Methodology / Method Statement

Work has been completed in accordance with best practice guidelines a summary of which are provided below.

Preparation

Prior to site visit camera locations were identified and located on digital map to enable GPS routing to the correct locations. The site was “scouted” for access using Google Streetview (c) Google.

Photography

- Photographs were taken on site at locations specified using a high-resolution professional digital camera. The Camera a Canon 6D is a full frame format (which corresponds to a traditional 35mm film format) as recommended by best practice guidelines.
- Images will be taken in RAW format which provides the maximum flexibility in adjustment along with the best quality available, and with bracketed exposure. The images were stored with embedded camera/photo exif data.
- The camera was tripod mounted, spirit leveled and set at a nominal 1.6m above ground level
- The lens used as a Canon prime (fixed) 50mm or normal lens. The 50mm lens provides a similar magnification to the human eye and will provide an image which is accepted.

Control

A series of survey points were captured on site for each photograph using Trimble R8 survey grade RTK-GPS. The following were measured:

- The camera position, plan and height
- Measured points of detail visible when the photograph was taken. On streetscape scenes points of detail (corners of buildings, poles, sign, white lines, structures, etc) are surveyed to provide an accurate orientation base where insufficient existing detail is available we supplement with either with red/white ranging rods or smaller orange cones placed in the camera’s field of view while taking the photograph.
- Regardless of the type of control the configuration shall be non-collinear with a good photogrammetric geometry. This ensures that computational analysis is convergent.

Setting up AVR Images

- Survey and OS mapping is imported into 3D software
- A calibrated virtual 50mm camera is created to match the physical one used to capture the image. These are snapped to the surveyed locations. The individual photograph frames are loaded into the viewport.
- Using in-built software algorithms the virtual camera is adjusted so the points of detail on the photograph and the surveyed points in real-life coalesce in the camera viewport. Once complete the virtual camera will be orientated so that it is identical to the physical camera that took the base photograph.
- Checks are made using the surveyed information and project mapping and cross referenced with the photographs to ensure they align.
- A Daylight system is then accurately introduced into the scene at it correct geo-referenced coordinates. Once the time/date and time zone is set the digital sky will match the position of the sun and shadows created by the same in the base photograph.

Verifiable Photomontage & Proposed development modelling

- The proposed development, structure, road works and earthworks is modeled up in 3D from the drawings provided by the Client / Design Team.
- The building is located in accordance with surveyed location and at the correct FFL.
- True life digital materials are designed and assigned to the 3D model elements using reference imagery provided by the client. Sophisticated real world rendering shaders are used in conjunction with the daylight system to produce final renders which will react in a verifiable manner to match the reference photographic base images.
- Finally, the new development image and the existing original photograph are merged with due care for any demolitions/removals, foreground / background existing objects, landscaping, lighting, shadows, etc. to produce a single believable and verifiable composite image.

Viewing instructions

These images are designed to be printed at A3 and taken to site to evaluate the impact of the development.

Images should be viewed with both eyes open from the locations indicated and held 500mm from the viewers eyes. (Arms length). When held at arms length the viewer should be able to effectively focus not only on the photomontage in hand but also on the surrounding landscape which will give them a much wider field of view.

When used in this fashion the existing landscape will line-up and the photomontage will provide similar perspective and thus enable the viewer to visually evaluate the proposal.