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Environmental Impact Assessment Report

Volume 3 – EIAR Appendix

Prepared by: AWN Consulting, August 2025

Prepared for: Crag Rathnew DC Limited and Kent Homes Limited

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APPENDIX 2.1

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Relevant Planning History within the Vicinity of the Subject Site

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Table 1 Relevant Planning History within the vicinity of the subject site

Planning Reference, Application and Location	Development Description	Decision Date
2560094 Cosmo Developments Kilmeaden Ltd. Adamstown, Kilmeaden, Waterford, Co. Waterford	for Modifications to previously permitted development (Planning Reference No. 20/400 (ABP-310803-21),consisting of the retention and permission for the completion of a two-storey, mid-terrace unit house Type D, (2 bedroom 4person) at Site 12 which is commenced on site up to rising wall level, renumbering of house sites, connections to services and all associated siteworks.	22/05/2025
2460680 Sean & Sharon Foster Amberhill, Kilmeaden, Co. Waterford, X91DN12	For the indefinite Retention of alterations to our existing dwelling, incorporating; 1. Single storey extension to rear. (South) 2. Single story extension to side. (East) 3. Construction of a two-storey domestic store together with all associated site development works	28/02/2025
2460641 S.E. Construction (Kent) Ltd Clochán Adamstown, Kilmeaden, Co. Waterford	For the as-constructed altered ground embankment levels permitted under planning reg. no. 22/507 and PERMISSION is sought for the erection of new boundary screen wall abutting existing rear boundary, all at rear of sites 1-12	28/07/2025
2460616 S.E. Construction (Kent) Ltd sites 13-20 and 21-28 Clochán, Adamstown, Kilmeaden Co. Waterford	For changes to houses types and all associated site works, from that granted under planning reg. no 21/214 (and subsequently granted relocation under 22/507) on sites 13-20 and 21-28 .Works comprise the erection of 7no bungalows comprising of 2no 3 unit 2 bed terraced blocks, 1no 2 bed bungalow and a single storey community dwelling in lieu of the previously permitted 2No 2 storey apartment blocks	03/03/2025

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Planning Reference, Application and Location	Development Description	Decision Date
2460590 Tirlan Limited Tirlán Countrylife, Kilmeaden, Co. Waterford, X91 PX45	For the following (i) Demolition of 3 No. existing single storey commercial garage units (644sqm) currently addressing the R680 (ii) reconfiguration of Tirlán CountryLife's front boundary including the provision of a new site entrance onto the R680 to provide access into the existing retail premises and associated yard (iii) reconfiguration of existing carparking area to provide 48 No. car parking spaces (iv) provision of 4 No. additional garden centre polytunnels (505 SqM) adjacent to the existing polytunnel location (v) extension of the existing agri retail store to enclose the existing external & covered retail area (45 SqM), provision of a new entrance lobby (9 SqM) along with all associated elevational alterations (vi) provision of a new single storey staff area (74 SqM) with connection to the existing agri retail area within the existing footprint of the agristore unit to rear, and all other associated site & development works	28/07/2025
24167 Thomas Keegan Amberhill, Kilmeaden, Co. Waterford	The Indefinite Retention Permission of the existing construction works to the existing workshop, comprising the following: the construction of a new extension and boiler house to the east side, the relocation of a door to the west side and minor elevational alteration/changes to the north side of the existing workshop, together with all ancillary and associated site works	10/09/2024
2360390 Damien DJH Hennessy Forecourt Ltd. DJH Forecourt Ltd, Kilmeaden, Co. Waterford, X91AF5Y	To retain indefinitely sit down area and all associated works	20/10/2023
2360179 S.E. Construction (Kent) Ltd.	For changes to houses types and all associated site works, from that granted under planning reg. no 21/214.	12/06/2023

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Planning Reference, Application and Location	Development Description	Decision Date
Sites 74 & 75 Clochán, Adamstown, Kilmeadan, Co. Waterford		
22811 Patrick Kirwan Amberhill, Kilmeaden, Co. Waterford	For single storey family dwelling together with detached garage, waste water treatment plant and percolation area, soakaway, boundary treatment, new entrance, connection to public services and all associated site works	25/10/2022
22737 Henry Skehan Carrickadustra, Raheens, Kilmeaden, Co. Waterford	A slatted tank/holding yard, meal bin and extension to an existing milking parlour and calf shed granted under PP 16/578 and planning permission to install a solar photovoltaic (PV) renewal electricity generation system on the farm comprising of 150 ground mounted solar panels standing at an overall height of 2m above ground level of and associated site works	11/10/2022
22666 Michael & Marian Murray Carrickadustra, Kilmeaden, Co Waterford,	For the demolition of the existing rear extension and for the construction of a new replacement rear extension and to include all associated and ancillary site works	13/09/2022
22573 John O'Leary Blackknock, Kilmeaden, Co. Waterford	The existing construction works to existing dwelling house, comprising the single storey ground floor extension to the front (North) side and the new dormer window at first floor level (West) side to the existing dwelling house and all connected to the existing Waste Water Treatment System and percolation area, together with all ancillary and associated site works, all as previously granted under Planning Permission Reference No. PD10/176	20/02/2023

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Planning Reference, Application and Location	Development Description	Decision Date
22507 S.E. Construction (Kent) Ltd Adamstown, Kilmeaden, Co. Waterford	The demolition of 2 no. existing habitable dwellinghouses and existing farm buildings comprising of haybarn, walker, lunge ring and stables. PLANNING PERMISSION is sought for the construction of 67 No. 2 storey dwelling units consisting of; 11 No. detached 4 bed units, 15 No. semi-detached 4 bed units, 33 No. semi-detached 3 bed units, 6 No. terraced 2 bed units, 2 No. semi-detached 2 bed units and 1 No. 2 storey apartment block consisting of 8 No. 2 bed apartments with associated external bin store and bicycle store. PLANNING PERMISSION is also sought for the relocation of previously granted 2 No. 2 storey apartment blocks and associated external bin store and bicycle store per apartment block, vehicular access and parking to same as granted under planning reg. no. 21/214, all associated site development works, off street car parking, provision of new layby onto the R680 and associated roadside kerb alterations to existing adjacent Fan Glas housing development entrance, and connections to entrance and access links, services and drainage including alterations to previously granted attenuation pond, to existing development under construction as granted under planning reg. no. 21/214. A NIS will be submitted to the planning authority with the application	10/01/2023
22178 TBEB Ltd. Powersknock, Kilmeaden, County Waterford	The Restoration of a disused rock and gravel quarry comprising some 3.26 hectares to agricultural use using imported inert soil and stone classified as Article 27 by-products of the construction industry. It is proposed to import some 270,000m3 of that material over a period of 5 years. The application is accompanied by an Environmental Impact Assessment Report (EIAR) and a screening report for Appropriate Assessment (AA).	07/10/2022
22134 Ronan Power Blackknock, Kilmeaden, Co. Waterford	INDEFINITE RETENTION of conversion of attic space as well as extension to dwelling house and storage sheds. PLANNING PERMISSION for garage and all ancillary works	07/04/2022

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Planning Reference, Application and Location	Development Description	Decision Date
211067 National Broadband Ireland Comeragh MD	SECTION 254 LICENCE for the erection of overground electronic communications infrastructure and any associated physical infrastructure along public roads including: 1. The erection of new overground fibre optic cables on existing timber poles. 2. The erection of new poles and associated fibre optic cables. Poles do not exceed 12 metres in height or approximately 0.3 metres in diameter and are manufactured to EN14229: 2010 and further described in Schedule Two. MRL T1 Application reference number 2021WD0536	18/01/2022
21923 Sarah and Brian Roche Adamstown, Kilmeaden, Co. Waterford	Planning Permission consequent on the grant of outline planning permission to decommission existing septic tank, connect existing dwelling to the public drainage system, construct a new single storey dwelling, connect to public drainage system, new entrance and all ancillary site works. Outline planning permission granted under planning reference 21/581	25/11/2021
21908 SLM Silva GP Ltd. Johnstown, Kilmeaden, Co. Waterford	Converting Broadleaf High Forest to Mixed High Forest (removal of diseased ash forest and replacement with a mixture of broadleaf and conifer species)	18/11/2021
21797 National Broadband Ireland (NBI) Comeragh MD, Municipal District	Section 254 Licence Application - The erection of overground electronic communications infrastructure and any associated physical infrastructure along public roads including:- 1. The erection of new overground fibre optic cables on existing timber poles 2. The erection of new poles and associated fibre optic cables (2021WD0351)	30/09/2021
21820 National Broadband Ireland NBI Deployment DAC Waterford City MD	SECTION 254 Licence Application - The erection of overground electronic communications infrastructure and any associated physical infrastructure along public roads including:- 1. The erection of new overground fibre optic cables on existing timber poles 2. The erection of new poles and associated fibre optic cables (2021WD0377)	30/09/2021
21663	Erect deli kitchen/store extension and all associated works	31/08/2021

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Planning Reference, Application and Location	Development Description	Decision Date
Damien Hennessy on behalf DJH Forecourt LTD. Gala Express Filling Station, Kilmeaden, Co. Waterford,		
21581 Sarah and Brian Roche Adamstown, Kilmeaden, Co. Waterford	Decommission existing septic tank, connect existing dwelling to the public drainage system, construct a new single storey dwelling, and all ancillary site works	12/08/2021
21416 Brea Cooke and Alan Whelan 22 Fan Glas, Adamstown, Kilmeaden Co Waterford	For a new single storey extension to the side and rear of existing house and all associated site works at	06/07/2021
21214 S.E. Construction (Kent) Ltd., Adamstown, Kilmeaden, Co Waterford	For the construction of 96 no. dwelling units incorporating 10 no. 2 storey 4 bed detached units (Type A) 32 No. 2 storey semi detached 4 bed units (Type 8), 28 No. 2 storey semi detached 3 bed units (Type C), 10 no. 2 storey semi detached 3 bed units (Type D) and 2 no. 2 storey apartment blocks consisting of 8 no. 2 bed apartments in each block together with 1 no. external bin store and bicycle store per apartment block, vehicular entrance and separate pedestrian entrance off the R680 road, 2 no. off street car parking spaces per dwelling and 12 no. spaces per apartment block in addition to 2 no. site visitor spaces, storm water attenuation wetlands pond and associated fencing in lands to the south west of the R680 road, all within the curtilage of the subject site together with all associated site development works. An NIS will be submitted to the planning authority with the application.	15/07/2021

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Planning Reference, Application and Location	Development Description	Decision Date
20810 Michael Guiry Unit 8 Kilmeaden Village Centre, Adamstown, Kilmeaden, Co. Waterford	RETENTION to retain indefinitely auctioneering sales, rental and administration offices, together with PERMISSION for front and side elevational fascia signage	17/12/2020
20802 Knockafalla Stud Farm Unit 2 (part of) of the Ground Floor, Kilmeaden Village Centre ,Adamstown, Kilmeaden Village, Co Waterford	For a change of use from previous retail use (part of previous larger retail unit) to use as a full traditional fast food/hot food takeaway. Together with modifications in creating the floor plan layout, forming the entance to the service area of the layout, providing front elevational fasia lettering and also the installation of all necessary services, including mechanical extract ventilation on the rear wall of building and up grading of drainage being connected to existing main. All at	17/12/2020
20572 Colette Murphy Creamery House, Blackknock, Kilmeaden, Co Waterford	For the following works to my existing dwelling house comprising refurbishment and alterations to the existing dwelling house, conversion of the existing garage to a new utility room, boot room, and plant room, construction of 2 no. single storey extensions to the side (north west) and rear (north east) of the existing dwelling house, a new car port to the rear (north east) of the existing dwelling house, together with all associated drainage and all ancillary and associated site works at	08/10/2020
20400 Michael Guiry Adamstown, Kilmeaden, Co. Waterford,	To build 40 no. dwellinghouses, consisting of (i) 14 no. two storey, semi detached houses (ii) 16 no. two storey, terraced houses in two blocks and (iii) 10 no. two storey terraced houses in three blocks, with option of providing a third floor to any of these three blocks. Together with the installation of all necessary services, including connection to existing foul drain and connection from existing public water main, both on main road adjoining (R680) and all associated site development works, including access from the existing public road adjoining (R680)	15/06/2021

Planning Reference, Application and Location	Development Description	Decision Date
20260 Donal Hickson Centra, Kilmeaden, Adamstown, Kilmeaden, Co Waterford	For change of use of part of the existing Stores Area at the rear of the building to Retail use including Off-Licence and the amalgamation of this area into the existing Supermarket, relocation of the Offices/Staff Facilities into the Stores Areas, alterations to the Front (South Western) Elevation of the building with associated signage, removal of the vaulted roof on the side (South Eastern) elevation and replacing same with a lower level flat roof to the match the supermarket flat roof level, alterations to the parking layout, alterations to the public footpath and the existing entrances/exits at the front of the site and all associated site works at	09/07/2020
20225 Mairead & Pat Cremin Carrigadustra, Kilmeaden, Co Waterford	The construction of a new single storey side and rear extension, an amendment to the existing driveway entrance, the addition of one new rooflight to the front including all internal modifications to existing dwelling and all associated site works	30/06/2020
19760 Irish Water Cullinagh, Kilmeaden, Co. Waterford	A new portable water pump station consisting of 6.6sqm kiosk with footprint dimensions of 3m x 3m and overall height above ground of approx. 2.4m, including all associated site development works and services	23/01/2020
19759 Irish Water Gortaclode, Kilmeaden, Co. Waterford	A new portable water pump station consisting of 6.6sqm kiosk with footprint dimensions of 3m x 3m and overall height above ground of approx. 2.4m, including all associated site development works and services	27/02/2020

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APPENDIX 2.2

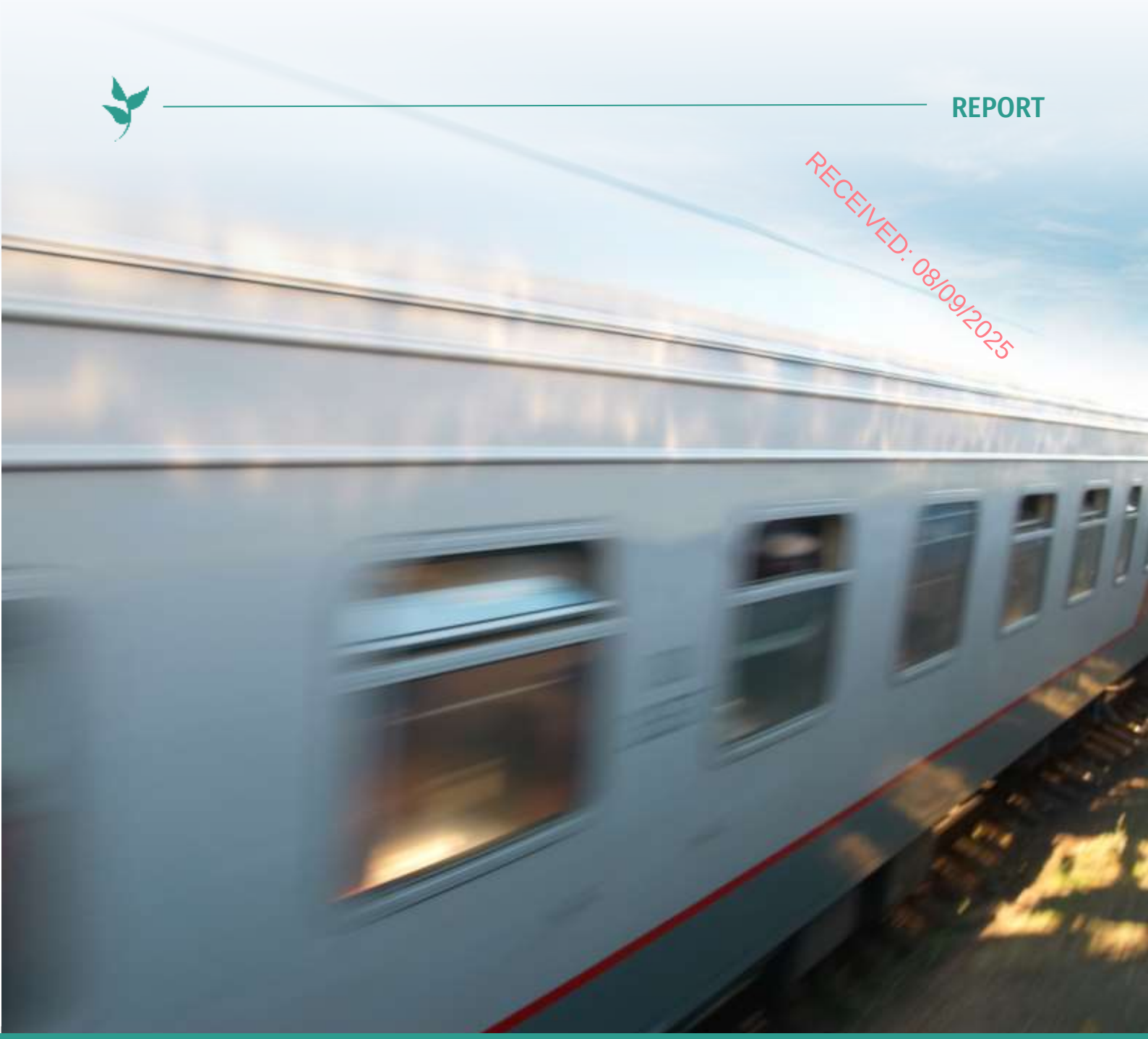
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BESS Fire Impact Assessment

AWN, 2025

REPORT

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Battery Energy Storage System Review

Kilmeaden Masterplan

CLIENT	DOCUMENT REFERENCE	DATE
Crag Rathnew DC Ltd. & Kent Homes Ltd.	257501.0205RR01	07/04/2025

AWN Consulting Ltd, The Tecpro Building, IDA Business & Technology Park, Clonshaugh, Dublin 17, D17 XD90

DOCUMENT CONTROL SHEET

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Document Control Sheet	
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Signature		
Name	Matthew Michie	Dr Fergal Callaghan
Title	Senior Risk Consultant	Director
Date	07/04/2025	07/04/2025

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1. INTRODUCTION

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AWN Consulting, a Trinity Consultants Team has been commissioned, by Crag Rathnew DC Ltd. & Kent Homes, to complete a Fire Impact Assessment for a Battery Energy Storage System (BESS) development at Kilmeadan, Co. Waterford.

This report contains the following:

- Background to risk assessment;
- Description of development, surrounding environment and identification of major accident hazards;
- Consequence assessment of Major Accident Hazards;
- Risk assessment of Major Accident Hazards;
- Conclusions.

2. BACKGROUND TO RISK ASSESSMENT

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2.1 Risk Assessment – An Introduction

Trevor Kletz (Kletz, 1999) in his seminal work on the subject stated that the essential elements of quantitative risk assessment (QRA) are (i) how often is a Major Accident Hazard (MAH) likely to occur and (ii) Consequence Analysis – what is the impact of the incident:

Kletz also commented that another way of expressing this method of QRA is:

How often?

How big?

So what?

In QRA, the "how often?" question refers to the frequency of the major accident scenario and is answered with reference to historical industry data for similar incidents, or by using frequency analysis techniques.

It is widely accepted that "no risk" scenarios do not exist. The occupier of a house with gas fired central heating is exposed to the risk posed by the presence of a natural gas supply in the house. Statistics from the UK Health and Safety Executive (UK HSE Risks associated with Gas Supply, 1993) show that the annual risk of death from gas supply events in the UK (risks include explosion, asphyxiation by fumes from poorly vented heaters, poisoning by gas leaks) is approximately 1.1 in a million. In other words, for every 10 million persons living in houses with a gas supply, 11 will die annually from events related to the supply.

Table 2-1 below presents the annual fatality rates, and the risk of fatality, for several activities (from CIRIA Report 152, 1995) in the UK.

Table 2-1 Annual Fatality Rates for a Variety of Activities

Risk	Annual Fatality Rate (per 1,000, 000 people at risk)	Annual Risk of Fatality
Fire fighting	800	1 in 1250
Farming	360	1 in 2778
Police work (non-clerical)	220	1 in 4545
Road accidents	100	1 in 10,000
Fires	28	1 in 35,700
Natural gas supply to house	1.1	1 in 909,090
Lightning strike	0.5	1 in 2,000,000

Kletz has shown that the average industrial worker is exposed to a risk of accidental death of somewhere around 1×10^{-3} per year, for all situations (work, home, travel).

The HSA Guidance on Technical Land Use Planning Advice (HSA, 2023) specifies a maximum tolerable risk, for new COMAH establishments, to a member of public of 1×10^{-6} per year and 5×10^{-6} per year to a person at an off-site work location.

3. DESCRIPTION OF PROPOSED DEVELOPMENT

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3.1 Proposed Development

The proposed development will consist of up to 96 No. lithium-ion (li-ion) BESS containers. The BESS development is part of a larger development which is located in Kilmeadan, Co. Waterford and comprises four distinct but connected areas including a new village centre, a solar farm and rewilding area (including the BESS development), and a data centre with associated energy centre.

The purpose of the proposed BESS development is to store surplus renewable energy generated during low demand periods and to release this when demand is greater. The stored energy is used to provide fast acting supply to the grid system which contributes to the stability of the system as the penetration of renewable generation on the system increases.

Figure 3-1 illustrates the proposed development layout and Figure 3-2 illustrates the proposed BESS layout.

The proposed development will comprise of (subject to detailed design, commercial and technical considerations):

- Up to 96 No. 5.25 MWh BESS containers measuring 20 ft *x* 8 ft *x* 10 ft (l *x* w *x* h).
- 4 No. Medium Voltage (MV) transformers
- 32 No. power skids
- 4 No. substations (SWG eHouse).
- Supporting elements of plant located within the compound including:
  - An Underground Firefighting Water Tank
  - All the services connections including electrical, potable water and connections to existing surface water drains.
  - External lighting poles, CCTV, lighting monopole.
- Security Fence
- Access

3.1.1 On-site Occupancy

This site will be unmanned and monitored remotely, 24/7, from a centralised control centre. Maintenance staff will visit the site intermittently and site access will be granted to authorized personnel only. All persons present on-site will be required to have an induction which will include the appropriate safety information. Maintenance staff will be suitably qualified and trained in all fire safety procedures.

3.1.2 Fire Suppression

The proposed development will have a dedicated underground firewater tank with a capacity of 252 m^3, sufficient to provide 35l/s of water for 2 hours. There will be a fire ring main provided around the BESS road to enable access to all BESS units onsite.

3.1.3 Surface Water

The BESS stormwater network will connect to an attenuation pond, with the capacity of 1200 m^3, sized to contain the 24hr - 10yr rainfall return period event, plus the 252 m^3 of fire water that could be applied in the event of a fire. Under normal operation, the attenuation tank will connect to the Technology Park

surface water network. In the event of a fire, and automatic valve will close and the contaminated water will be collected in the attenuation tank for removal (see Appendix B for drawings).

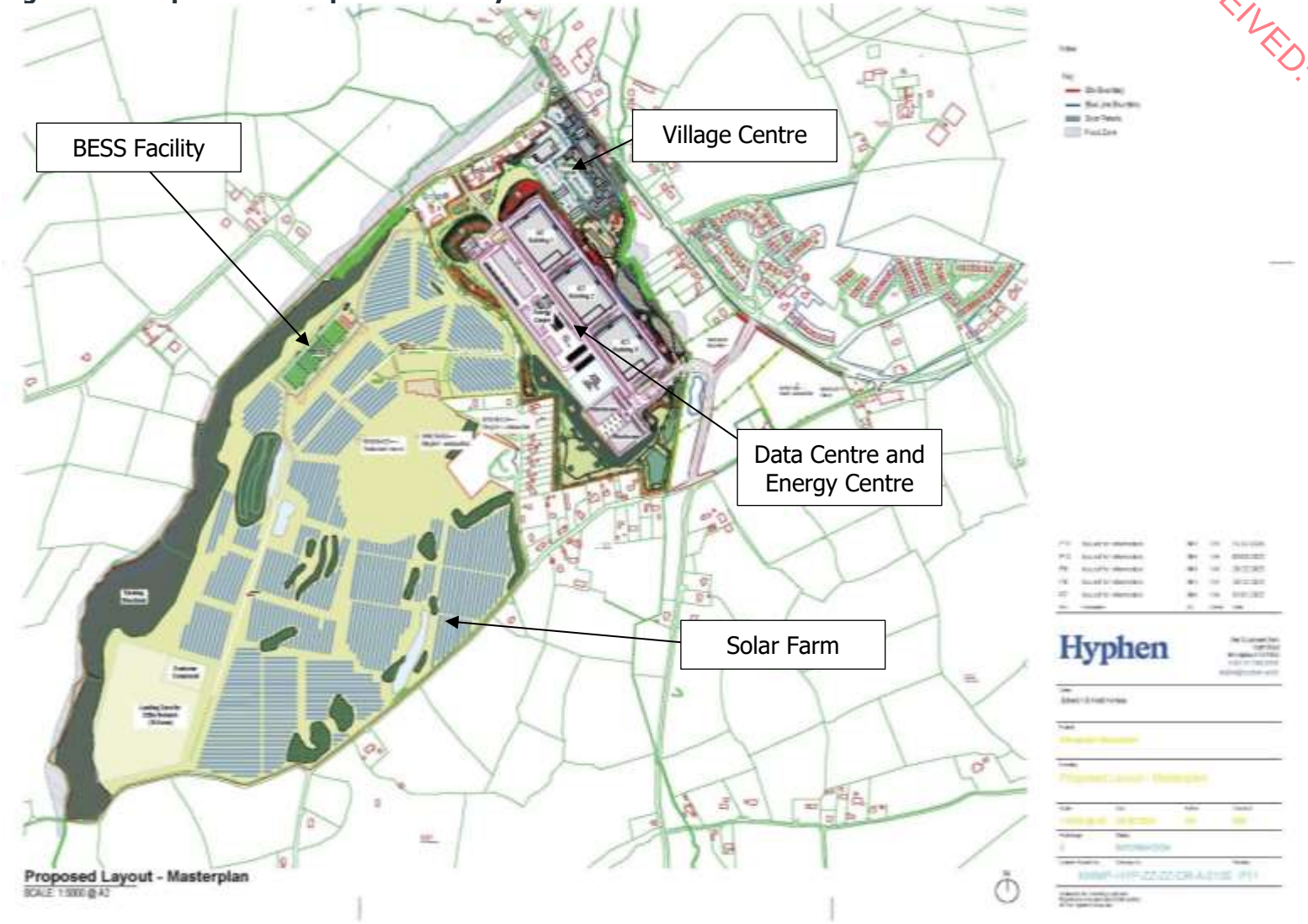
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3.1.4 Surrounding Area

The subject site comprises undeveloped agricultural lands and lands previously developed for the Kilmeaden Cheese Factory (brownfield). The proposed development site surroundings are characterised by extensive agricultural lands with a few small residential settlements. There are no industries within the study area and there are only a small number of commercial businesses within 2.5km from the proposed development.

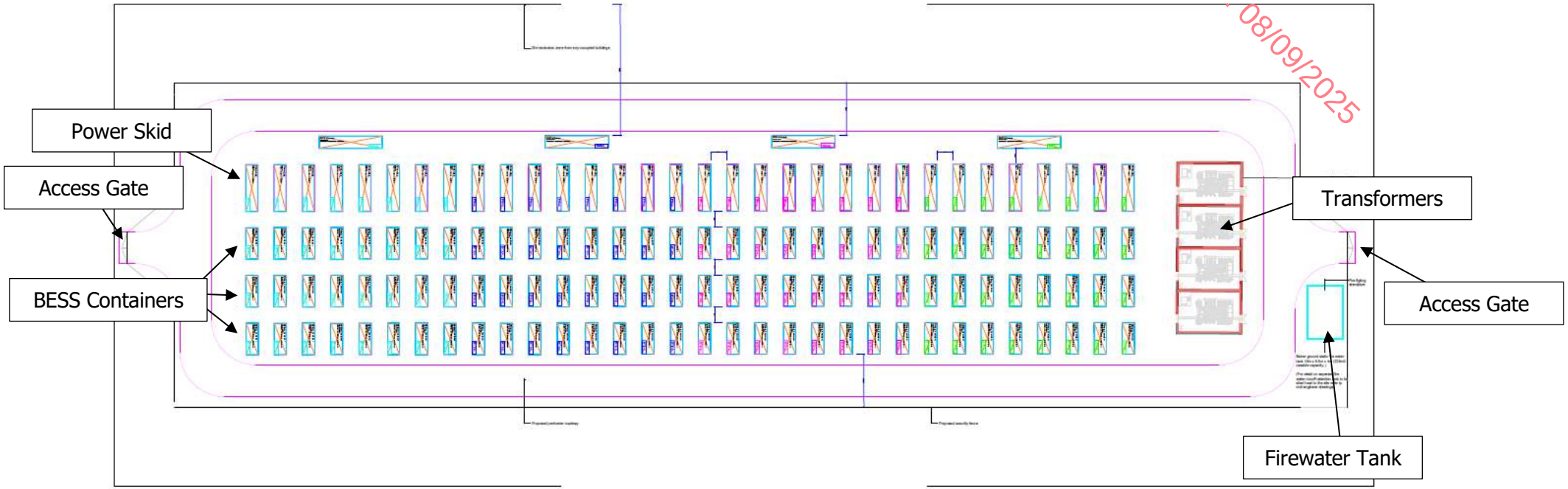
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Figure 3-1 Proposed Development Site Layout



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Figure 3-2 Proposed BESS Facility Site Layout



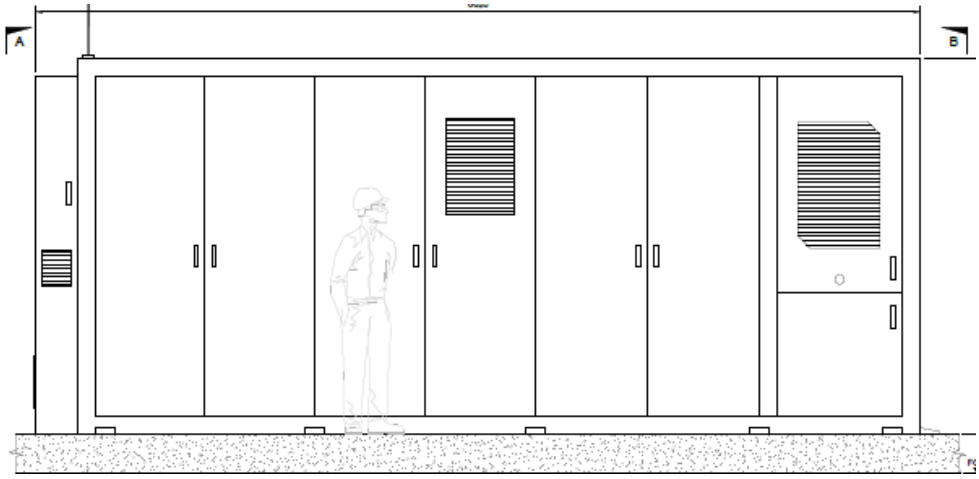
4. BATTERY ENERGY STORAGE SYSTEMS

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4.1 BESS Design

A BESS arrangement consists of an aggregate of individual battery cells, sized to fit the energy needs of the development. Large scale BESS developments typically include large arrays of individual BESS units. BESS units at the proposed development will be containerised, whereby a container houses multiple stacks of battery cells. The proposed BESS containers will be completely occupied by battery cells; therefore, there is minimal available space for gases to accumulate and it is not possible for personnel to enter (see Figure 4-1 for a potential container configuration).

Figure 4-1 Generic BESS Containerised Configuration



4.2 BESS Safety Systems

Safety features of BESS vary between supplier; however, BESS containers typically have internal layers of protection to isolate containers and minimise propagation. Furthermore, battery manufacturers state that they adhere to UL9540 and all battery providers are required to provide evidence of a UL9540A burn test. This test demonstrates that, in the event of thermal runaway in a module, propagation does not occur.

The containers at the proposed project will have the following safety features (or similar):

1. Battery Management Systems (BMS), the BMS monitors the cells' voltage and temperature and measures current and pack voltage as well as detects any voltage imbalance, cell temperature differences, and sense line diagnostics.
2. A fire detection, including CO gas detection and smoke detection, and alarm system will be provided a sounder with strobe provided in accordance with the relevant standards (i.e. IS 3218 2023 or approved equivalent).
3. Faulty BESS containers can be isolated
4. Vents to avoid the build-up of gas in a cell thermal event
5. Container casing is designed to prevent high voltage exposure
6. Modules are made from a flame-retardant polymer material, and the bottom tray is made of steel to prevent the spread of fire within the module or container.

7. ATEX rated ventilation system in accordance with UL 507 and EN 60079-7 or approved equivalent

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4.3 Hazards of BESS

Thermal runaway is a process whereby an uncontrolled chain of exothermic reactions produce heat and cause an increase in battery temperature. As battery temperature increases, these reactions trigger additional degradative processes which leads to an even greater amount of heat, resulting in an uncontrollable rise in temperature. Depending on the internal chemistry of the battery, flammable, explosive and toxic gases can be produced.

It is noted that thermal runaway is different to a fire. In a fire, heat oxygen and fuel are needed to sustain a fire. Removing one element can extinguish the fire. In a thermal runaway, oxygen is not required to sustain the reaction and it is best controlled by application of cooling water to remove the heat from the area and cool the area such that the thermal runaway is under control.

Along with thermal radiation and overpressure consequences, fires at battery enclosures have the potential to release toxic gases. The toxic combustion products are dependent on the components of the electrolyte. Common combustion products are listed alongside their COMAH classification in Table 4-1.

Table 4-1 Common Combustion Products from Lithium-Ion Batteries

Combustion Product	COMAH Classification
Lithium Cyanide	H1
Cobalt Oxide	H2, E1
Copper Oxide	E1
Copper Cyanide	H1, E1
Hydrogen Fluoride	H1

5. CONSEQUENCE ASSESSMENT

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This consequence assessment is a guide intended to aid the local fire service in evaluating the appropriateness of the proposed BESS project. The assessment will determine consequence associated with a BESS failure.

5.1 Consequence Assessment

The major accidents scenarios that could occur at BESS developments are as follows:

- Fire following thermal runaway;
- Release of toxic combustion products following fire
- Vapour Cloud Explosion within battery container
- Contaminated Firewater runoff

The models in this report are to be used as a guide. Currently, to the best of the authors knowledge, there are no specific battery fire consequence models. Model inputs have been extrapolated from small scale Li-ion battery experiments that have been published and have been peer reviewed.

5.2 Fire Following Thermal Runaway

In order to assess a worst-case scenario, it is assumed that all fire prevention systems had failed. The heat radiation from a fire depends on the surface area of the fire.

The radiative heat flux emitted was calculated using the Stefan-Boltzmann Law. The Stefan-Boltzmann law gives the total radiant heat power emitted from a surface. This is seen as representative of a battery fire, as the fire will most likely be contained within the BESS container and the radiant power of the container is proportional to the heat inside it. The calculation methodology is presented in Appendix A. The heat flux from the surface was assumed to be uniform.

$$j^*_{emitter} = \varepsilon \sigma T^4$$

The model inputs for the calculations are detailed in Table 5-1.

Table 5-1 Battery Fire: Model Inputs

Parameter	Units	Value	Description
Battery Surface Area	m^2	14.6	Container Dimensions (6.1m *x* 2.4m *x* 3.0m)
Model	-	Stefan-Boltzmann Law	-
Surface Temp	K	1173	Maximum surface temperature of Li-Ion battery fire (Huang, 2015)
Emissivity (ε)	-	0.9	Conservative Emissivity

The thermal radiation vs distance profile for a large battery fire is illustrated in Figure 5-1

Figure 5-1 BESS Container Fire: Thermal Radiation vs Distance

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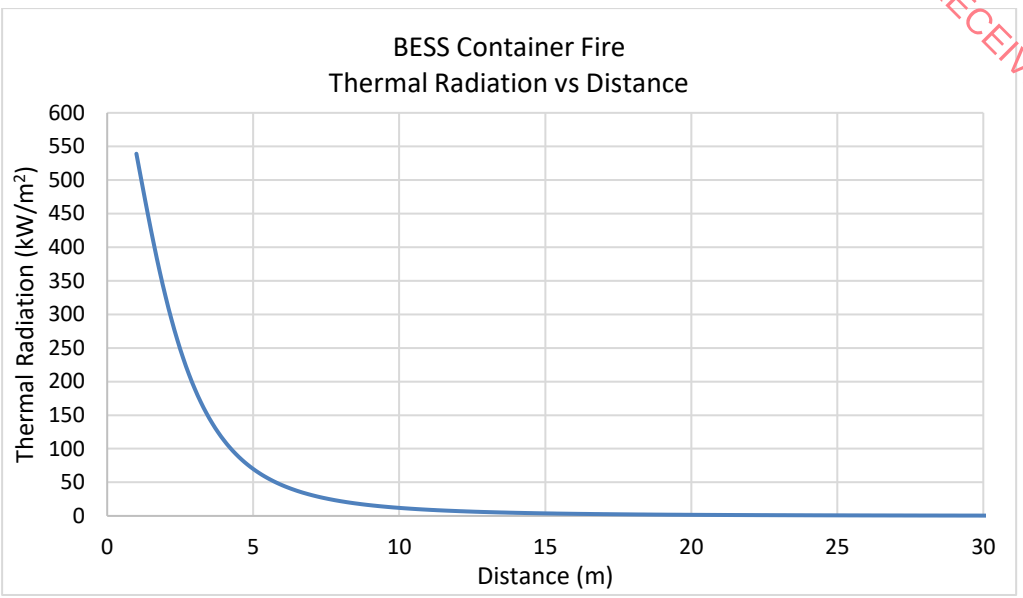


Table 5-2 presents distances to thermal radiation levels associated with specified levels of probability of fatality to persons outdoors and to persons indoors and to equipment damage for a large battery fire.

Table 5-2 BESS Container Fire: Thermal Radiation Endpoints

Criterion	Thermal Radiation Level	Distance
	kW/m²	m
1% fatality outdoors (HSA, 2023)	8.02	12
Building protected below this level, 0% fatality probability	12.7	10
Building will catch fire quickly, 100% fatality probability	25.6	8
Damage to process equipment	37.5	7

The Stefan-Boltzmann model suggests that the thermal radiation fluxes, sufficient to cause could result in damage to a neighbouring equipment, could extend a distance of 7m from the container. There is potential for knock-on effects to neighbouring battery containers, initiating thermal runaway, which could cause additional battery fires. However, all battery providers are required to provide evidence of a UL9540A burn test. This test demonstrates that, in the event of thermal runaway in a module, propagation does not occur.

5.3 Release Of Toxic Combustion Products Following Fire

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In the event of a fire at a battery container, toxic gases will be released. The exact gases released depend on the components of the electrolyte; as this is currently unknown, a list of common release gases will be used as representative (Table 4-1).
Hydrogen Fluoride (HF) will be used as representative for dispersion. HF is toxic in small quantities and forms a corrosive acid on contact with water. It can be lethal by inhalation, ingestion and skin contact.

There are no robust models that quantify the release rates or amounts of hydrogen fluoride from large Li-Ion battery units. Larsson *et al.,* tested 7 different types of small commercial Li-ion batteries and found the release amounts of HF ranged between 20 and 200 mg/Wh of nominal battery energy capacity, with an average total release HF of 166.8 mg/Wh (Larsson, 2017). The Research Institutes of Sweden found HF release amounts ranged between 12 and 200 mg/Wh (RISE, 2017). As these ranges concur, a value of 166.8 mg/Wh will be used in this assessment. A BESS container at the proposed site will have an energy storage capacity of 5.25 MWh. Extrapolation of Larsson's findings results in a total release of 876 kg of HF from a battery container fire.

A Li-iron phosphate BESS fire at Neermoor in Germany reported a fire duration of 10 hours (EPRI, 2024). Therefore, a fire duration of 10 hours will be used in this assessment as a worst-case representative scenario. A worst-case scenario is that all the HF is released in 10 hours, therefore, the calculated release rate is 0.024 kg/s.

5.3.1 Toxic Model Inputs

The Gexcon Effects Plume Rise from Fires model was used to calculate the dispersion of HF from a fire at a battery container. Table 5-3 details the model inputs.

Table 5-3 Toxic Gas Release: Model Inputs

Parameter	Units	Value	Description
Release Height	m	3	Container height (Figure 2)
Mass Flow Rate	kg/s	0.023	See Section 5.3
Model	-	Plume Rise from Fire	-
Receiver Height	m	1.5	-
Weather Conditions	-	F2, 10 ^{O}C and D5, 15 ^{O}C	HSA, 2023
Convective Heat Production of Fire	MW	18.9	See Note 1
Surface Roughness	m	0.1	Low crops, occasional large obstacles

Note 1

Voight *et. Al,* investigated the cheat release rate of Lithium-ion batteries. It was found that the heat release rate (HRR) was approximately 12-15 times the energy stored within the battery. Extrapolation to the battery container at the proposed site, the HHR would be in the region of 63 MWh (12 *x* 5.25

MWh). It was assumed that convective heat accounts for 30% for the heat released (Gexcon Effects, supporting documentation); therefore, 18.9 MW was used as the input parameter.

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The AEGL toxic endpoints for hydrogen fluoride are as detailed in Table 5-4.

Table 5-4 HF AEGL Endpoints

AEGL Level	Concentration (ppm)	
	10 min	30 min
AEGL-1 (Nondisabling)	1	1
AEGL-2 (Disabling)	95	34
AEGL-3 (Lethal)	170	62

The maximum concentration of HF is 22 ppm and 76 ppm for F2 and D5 weather conditions respectively. It is concluded that in the event of a toxic release of hydrogen fluoride at the BESS containers, distances to AEGL 1 (10 mins and 30 mins) could extend up to 9 m for D5 weather conditions and 2 m for F2 weather conditions. It should be noted that at this level the general population could experience notable discomfort, however the effects are not disabling, are transient and reversible upon cessation of exposure.

The concentration corresponding to AEGL 2 (10 mins) or AEGL 3 (10 mins) is not reached for D5 or F2 weather conditions.

It is concluded that disabling concentrations of HF are not reached, at a receiver height of 1.5m. Non-disabling effects could occur within 9 m of the battery containers.

5.4 Vapour Cloud Explosion

A vapour cloud explosion, resulting from the ignition of flammable vapour or gas, is a plausible scenario following thermal runaway and build-up of explosive gases for indoor battery containers. The battery containers at the proposed development will be stored externally. Therefore, there is likely to be dispersion of any released explosive gas, reducing the likelihood and severity of an explosion event.

Therefore, a VCE, resulting from thermal runaway, at the proposed development is not considered a credible scenario.

5.5 Firewater Runoff

There will be an automatic shut-off valve, downstream of the attenuation tank to prevent discharge from the drainage network in an emergency event. Therefore, in the event that there is contaminated firewater produced, it will be contained at the BESS facility.

6. Fire Risk Assessment

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The hazard identification assessment identifies possible hazardous events that could give rise to major accidents at the BESS facility.

The major accidents scenarios that could occur at BESS developments are as follows:

- Fire following thermal runaway
- Release of toxic combustion products following fire
- Vapour Cloud Explosion within battery container
- Contaminated Firewater runoff

Each hazardous scenario/event was assigned a Frequency Value (F) and a Severity Value (S) and the risk posed by the event was then calculated using the equation:

$$R = F \times S$$

A risk matrix was developed which describes the definitions of Risk, Frequency and Severity that were applied for the identified scenarios (Table 6-1 and Table 6-2).

The risks are then ranked according to their own risk score (1-5) in a colour coded matrix table which allows risks to be easily displayed and prioritised. The colour codes are as follows:

- Red – high level risks requiring priority action (overall risk scores of 15-25);
- Yellow – medium-level risks requiring action, but not as critical as red-coded risks (overall risk scores of 8-12); and
- Green (light and dark) – low-level risks requiring continuing awareness and monitoring on a regular basis (overall risk scores of 1-6).

Table 6-4 details the risk assessment for the BESS project. It is concluded that the risk of a fire and harm to persons is low (<5) for all scenarios identified.

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Table 6-1 Frequency Criteria

Rating	Category	Description
1	Very low	Very low chance of hazard occurring
2	Low	Low chance of hazard occurring
3	Medium	Medium chance of hazard occurring
4	High	High chance of hazard occurring
5	Very high	Very high chance of hazard occurring

Table 6-2 Severity Criteria

Rating	Category	Description
1	Trivial	Small number of people affected, no fatalities No contamination to environment
2	Minor	Single fatality: limited number of people affected; a few serious injuries Localised contamination effects of short duration
3	Moderate	Significant number of people in affected area impacted with multiple fatalities Contamination effects widespread or of extended duration
4	Major	5 to 50 fatalities, up to 100 serious injuries Heavy contamination, localised effects, or extended duration
5	Massive	Large numbers of people impacted with a significant number of fatalities (>50), injuries in the hundreds Very heavy contamination, widespread effects of extended duration

Table 6-3 Risk Matrix

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		Consequence →				
		Trivial	**Minor**	**Moderate**	**Major**	**Massive**
Likelihood ↑	**Very High**	**Low**	**Medium**	**High**	**High**	**High**
	High	**Low**	**Medium**	**Medium**	**High**	**High**
	Medium	**Low**	**Low**	**Medium**	**Medium**	**High**
	Low	**Low**	**Low**	**Low**	**Medium**	**Medium**
	Very Low	**Low**	**Low**	**Low**	**Low**	**Low**

Table 6-4 BESS Facility Risk Assessment

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Risk ID	Event	Consequence	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
1	Thermal Runaway at BESS Containers	Fire	2	1. Thermal radiation consequences, to persons outdoors, extend up to 12 m from a BESS container (see Section 5.2) 2. BESS facility will not be permanently manned. 3. Potential harm to maintenance personnel / emergency responders in the immediate vicinity of the BESS container 4. There is sufficient means of escape from the battery containers. 5. A fire detection and alarm system will be provided with a sounder with strobe provided in accordance with the relevant standards (i.e. IS 3218 2023 or approved equivalent) linked to the main control building.	2	1. Battery Management Systems (BMS), the BMS monitors the cells' voltage and temperature and measures current and pack voltage as well as detects any voltage imbalance, cell temperature differences, and sense line diagnostics. 2. Thermal Management System to minimise temperature fluctuations 3. Humidity and water ingress protection 4. Vents to avoid the build-up of gas in a cell thermal event 5. The containers are Highly Accelerated Life Tested (HALT) 6. All systems will be tested in accordance with relevant standards 7. Containers will have undergone UL9540A testing that demonstrates no propagation. 8. All systems will be on a maintenance regime that will follow manufacturers recommendations maintenance schedule 9. Control of ignition sources on-site 10. Permit to work required for all maintenance 11. Lightning protection at BESS units in accordance with ISO 2318 2023 (or equivalent)	4

Risk ID	Event	Consequence	Consequence Rating	Basis of Consequence	Likelihood Rating	Basis of Likelihood	Risk Score
2	Thermal Runaway spreading to adjacent BESS Containers	Fire	3	1. Same as for Risk ID 1 2. Potential for thermal radiation effects to extend further than 12m 3. There is sufficient means of escape from the battery containers.	1	1. Same as for Risk ID 1 2. Faulty containers can be isolated manually and remotely 3. Fire Response could include cooling of adjacent containers (subject to approval from Local Fire Service)	3
3	Thermal Runaway at BESS Containers	Venting of toxic gases	2	1. Disabling toxic concentrations are not reached (see Section 5.3) 2. Same as Risk ID 1	2	1. Same as Risk ID 1	4
4	Thermal Runaway at BESS Containers	Explosion following venting of flammable gases	1	1. BESS containers are outdoor and flammable gases are not expected to accumulate 2. Same as Risk ID 1	1	1. Same as Risk ID 1	1
5	Inverter / Transformer failure	Fire	2	1. BESS facility will not be permanently manned. Inverters are separated by firewalls and are not close to buildings 2. Potential harm to maintenance personnel / emergency responders in the immediate vicinity of the BESS container	1	1. All equipment will be new 2. Maintenance regime will follow manufacturers recommendations	1

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7. CONCLUSION

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AWN Consulting, a Trinity Consultants Team has been commissioned, by Crag Rathnew DC Ltd. & Kent Homes, to complete a Fire Impact Assessment for a Battery Energy Storage System (BESS) development at Kilmeadan, Co. Waterford.

The proposed development will consist of up to 96 No. lithium-ion (li-ion) BESS containers. The BESS development is part of a larger development which is located in Kilmeadan, Co. Waterford and comprises four distinct but connected areas including a new village centre, a solar farm and rewilding area (including the BESS development), and a data centre with associated energy centre.

The purpose of the proposed BESS development is to store surplus renewable energy generated during low demand periods and to release this when demand is greater. The stored energy is used to provide fast acting supply to the grid system which contributes to the stability of the system as the penetration of renewable generation on the system increases.

Consequence Assessment

Large scale Li-ion BESS developments are not currently regarded by the HSA as regulated under COMAH Regulations 2015.

The major accidents scenarios that have been assessed in this report are as follows:

- Fire following thermal runaway
- Release of toxic combustion products following fire
- Vapour Cloud Explosion within battery container
- Contaminated Firewater runoff

The models in this report are to be used as a guide. To the best of the authors knowledge, there are no specific battery fire models. Model inputs have been extrapolated from small scale Li-ion battery experiments that have been published and have been peer reviewed.

Battery Fire Following Thermal Runaway

The Stefan-Boltzmann model suggests that the thermal radiation fluxes, sufficient to cause could result in damage to a neighbouring equipment, could extend a distance of 7m from the container. There is potential for knock-on effects to neighbouring containers, initiating thermal runaway, which could cause additional battery fires. However, all battery providers are required to provide evidence of a UL9540A burn test. This test demonstrates that, in the event of thermal runaway in a module, propagation does not occur.

Toxic Combustion Products

The maximum airborne concentration of HF is 22 ppm and 76 ppm for F2 and D5 weather conditions respectively. It is concluded that in the event of a toxic release of hydrogen fluoride at the BESS containers, distances to AEGL 1 (10 mins and 30 mins) could extend up to 9 m for D5 weather conditions and 2 m for F2 weather conditions. It should be noted that at this level the general population could experience notable discomfort, however the effects are not disabling, are transient and reversible upon cessation of exposure.

The concentration corresponding to AEGL 2 (10 mins) or AEGL 3 (10 mins) is not reached for D5 or F2 weather conditions.

It is concluded that disabling concentrations of HF are not reached, at a receiver height of 1.5m. Non-disabling effects could occur within 9 m of the battery containers.

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Vapour Cloud Explosion

A vapour cloud explosion, resulting from the ignition of flammable vapour or gas, is a plausible scenario following thermal runaway and build-up of explosive gases for indoor battery containers. The battery containers at the proposed development will be stored externally. Therefore, there is likely to be dispersion of any released explosive gas, reducing the likelihood and severity of an explosion event. Therefore, a VCE, resulting from thermal runaway, at the proposed development is not considered a credible scenario.

Contaminated Firewater

There will be an automatic shut-off valve, downstream of the attenuation tank to prevent discharge from the drainage network in an emergency event. Therefore, in the event that there is contaminated firewater produced, it will be contained at the BESS facility.

Risk Assessment

Each hazardous scenario/event was assigned a Frequency Value (F) and a Severity Value (S) and the risk posed by the event was then calculated using the equation:

$$R = F \times S$$

The risk assessment for the BESS project concluded that the risk of a fire and harm to persons is low for all scenarios identified.

Recommendations

It is recommended to create and implement a comprehensive Emergency Response Plan including (but not limited to):

- Hazards of cascading thermal runaway, including flammable gases
- Measures to manage the fire and cool the battery modules
- Management of toxic gases

The NFPA 855 documents outlines fire-fighting considerations for energy storage systems. The document outlines that the Emergency Response Plan should contain the following:

1. Procedures for safe shutdown, de-energizing, or isolation of equipment and systems under emergency conditions to reduce the risk of fire, electric shock, and personal injuries, and for safe start-up following cessation of emergency conditions
2. Procedures for inspection and testing of associated alarms, interlocks, and controls
3. Procedures to be followed in response to notifications from the BMS, when provided, that could signify potentially dangerous conditions, including shutting down equipment, summoning service and repair personnel, and providing agreed upon notification to fire department personnel for off-normal potentially hazardous conditions
4. Emergency procedures to be followed in case of fire, release of liquids or vapours, damage to critical moving parts, or other potentially dangerous conditions
5. Response considerations similar to a safety data sheet (SDS) that will address response safety concerns and extinguishment when an SDS is not required
6. Procedures for dealing with ESS equipment damaged in a fire or other emergency event, including contact information for personnel qualified to safely remove damaged ESS equipment from the facility
7. Other procedures as determined necessary by the Local Fire Service to provide for the safety of emergency responders

8. Procedures and schedules for conducting drills of these procedures

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APPENDIX A

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A fire event at a battery unit was modelled for a BESS container.

The radiative heat flux emitted was calculated using the Stefan-Boltzmann Law:

$$j^*_{emitter} = \varepsilon\sigma T^4$$

Where $j^*_{emitter}$ is the radiant emittance, ε is the emissivity of the battery unit, σ is the Stefan-Boltzmann constant and T is the surface temperature. The heat flux received was calculated using the view factor method:

$$j^*_{reciever} = 4.\emptyset.j^*_{emitter}$$

The view factor, $\emptyset$, is given by the equation:

$$\emptyset = \frac{1}{2\pi}\left[\frac{a}{(1+a^2)^{1/2}}\tan^{-1}\frac{b}{(1+a^2)^{1/2}} + \frac{b}{(1+b^2)^{1/2}}\tan^{-1}\frac{a}{(1+b^2)^{1/2}}\right]$$

The parameters *a* and *b* are given by the following equations, where *h* is half the height of the surface, *w* is half the width of the surface and *s* is the perpendicular distance from the surface to the point of interest.

$$a = \frac{h}{s}$$

$$b = \frac{w}{s}$$

APPENDIX B

Drainage Drawings

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APPENDIX 2.3

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Solar Farm Decommissioning Plan

Greenvolt Next Ireland, 2025

RECEIVED: 08/09/2025

SOLAR FARM
DECOMMISSIONING PLAN

Kilmeaden Solar Farm
April 2025

Waterford County Council

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1. Introduction

This Decommissioning Plan outlines the procedure for the safe and responsible removal of the Kilmeaden Solar Farm, located at coordinates 52.225058, -7.249134 in County Waterford.

The site consists of 43,056 bifacial Leapton or similar 690W solar panels, mounted on concrete footings.

The total installed capacity is 29.71 MWp, and the system has an expected operational lifespan of 30 years.

Battery storage units on site are not included in this plan and will be addressed separately.

A site location plan is provided at Appendix 1 for reference.

2. Decommissioning Plan

The Kilmeaden Solar Farm is expected to operate for a period of 30 years. At the end of this operational life, the applicant will carry out decommissioning works which will include the complete removal of all solar infrastructure, including photovoltaic modules, mounting structures, electrical equipment and all associated components. This includes the removal of any subsurface cables and concrete footings to a depth of one metre.

All access roads or temporary laydown areas created during the construction or operation of the system will also be removed, unless otherwise requested by the landowner or required for ongoing agricultural use. These areas will be re-vegetated with appropriate native grassland species or similar vegetation, suitable for the reinstated land use.

All solar panels and associated equipment removed from the project site, unless being reused, repurposed or upgraded as part of a phased repowering strategy, will be recycled or disposed of in accordance with applicable EU and national waste management policies in effect at the time of decommissioning. Materials such as aluminium, glass, copper and silicon from the PV modules will be directed to certified recycling facilities.

The process will also include restoration of the land to its original condition before installation. This includes grading, reapplication of topsoil where needed and vegetative

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stabilisation. The aim is to ensure the land is returned to a condition suitable for agricultural or previous land uses, with no lasting environmental or physical impact.

Although decommissioning is currently expected to take place in year 30, it is recognised that the operational life of the solar farm could be extended, subject to planning approval and technical feasibility. In the event that the photovoltaic modules are replaced near or at the end of their original service life, and provided that the supporting structures and electrical infrastructure remain compliant and structurally sound, the site may continue to operate beyond the initial 30-year term. In such a case, the decommissioning plan would be revised and deferred accordingly, to reflect the extended operational period of the repowered installation.

3. Pre-Commencement Activities

Prior to the decommissioning process, the Applicant should seek guidance from an Ecological Consultant to provide advice on how to manage any ecological or environmental issues that may arise during the process.

A full ecological survey of the site will be required before the removal of any infrastructure. This may include more detailed studies such as:

- Soil health
- Nesting birds
- Mammals
- Habitat mapping

Adequate lead-in time must be allowed to ensure surveys are completed during appropriate seasonal windows.

Following the survey, a Decommissioning Environmental Management Plan (DEMP) will be developed. This may include:

- Translocation of protected species
- Manipulation of vegetation to disperse wildlife
- Careful scheduling of works to avoid sensitive periods

Additionally, a Decommissioning Transport Management Plan (DTMP) will be prepared and agreed with the Local Planning Authority (LPA), if required. This plan will likely mirror

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the Construction Traffic Management Plan (CTMP) used during the original installation, updated to reflect current best practices.

Finally, the electrical supply to the solar farm will need to be safely disconnected, and any future arrangements for the DNO substation must be agreed upon with the network operator, landowner, and the LPA.

4. Decommissioning Scope and Timeline

Decommissioning activities will commence within 6 months after the cessation of commercial operation and are expected to take approximately 4 to 6 months, depending on site and weather conditions.

The scope includes:

- Removal of PV modules
- Dismantling of mounting structures
- Excavation and removal of concrete footings
- Removal of electrical infrastructure
- Site regrading and soil restoration

5. Decommissioning Instructions

The following section outlines the sequential procedures to be followed for the safe and complete decommissioning of the Kilmeaden Solar Farm (29.71 MWp). The process involves the removal of all infrastructure, equipment, and materials from the site, restoring the land to its pre-development condition.

5.1. Project Component Removal.

All control cabinets, substations, inverter stations, transformer stations, other electronic components and internal cables will be removed along with the panels, racks, and inverters. These components will be transported whole for reconditioning and reuse where possible, or if not disassembled/cut into more easily transportable sections for salvageable, recyclable, or disposable components (primarily the mounting frame and electrical cables). Special attention will be given to high-value materials such as aluminium frames and copper wiring.

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5.2. PV Module Removal

The Kilmeaden Solar Farm includes 43,056 bifacial Leapton or similar 690W photovoltaic modules. These panels will be unmounted carefully from their racking structures and packaged according to the specifications of approved recyclers or resellers.

The Project's solar photovoltaic panels are manufactured according to the regulatory toxicity requirements based on the Toxicity Characteristic Leaching Procedure (TCLP). Under these regulations, solar panels are not considered hazardous waste. The panels used in the Project will contain:

Glass	75%
Polymers	10%
Aluminium	8%
Silicon	5%
Copper	1%
Silver	1%

All which have recycling or resale value. Modules will be dismantled and packaged per manufacturer, approved recyclers or resellers specifications and shipped to an approved off-site solar panel recycler.

It is important to note that the Leapton or similar 690W bifacial modules are currently supplied with a 20-year product warranty. As the decommissioning is scheduled for year 30, this warranty will have fully expired, and the modules are expected to have reached the end of their technical and commercial lifespan. Therefore, their salvage value at the time of decommissioning is likely to be negligible.

In light of this, it may be more practical and cost-effective to consider a progressive replacement of the modules beginning around year 20, should the solar farm continue to operate beyond its original design life. This strategy would take advantage of the existing support structures, which, if maintained in good condition, can accommodate new generation modules without the need for full structural replacement.

Additionally, with appropriate maintenance of the electrical system, including targeted replacement of cabling, the technical effort and cost required to ensure ongoing compliance with performance and safety standards is expected to be moderate. Upgrading cable sections based on today's specifications is considered to be a

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manageable intervention that would not represent a major constraint for long-term repowering plans.

International Renewable Energy Agency (IRENA) and the International Energy Agency's Photovoltaic Power Systems Programme (IEA-PVPS) published a detailed report titled "The End-of-Life Management: Solar Photovoltaic Panels" that projects the PV panel waste volumes to 2050 and highlights that recycling or repurposing of solar PV panels at the end of a 30-year lifetime will unlock a large stock of raw materials and valuable components. The report estimates that PV panel waste could total 78 million tonnes globally by 2050. The value of the recovered material could exceed $15 billion by 2050. This potential material influx could produce 2 billion new panels or be sold into global commodity markets. The Kilmeaden project will therefore aim to maximise material recovery and contribute to the circular economy through environmentally responsible end-of-life management.

5.3. Electric Wire Removal

The electrical infrastructure of the Kilmeaden Solar Farm will be safely decommissioned as part of the dismantling process. This includes the disconnection and removal of all DC and AC cabling, inverters, transformers, junction boxes and associated switchgear.

The copper and aluminium wiring installed across the site has recognised value for recycling. DC cabling between the modules and inverters will be removed manually. Underground cables will be excavated to a depth of one metre, or beyond, where technically and economically feasible.

During trench excavation, the topsoil will be separated from the subsoil and stored correctly. All cables, including any underground warning tape, will be fully removed. Once trenches are backfilled, additional subsoil may be required to avoid future settlement, and the stored topsoil will be reinstated to match the original ground profile.

Any overhead cabling used for grid interconnection will also be removed from poles. All electrical wiring recovered from the site will be sorted and sent to a licensed recycling facility in line with environmental regulations in force at the time.

It should be noted that if the system has been properly maintained throughout its 30-year lifespan, including the regular inspection of connections, insulation, protections and conduits, the partial replacement or renewal of electrical cabling is not expected to represent a significant technical or financial burden. Preventive and corrective

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maintenance will ensure the electrical system remains fully functional and compliant with safety standards throughout the project's operational life.

In the event that the solar farm remains in operation beyond year 30, following the replacement of modules and potential repowering, the electrical infrastructure may continue to be used effectively. Provided that targeted upgrades or refurbishments are carried out as necessary, the cabling network is not expected to present a constraint to the long-term extension of the project's life.

5.4. Racking and Fencing Removal

All mounting structures and fencing installed as part of the Kilmeaden Solar Farm will be fully dismantled and removed during decommissioning, unless otherwise agreed with the landowner or required for future use.

The racking systems, composed primarily of galvanised steel or aluminium, will be disassembled into manageable sections. Materials will be sorted on-site for recycling or reuse and transported to authorised facilities in accordance with waste regulations.

Fence lines, including perimeter and internal fencing, will also be dismantled. Where fence posts have been embedded in the ground, these will be carefully extracted to avoid unnecessary disturbance of the surrounding soil. Where fencing has been replaced or reinforced during operation and is deemed useful for continued agricultural or security purposes, it may be left in place at the discretion of the landowner or by agreement with the planning authority.

All non-recyclable components will be removed from site and disposed of through licensed waste contractors. Temporary fencing used during construction or maintenance activities will also be dismantled and removed.

5.5. Foundations and Concrete Slabs

All concrete elements installed as part of the Kilmeaden Solar Farm will be fully removed during the decommissioning process. This includes individual footings used to support the photovoltaic module structures, as well as structural concrete slabs associated with transformer cabins, inverter stations and other fixed electrical equipment.

Foundations and pads will be excavated to a depth of one metre. Reinforced concrete slabs beneath technical cabins will be broken up and removed entirely. All clean concrete

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will be either crushed on-site or transported to a licenced recycling facility, depending on material quality and the availability of appropriate infrastructure.

Where feasible, recovered aggregates may be repurposed in accordance with national waste recovery guidelines. Excavated areas will be refilled with suitable subgrade material, compacted to match surrounding conditions, and covered with topsoil to restore the site to its original profile.

Appropriate precautions will be taken during removal works to minimise soil disturbance and maintain the overall structural integrity of the surrounding land. Final ground conditions will support re-vegetation or a return to agricultural use, in line with planning and environmental requirements.

In the event that the solar farm remains in operation beyond the 30-year period, through the progressive replacement of modules and targeted upgrades of electrical systems, the existing support structures and concrete foundations, including slabs, may remain in place, provided they are found to be in structurally sound condition. To confirm their suitability for continued use, site investigations and trial pits would be required at representative locations to assess their structural integrity and load-bearing capacity in accordance with applicable standards. If confirmed, these elements would not need to be removed and could form part of an upgraded or repowered installation for extended operation.

5.6. Access tracks

All access tracks constructed for the operation and maintenance of the Kilmeaden Solar Farm will be removed during decommissioning, unless their continued use is requested by the landowner or deemed necessary for ongoing agricultural or site management purposes.

Track surfaces, including any imported stone, compacted layers or road base materials, will be stripped and removed from site. Geotextile membranes laid beneath the access tracks will also be excavated and taken to authorised waste facilities.

In areas where the soil has become compacted due to prolonged use of heavy vehicles or construction equipment, decompaction will be carried out using suitable agricultural or civil engineering machinery. This will help to restore normal infiltration rates and soil structure for future cultivation or ecological recovery.

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Once decompacted, the access routes will be backfilled and reprofiled where necessary, and topsoil will be re-spread to blend with the surrounding landscape. Final restoration will allow the land to return to its previous use, typically pasture or arable farming, without long-term impacts to soil productivity.

Should the solar farm remain in operation beyond 30 years, and if the site layout is retained, some internal access routes may be maintained for continued maintenance and inspection of the repowered system.

5.7. Site Restoration Process

Following the removal of all solar infrastructure, the Kilmeaden site will undergo full restoration to return the land to a condition suitable for its former agricultural use or similar rural purposes.

All areas disturbed during decommissioning will be assessed and, where necessary, decompacted to alleviate soil compaction caused by construction and long-term operation. Subsoil and topsoil will be reprofiled to match the original ground levels, using stored or imported material if required.

Topsoil will be re-spread across the site and prepared for revegetation. Where pasture or crop land previously existed, appropriate grass or cover seed mixes will be sown in accordance with agricultural best practices. In environmentally sensitive areas, native seed mixes may be used in consultation with an ecological advisor.

Erosion control measures will be implemented as needed, including mulching, sediment barriers or temporary stabilisation to prevent runoff. Weed control may also be applied during the early stages of land recovery to promote healthy vegetation cover.

Monitoring may be carried out in the months following restoration to assess regrowth and confirm that the site stabilises without adverse environmental impacts.

Should the project be repowered and continue in operation beyond the initial 30-year lifespan, site restoration will be limited to non-retained areas and deferred for the remaining infrastructure until its final decommissioning phase.

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6. Conclusion

This Decommissioning Plan sets out a comprehensive and realistic framework for the safe, controlled and environmentally responsible removal of the Kilmeaden Solar Farm infrastructure at the end of its operational life.

The Plan takes full account of national and EU environmental standards, current best practices in waste management and recycling, and the future potential for site restoration to agricultural use or other appropriate rural purposes. Where possible, valuable materials such as aluminium, copper, glass and silicon will be recovered and directed to certified recycling facilities, in line with circular economy principles.

It is particularly significant that the plan also recognises the potential to extend the operational life of the installation through the replacement of photovoltaic modules and targeted upgrades to existing infrastructure. In such a scenario, decommissioning would be postponed and adapted to reflect the conditions of a repowered facility.

This approach not only meets technical and operational criteria, but also introduces a forward-looking perspective on the life-cycle management of renewable energy infrastructure, where the plant itself becomes a reusable asset. In doing so, it goes beyond current decommissioning standards and aligns fully with the strategic objectives of both the European Union and the Government of Ireland in the areas of sustainability, resource recovery and the transition to a low-carbon energy system. This vision reinforces the applicant's commitment to a responsible, circular and future-oriented model of energy development, consistent with long-term climate and environmental goals at national and European level.

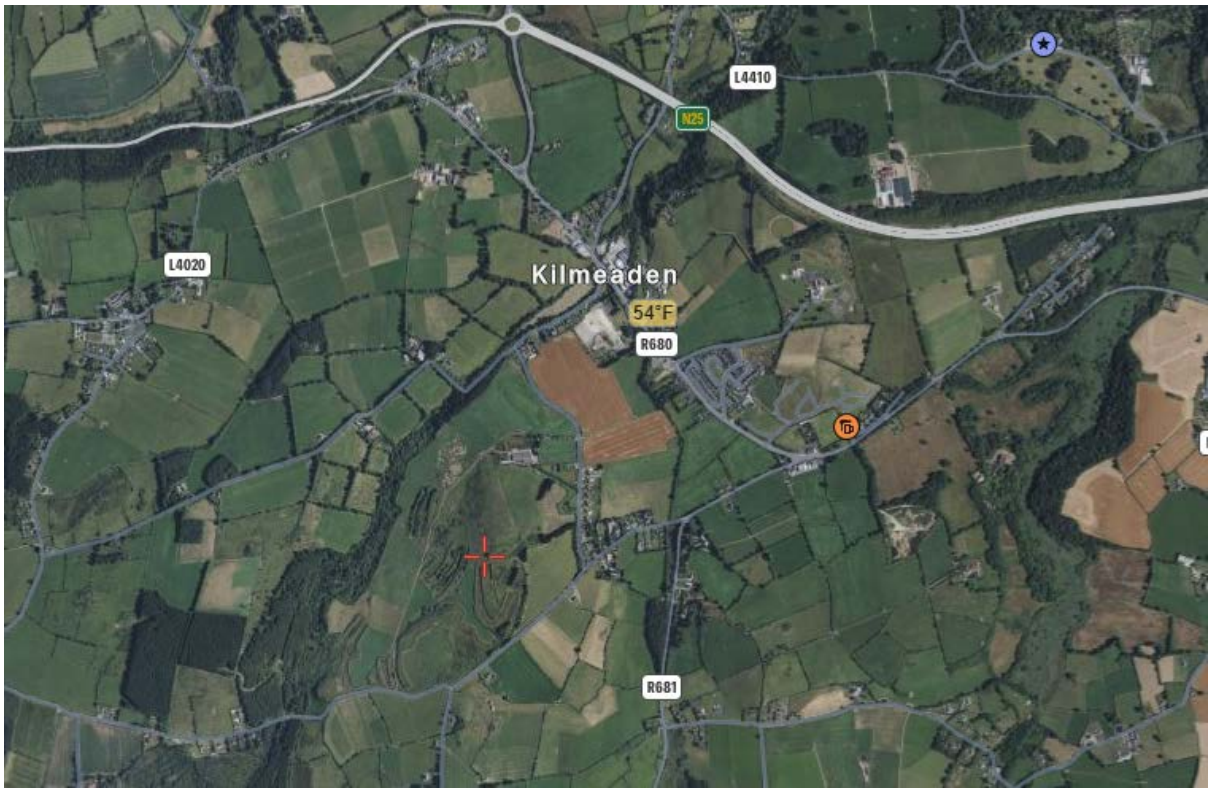
Through the measures described in this document, the applicant demonstrates a clear commitment to responsible land use, environmental protection and long-term planning compliance. The proposed works will ensure that the land is left in a safe, stable and productive condition with no lasting environmental impact.

This Decommissioning Plan is therefore submitted to the Planning Authority as a robust, adaptable and environmentally sound strategy for the future management of the Kilmeaden Solar Farm.

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Appendix 1. Site Location and Layout Plan

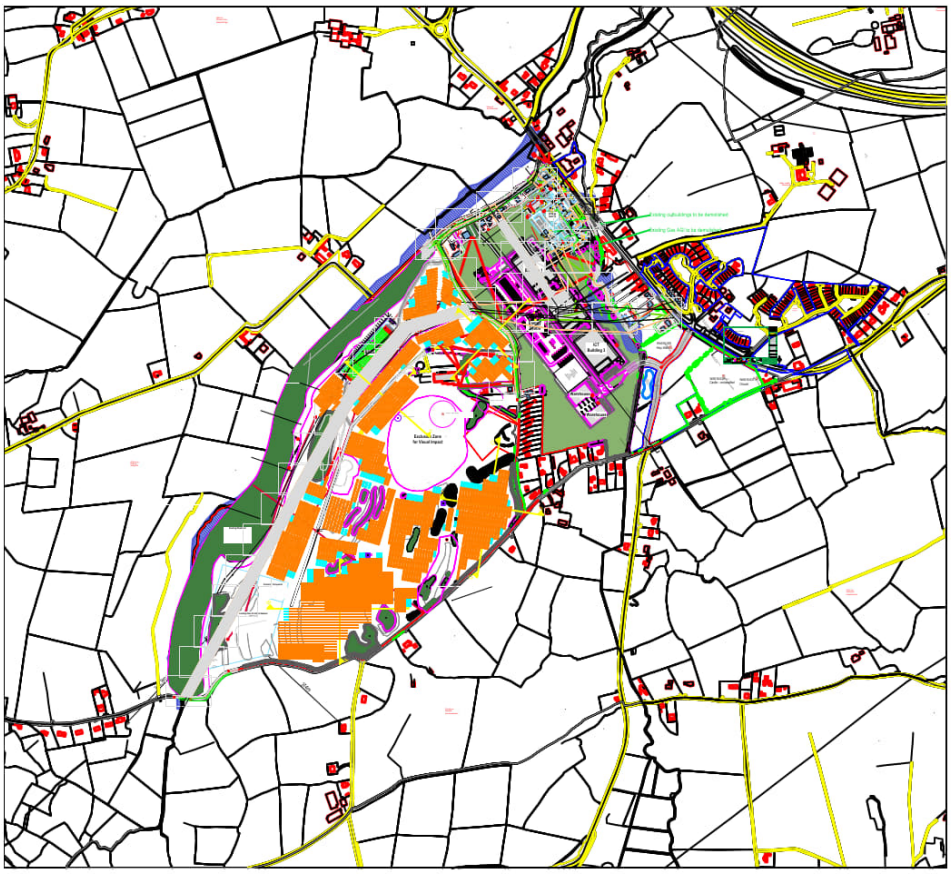
Site Location Plan



Site Location

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Layout Plan



TOTAL PANELS: 43,056 panels
TOTAL Power: 690 x 43,056= 29.71 MWp

Layout

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Appendix 2. Breakdown of Decommissioning Costs

Since the restoration of the land will take place in 30 years, it is not possible to determine a cost for it over such a long period. Just before these works are carried out, if the Council deems it appropriate and in accordance with the legislation in force at that time, a detailed cost analysis will be provided.

APPENDIX 5.1

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NRA/TII Criteria for Rating the Magnitude and Significance of Soils and Geological Impacts at EIA Stage National Roads Authority

NRA/TII, 2009

Table 1 Criteria for rating site Attributes – Estimation of Importance of Soil and Geology Attributes (NRA)

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Importance	Criteria	Typical Examples
Very High	Attribute has a high quality, significance or value on a regional or national scale Degree or extent of soil contamination is significant on a national or regional scale Volume of peat and/or soft organic soil underlying route is significant on a national or regional scale*	Geological feature rare on a regional or national scale (NHA) Large existing quarry or pit Proven economically extractable mineral resource
High	Attribute has a high quality, significance or value on a local scale. Degree or extent of soil contamination is significant on a local scale. Volume of peat and/or soft organic soil underlying route is significant on a local scale. *	Contaminated soil on site with previous heavy industrial usage Large recent landfill site for mixed wastes Geological feature of high value on a local scale (County Geological Site) Well drained and/or high fertility soils Moderately sized existing quarry or pit Marginally economic extractable mineral resource
Medium	Attribute has a medium quality, significance or value on a local scale Degree or extent of soil contamination is moderate on a local scale Volume of peat and/or soft organic soil underlying route is moderate on a local scale*	Contaminated soil on site with previous light industrial usage Small recent landfill site for mixed wastes Moderately drained and/or moderate fertility soils Small existing quarry or pit Sub-economic extractable mineral resource
Low	Attribute has a low quality, significance or value on a local scale Degree or extent of soil contamination is minor on a local scale. Volume of peat and/or soft organic soil underlying route is small on a local scale*	Large historical and/or recent site for construction and demolition wastes. Small historical and/or recent landfill site for construction and demolition wastes. Poorly drained and/or low fertility soils. Uneconomically extractable mineral resource.

** relative to the total volume of inert soil disposed of and/or recovered*
Source: Box 4.1: 'Guidelines on Procedures for Assessment and Treatment of Geology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 2 Criteria for Rating Impact Significance at EIA Stage - Estimation Of Magnitude of Impact on Soil / Geology Attribute (NRA)

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Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute	Loss of high proportion of future quarry or pit reserves Irreversible loss of high proportion of local high fertility soils Removal of entirety of geological heritage feature Requirement to excavate / remediate entire waste site Requirement to excavate and replace high proportion of peat, organic soils and/or soft mineral soils beneath alignment
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Loss of moderate proportion of future quarry or pit reserves Removal of part of geological heritage feature Irreversible loss of moderate proportion of local high fertility soils Requirement to excavate / remediate significant proportion of waste site Requirement to excavate and replace moderate proportion of peat, organic soils and/or soft mineral soils beneath alignment
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Loss of small proportion of future quarry or pit reserves Removal of small part of geological heritage feature Irreversible loss of small proportion of local high fertility soils and/or high proportion of local low fertility soils Requirement to excavate / remediate small proportion of waste site Requirement to excavate and replace small proportion of peat, organic soils and/or soft mineral soils beneath alignment
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	No measurable changes in attributes
Minor Beneficial	Results in minor improvement of attribute quality	Minor enhancement of geological heritage feature
Moderate Beneficial	Results in moderate improvement of attribute quality	Moderate enhancement of geological heritage feature
Major Beneficial	Results in major improvement of attribute quality	Major enhancement of geological heritage feature

Source: Box 5.1: 'Guidelines on Procedures for Assessment and Treatment of Geology, for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 3 Rating of Significant Environmental Impacts at EIA Stage (NRA)

Importance of Attribute	Magnitude of Importance			
	Negligible	Small Adverse	Moderate Adverse	Large Adverse
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant/moderate	Profound/Significant	Profound
High	Imperceptible	Moderate/Slight	Significant/moderate	Profound/Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/Moderate

Source: Box 5.4: Guidelines on Procedures for Assessment and Treatment of Geology for National Road Schemes' by the National Roads Authority (NRA, 2009)

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APPENDIX 6.1

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NRA/TII Criteria for Rating the Magnitude and Significance of Hydrogeological Impacts at EIA Stage National Roads Authority

NRA/TII, 2009

Table 1 Criteria for rating Site Attributes - Estimation of Importance of Hydrogeology Attributes (NRA)

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Magnitude of Impact	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	Groundwater supports river, wetland or surface water body ecosystem protected by EU legislation e.g. SAC or SPA status
Very High	Attribute has a high quality or value on a regional or national scale	Regionally Important Aquifer with multiple well fields Groundwater supports river, wetland or surface water body ecosystem protected by national legislation – NHA status Regionally important potable water source supplying >2500 homes Inner source protection area for
High	Attribute has a high quality or value on a local scale	Regionally Important Aquifer Groundwater provides large proportion of baseflow to local rivers Locally important potable water source supplying >1000 homes Outer source protection area for regionally important water source Inner source protection area for locally important water source
Medium	Attribute has a medium quality or value on a local scale	Locally Important Aquifer Potable water source supplying >50 homes Outer source protection area for locally important water source
Low	Attribute has a low quality or value on a local scale	Poor Bedrock Aquifer Potable water source supplying <50 homes

Source: Box 4.3: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 2 Criteria for Rating Impact Significance at EIS Stage – Estimation of Magnitude of Impact on Hydrogeology Attribute (NRA)

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Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute and /or quality and integrity of attribute	Removal of large proportion of aquifer. Changes to aquifer or unsaturated zone resulting in extensive change to existing water supply springs and wells, river baseflow or ecosystems. Potential high risk of pollution to groundwater from routine run- off. [1] Calculated risk of serious pollution incident >2% annually. [2]
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Removal of moderate proportion of aquifer. Changes to aquifer or unsaturated zone resulting in moderate change to existing water supply springs and wells, river baseflow or ecosystems. Potential medium risk of pollution to groundwater from routine run-off. [1] Calculated risk of serious pollution incident >1% annually. [2]
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Removal of small proportion of aquifer. Changes to aquifer or unsaturated zone resulting in minor change to water supply springs and wells, river baseflow or ecosystems. Potential low risk of pollution to groundwater from routine run- off. [1] Calculated risk of serious pollution incident >0.5% annually. [2]
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Calculated risk of serious pollution incident <0.5% annually. [2]

1 refer to Annex 1, Method C, Annex 1 of HA216/06
2 refer to Appendix B3 / Annex 1, Method D, Annex 1 of HA216/06

Source: Box 5.3: 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the National Roads Authority (NRA, 2009)

Table 3 Rating of Significant Environmental Impacts at EIA Stage (NRA)

Importance of Attribute	Magnitude of Importance			
	Negligible	**Small Adverse**	**Moderate Adverse**	**Large Adverse**
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant/moderate	Profound/Significant	Profound
High	Imperceptible	Moderate/Slight	Significant/moderate	Profound/Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/Moderate

Source: Box 5.4: Guidelines on Procedures for Assessment and Treatment of Geology for National Road Schemes' by the National Roads Authority (NRA, 2009)

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APPENDIX 6.2

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NRA/TII Criteria for Rating the Magnitude and Significance of Hydrological Impacts at EIA Stage National Roads Authority

NRA/TII, 2009

Table 1 Criteria for Rating Site Attributes – Estimation of Importance of Hydrological Attributes (NRA)

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Importance	Criteria	Typical Examples
Extremely High	Attribute has a high quality or value on an international scale	River, wetland or surface water body ecosystem protected by EU legislation e.g. 'European sites' designated under the Habitats Regulations or 'Salmonid waters' designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988.
Very High	Attribute has a high quality or value on a regional or national scale	River, wetland or surface water body ecosystem protected by national legislation – NHA status. Regionally important potable water source supplying >2500 homes. Quality Class A (Biotic Index Q4, Q5). Flood plain protecting more than 50 residential or commercial properties from flooding. Nationally important amenity site for wide range of leisure activities.
High	Attribute has a high quality or value on a local scale	Salmon fishery. Locally important potable water source supplying >1000 homes. Quality Class B (Biotic Index Q3-4). Flood plain protecting between 5 and 50 residential or commercial properties from flooding. Locally important amenity site for wide range of leisure activities.
Medium	Attribute has a medium quality or value on a local scale	Coarse fishery. Local potable water source supplying >50 homes. Quality Class C (Biotic Index Q3, Q2- 3). Flood plain protecting between 1 and 5 residential or commercial properties from flooding.
Low	Attribute has a low quality or value on a local scale	Locally important amenity site for small range of leisure activities. Local potable water source supplying <50 homes Quality Class D (Biotic Index Q2, Q1). Flood plain protecting 1 residential or commercial property from flooding.

Importance	Criteria	Typical Examples
		Amenity site used by small numbers of local people.

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Table 2 Criteria for Rating Site Attributes – Estimation of Magnitude of Impact on Hydrological Attribute (NRA)

Magnitude of Impact	Criteria	Typical Examples
Large Adverse	Results in loss of attribute	Loss or extensive change to a waterbody or water dependent habitat. Increase in predicted peak flood level >100mm. Extensive loss of fishery. Calculated risk of serious pollution incident >2% annually. Extensive reduction in amenity value.
Moderate Adverse	Results in impact on integrity of attribute or loss of part of attribute	Increase in predicted peak flood level >50mm. Partial loss of fishery. Calculated risk of serious pollution incident >1% annually. Partial reduction in amenity value.
Small Adverse	Results in minor impact on integrity of attribute or loss of small part of attribute	Increase in predicted peak flood level >10mm. Minor loss of fishery. Calculated risk of serious pollution incident >0.5% annually. Slight reduction in amenity value.

Magnitude of Impact	Criteria	Typical Examples
Negligible	Results in an impact on attribute but of insufficient magnitude to affect either use or integrity	Negligible change in predicted peak flood level. Calculated risk of serious pollution incident <0.5% annually.
Minor Beneficial	Results in minor improvement of attribute quality	Reduction in predicted peak flood level >10mm. Calculated reduction in pollution risk of 50% or more where existing risk is <1% annually.
Moderate Beneficial	Results in moderate improvement of attribute quality	Reduction in predicted peak flood level >50mm. Calculated reduction in pollution risk of 50% or more where existing risk is >1% annually.
Major Beneficial	Results in major improvement of attribute quality	Reduction in predicted peak flood level >100mm

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Table 3 Rating of Significant Environmental Impacts at EIS Stage (NRA)

Importance of Attribute	Magnitude of Importance			
	Negligible	Small Adverse	Moderate Adverse	Large Adverse
Extremely High	Imperceptible	Significant	Profound	Profound
Very High	Imperceptible	Significant/moderate	Profound/Significant	Profound
High	Imperceptible	Moderate/Slight	Significant/moderate	Profound/Significant
Medium	Imperceptible	Slight	Moderate	Significant
Low	Imperceptible	Imperceptible	Slight	Slight/Moderate

APPENDIX 6.3

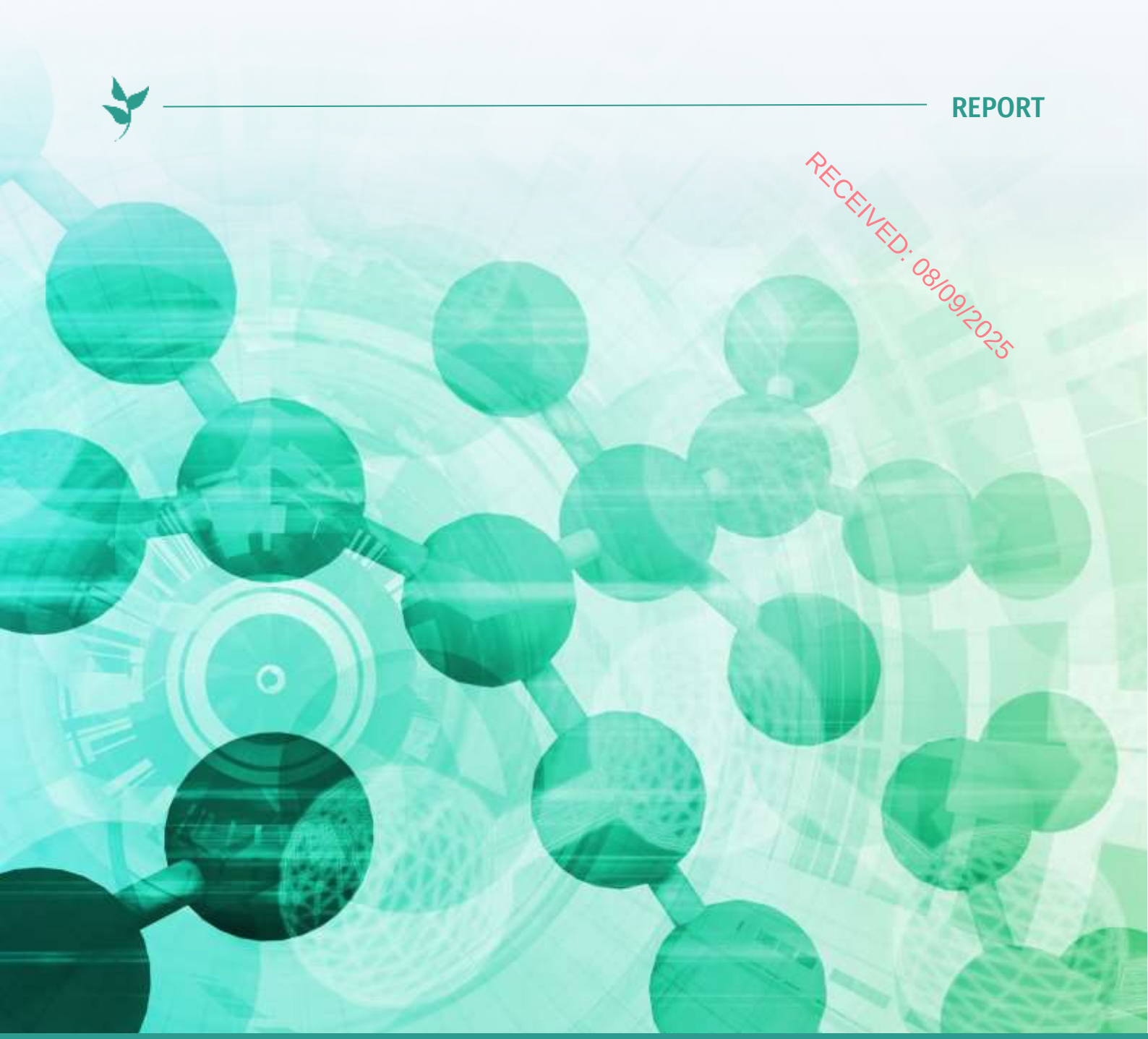
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Water Framework Directive Assessment

AWN, 2025

REPORT

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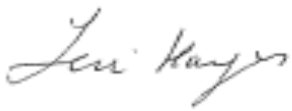
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DOCUMENT CONTROL SHEET

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Signature		
Name	Alan Wilson	Teri Hayes
Title	Environmental Consultant	Director (Water Services)
Date	02/08/2025	

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1. INTRODUCTION

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1.1 OBJECTIVE OF ASSESSMENT

AWN Consulting Limited (AWN) has prepared this Water Framework Directive (WFD) Screening Assessment to support the competent authority, in determining if there is a likelihood of significant effects on the Water Framework status of the receiving waterbodies as a result of the proposed development. The proposed development comprises four distinct but connected areas including a new village centre, a solar farm and rewilding area including grid scale battery storage, and a data centre with associated energy centre (the "proposed development") for a proposed single data centre. The proposed development location lies to the south of the R680, within the townlands of Ballyduff east, Amberhill and Blackknock, Co Waterford

This WFD Screening Assessment has been prepared in response to the requirements of the Water Framework Directive 2000/60/EC and is provided to support the Environmental Impact Assessment Screening Report (EIAR) and should, therefore, be read together with this report.

The objective of the assessment is to address the following:

- Does the development cause deterioration of a water body from its current status or impede its potential for reaching "Good" status?
- Does the development impact on any water dependent protected areas, priority species, habitats etc.?
- Does the development support the achievement of water body objectives and programme of measures?

The surface water assessment and groundwater assessment both examine the potential effects of the proposed development, which includes the construction and operation of the proposed development.

1.2 SITE SETTING AND HISTORY

The proposed development is located in Kilmeadan, Co Waterford and comprises four distinct but connected areas including a new village centre, a solar farm and rewilding area including grid scale battery storage, and a data centre with associated energy centre (the "proposed development"). The proposed development location lies to the south of the R680, within the townlands of Ballyduff east, Amberhill and Blackknock, Co Waterford.

The site is surrounded primarily by agricultural land to the north south and west and is bounded by Kilmeaden village to the east.

The approximate topographical levels for the proposed site range between 89.0mAOD to 15.0mAOD. The site containing a hill known as the Blackknock Hill with the highest point of 89.0mAoD in the centre and the lowest point 15mAoD to the northeast where the main entrance to the old Cheese Factory is located. The site slopes to the north-east towards the Whelanbridge Trib 1 (European Code: IE_SE_16W010400) and south-west towards the Whelanbridge River (European Code: IE_SE_16W010400).

The entire area was greenfield until 1965 when the 'Kilmeaden Cheddar Cheese' factory was constructed and comprised the main factory building in the eastern portion of site which included the cheese production area, boiler house fuelled by natural gas and offices. The raw milk intake silos for this factory were located to the south of the building with an associated truck wash area. Cheese production was carried out at the 'Cheddar Cheese' factory from 1965 to 2005.

The facility was expanded in 1988 with the construction of the two-story building for the 'Continental Cheese' factory in the western portion of the site which was operational for cheese

production from 1988 to 2005. This factory included a cheese production area, cheese treatment and storage areas, chemical stores and brine storage tanks.

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Surface run-off from the paved non-production areas of the factory was collected and discharged to the Whelanbridge Trib 1 (formerly referred to as the Loughdeheen Stream), run-off from production areas was collected together with process effluent and pumped to the off-site ICW and farm area to the west of the site. The effluent was disposed of via an irrigation system on the greenfield portion of the site and off-site farm from 1966 to 1997. The ICW was developed in 1997 and was fully operational in 2001 and used for effluent treatment and disposal in accordance with standard best practice at the time until 2005 when production at the facility ceased.

Upon review of historical 6 inch first edition, 6 inch last edition and 25 inch Cassini map, 3 no. springs were identified in the immediate vicinity of the site. There is 1 no. spring located adjacent to the south-eastern boundary of the site located near the R681 regional road, c. 310m and c. 420m south-west of the existing factory building and immediately south and north of the Whelanbridge River, respectively.

A review of Aerial maps from 1995 to 2013 revealed that the land use hasn't changed since 1995 (OSI, 2025).

1.3 EXPERIENCE OF AUTHORS

This report was prepared by Alan Wilson (BSc) and Teri Hayes ((BSc MSc PGeol EurGeol, Adv Dip in Environmental & Planning Law). Alan Wilson is an Environmental Consultant at AWN. Alan holds a BSc Honours in Environmental Management in Agriculture/ Environmental and Geographical Sciences. Alan has worked on a range of large scale projects involving EIA reports, site specific flood risk assessments, baseline studies, hydrological and hydrogeological risk assessments, environmental due diligences, site investigations and groundwater, surface water and soil monitoring on various operational developments and greenfield and brownfield sites. Alan also has previous experience as an Environmental Consultant in Ecology and Forestry related work. Alan is a member of the International Association of Hydrogeologists (IAH) Irish Group.

Teri Hayes (BSc MSc PGeol EurGeol, Dip Env & Planning Law) is a Director and Senior Hydrogeologist with AWN Consulting with over 30 years of experience in water resource management, environmental assessment and environmental licensing. Teri is a former President of The International Association of Hydrogeologists (IAH, Irish Group) and is a professional member of the Institute of Geologists of Ireland (IGI) and European Federation of Geologists (EurGeol). She has qualified as a competent person for contaminated land assessment as required by the IGI and EPA. Her project experience includes contributions to a wide range of complex Environmental Impact Statements, planning applications and environmental reports for Industry Infrastructure and residential developments. Teri's specialist area of expertise is water resource management, eco-hydrogeology, hydrological assessment and environmental impact assessment.

1.4 LEGISLATION AND GUIDANCE

The Water Framework Directive (WFD) 2000/60/EC aims to protect and enhance the quality of the water environment (both surface water and groundwater) across all European Union member states.

The concept of 'deterioration of the status' of a body of surface water in Article 4(1)(a)(i) of Directive 2000/60 must be interpreted as meaning that there is deterioration as soon as the status of at least one of the quality elements, within the meaning of Annex V to the directive, falls by one class, even if that fall does not result in a fall in classification of the body of the surface water as a whole. However, if the quality element concerned, within the meaning of that annex, is already

in the lowest class, any deterioration of that element constitutes a 'deterioration of the status' of a body of surface water, within the meaning of Article 4(1)(a)(i).

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As part of its role, the EPA and other stakeholders such as local authorities must consider whether proposals for new developments (other than where exemptions apply Article 4.4 - 4.7 of the WFD) have the potential to:

- Cause a deterioration of a water body from its current status or potential; and/ or
- Prevent future attainment of good status or potential where not already achieved.

As a result, new developments that have the potential to impact on current or predicted WFD status are required to assess their compliance against the WFD objectives of the potentially affected water bodies.

The WFD is implemented through River Basin Management Plans (RBMPs) in six-year cycles. We are currently in WFD third cycle 2022-2027 i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government & Heritage, Sept 2024).

The primary aim of the RBMP is that water bodies identified as being 'At Risk' of not achieving their environmental objectives need to have targeted measures implemented to achieve objectives under this Plan. The Water Action Plan 2024 has been reviewed in the context of ensuring mitigation measures comply with current and expected future measures required to be implemented for protection of water body status within the context of the proposed development.

1.5 METHODOLOGY

This WFD assessment was based on desktop review of the Environmental Protection Agency (EPA) dataset which was obtained from the portal www.catchments.ie (accessed October 2024).

The water bodies identified for this assessment are related to the vicinity of the proposed construction area and its direct or indirect hydrological or hydrogeological connection. From the aforementioned source of information, the WFD Status classification and Risk score were obtained for the identified water bodies.

1.5.1 WFD Risk Status

The WFD Risk score is the risk for each waterbody of failing to meet their WFD objectives by 2027. The risk of not meeting WFD objectives has been determined by assessment of monitoring data, data on the pressures and data on the measures that have been implemented. Waterbodies that are At Risk are prioritised for implementation of measures. This assessment was completed in 2020 by the EPA Catchments Unit in conjunction with other public bodies and was primarily based on monitoring data up the end of 2018.

The three risk categories are:

- Waterbodies that are 'At Risk' of not meeting their Water Framework Directive objectives. For these waterbodies an evidence-based process was undertaken to identify the significant pressures; once a pressure is designated as 'significant', measures and accompanying resources are needed to mitigate the impact(s) from this pressure. These 'At Risk' waterbodies require not only implementation of the existing measures described in the various regulations, e.g., the Good Agricultural Practices Regulations, but also in many instances more targeted supplementary measures that may have to be taken by a variety of actors, in both the public and private sector.
- Waterbodies that are categorised as 'Review' either because additional information is needed to determine their status before resources and more targeted measures are initiated or the

measures have been undertaken, e.g., a wastewater treatment plant upgrade, but the outcome hasn't yet been measured/monitored.

- Waterbodies that are 'Not at Risk' and therefore are meeting their Water Framework Directive objectives. These require maintenance of existing measures to protect the satisfactory status of the water bodies.

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1.5.2 WFD Water Body Status

Surface water body status is classified on the basis of chemical and ecological status or potential. This system is summarised in Appendix B Figure 1. Under the WFD, groundwater body status is classified on the basis of quantitative and chemical status. This system is summarised in Appendix B Figure 2.

1.5.3 Methodology for Determination of No Deterioration Assessment

Proposed developments that have the potential to impact on current or predicted WFD status are required to assess their compliance against the objectives defined for potentially affected water bodies.

1.5.4 Surface Water No Deterioration Assessment

Table 1-1 below presents the matrix used to assess the effect of the proposed development on surface water status or potential class. It ranges from a major beneficial effect (i.e., a positive change in overall WFD status) through no effect to deterioration in overall status class. The colour coding used in Table 2-1 is applied to the No Deterioration Assessment' spreadsheet provided in Appendix A of this report.

Table 1-1 Surface Water Assessment Matrix

Effect	Description/ Criteria	Outcome
Major Beneficial	Impacts that taken on their own or in combination with others have the potential to lead to the improvement in the ecological status or potential of a WFD quality element for the entire waterbody	Increase in status of one or more WFD element giving rise to a predicted rise in status class for that waterbody.
Minor/ localised beneficial	Impacts when taken on their own or in combination with others have the potential to lead to a minor localised or temporary improvement that does not affect the overall WFD status of the waterbody or any quality elements	Localised improvement, no change in status of WFD element
No Impact	No measurable change to any quality elements.	No change
Localised / temporary adverse effect	Impacts when taken on their own or in combination with others have the potential to lead to a minor localised or temporary deterioration that does not affect the overall WFD status of the waterbody or any quality elements. Consideration will be given to habitat creation measures.	Localised deterioration, no change in status of WFD element when balanced against mitigation measures embedded in the project.

Adverse effect on class of WFD element	Impacts when taken on their own or in combination with others have the potential to lead to the deterioration in the WFD status class of one or more biological quality elements, but not in the overall status of the waterbody. Consideration will be given to habitat creation measures.	Decrease in status of WFD element when balanced against positive measures embedded in the project.
Adverse effect on overall WFD class of waterbody	Impacts when taken on their own or in combination with others have the potential to lead to the deterioration in the ecological status or potential of a WFD quality element, which then lead to a deterioration of status/potential of waterbody.	Decrease in status of overall WFD waterbody status when balanced against positive measures embedded in the project.

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1.5.5 Groundwater No Deterioration Assessment

Table 1.2 below presents the matrix used to assess the effect of the proposed development on groundwater status class. It ranges from a beneficial effect but no change in status to deterioration in overall status class. The colour coding used in Table 2.2 is applied to the final 'No Deterioration Assessment' spreadsheet in Appendix A of this report.

Table 1-2 Groundwater Assessment Matrix

Magnitude of Impact of the proposed development on WFD Element	**Effect on WFD Element within the assessment boundary**	**Effect on Status of WFD element at the Groundwater Body Scale**
Impacts lead to beneficial effect	Combined impacts have the potential to have a beneficial effect on the WFD element.	Improvement but no change to status of WFD element
No measurable change to groundwater levels or quality.	No measurable change to WFD elements.	No change and no deterioration in status of WFD element
Impacts when taken on their own have the potential to lead to a minor localised or temporary effect	Combined impacts have the potential to lead to a minor localised or temporary adverse effect on the WFD element.	Combined impacts have the potential to lead to a minor localised or temporary effect on the WFD element. No change to status of WFD element and no significant deterioration at groundwater body scale.
Impacts when taken on their own have the potential to lead to a widespread or prolonged effect.	Combined impacts have the potential to have an adverse effect on the WFD element.	Combined impacts have the potential to have an adverse effect on the WFD element, resulting in significant deterioration but no change in status class at groundwater body scale.

Impacts when taken on their own have the potential to lead to a significant effect.	Combined impacts in combination with others have the potential to have a significant adverse effect on the WFD element.	Combined impacts in combination with others have the potential to have an adverse effect on the WFD element AND change its status at the groundwater body scale

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1.5.6 Assessment against Future Status Objectives

River Basin Management Plans are used to outline water body pressures and the actions that are required to address them. The future status objective assessment considers the ecological potential of a surface water body and the mitigation measures that defined the ecological potential. Assessments are based on the project (including mitigation measures) risks (construction and operation) with regard to the objectives for achieving good status as set out in the 3rd Cycle RBMP 2022-2027 i.e. Water Action Plan 2024. The assessment considers whether the proposed development has the potential to prevent the implementation or impact the effectiveness of the defined measures to achieve the objectives in these plans.

1.6 SOURCES OF INFORMATION

Desk-based hydrological and hydrogeological information in the vicinity of the site was obtained through accessing databases and other archives where available. Data was sourced from the following:

- Geological Survey of Ireland- online mapping (GSI, 2025).
- GSI - Geological Heritage Sites & Sites of Special Scientific Interest.
- Ordnance Survey of Ireland (OSI).
- Teagasc subsoil database.
- National Parks and Wildlife services (NPWS, 2025).
- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area.
- WFD Cycle 2 –Moy & Killala Bay Catchment Report - Sub-Catchment: Abbeystown_010 (EPA, 2019).
- Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government & Heritage, Sept 2024).
- Waterford City and County Development Plan 2022-2028 – Strategic Flood Risk Assessment (SFRA, 2022-2028).
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW).
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)

Site specific data was derived from the following sources:

- Various design site plans and drawings, as submitted with this planning application.
- AtkinsRéalis Ireland Limited Stage 1 Flood Risk Assessment Report (January, 2025).
- AtkinsRéalis Ireland Limited Engineering Report (December, 2024).
- Malone O' Regan (MOR) Environmental Site Assessment Report (December, 2009).
- AtkinsRéalis Ireland Construction Environmental Management Plan
- Various design site plans and drawings; and
- Consultation with design engineers.

Relevant legislation and guidance is as follows:

- European Communities 920030, Common Implementation Strategy for the Water Framework Directives (2000/60/EC) Guidance Document No.2.
- EPA (May 2015), An approach to characterisation as part of the Water Framework Directive V2 revised.
- EPA (2010) Methodology for Establishing Groundwater Threshold Values, the Assessment of Chemical and Quantitative Status for Groundwater and Groundwater Trends.
- Common Implementation Strategy (CIS) (2017) Guidance Document No. 36 'Exemptions to the environmental objectives according to Article 4(7) provides comprehensive guidance on the application of Article 4(7).
- Joint Assistance to Support Projects in European Regions (JASPERS) (2018) Water Framework Directive Project assessment checklist tool.
- UKTAG (2012) Groundwater Chemical Classification for the Water Framework Directive. Paper 11b(i).
- UK Technical Advisory Group on the Water Framework Directive.
- UKTAG (2012) Groundwater Quantitative Classification for the Water Framework Directive. Paper 11b(ii), UK Technical Advisory Group on the Water Framework Directive.
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001).
- CIRIA C648 Control of Water Pollution from Constructional Sites.
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA 2008); and
- Inland Fisheries Ireland (IFI) – A Guideline on Planning for Watercourses in the Urban Environment.

This WFD assessment was based on desktop review of the Environmental Protection agency (EPA) and Local Authority Waters Programme water quality records which were obtained from the portal www.catchments.ie (accessed February 2025). From the aforementioned source of information, the WFD Status classification and Risk score were obtained for the identified water bodies.

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2. DESCRIPTION OF EXISTING HYDROLOGICAL AND HYDROGEOLOGICAL ENVIRONMENT

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2.1 HYDROLOGY

2.1.1 Regional Hydrological Environment

The proposed development site is located within the former Eastern River Basin District (ERBD) (now the Irish River Basin District), as defined under the European Communities Directive 2000/60/EC, establishing a framework for community action in the field of water policy – this is commonly known as the Water Framework Directive (WFD). The proposed development site is located in the South Eastern River Basin District (IESE) (Hydrometric Area No. 16).

The proposed development site lies within the Suir Catchment (Catchment ID: 16) and the Dawn[River]_SC_010 Sub-Catchment (Sub-Catchment ID: 16_7). The current EPA watercourse mapping shows two watercourses flowing adjacent to the proposed development site. The Whelanbridge Trib 1 (European Code: IE_SE_16W010400) is located along the north-eastern boundary, flowing in a northerly direction before discharging to the Whelanbridge River c. 330m north-east (linear distance) and c. 520m downstream of the proposed development site. The Whelanbridge Trib 1 is culverted beneath the R680 regional road which bounds the north-eastern portion of the proposed development site. The Whelanbridge River (European Code: IE_SE_16W010400) flows in a north-easterly direction along the western boundary of the site before its confluence with the Whelanbridge Trib 1. The Whelanbridge River flows north before discharging to the Upper Suir Estuary Transitional Waterbody (European Code: IE_SE_100_0600) c. 1.7km north-east (linear distance) and c. 2.12km downstream. The Upper Suir Estuary Transitional Waterbody is located entirely within the Lower River Suir SAC (Site Code: 002137).

The site comprises multiple fields enclosed and separated by boundaries and internal hedgerows. Site drainage is towards the existing settlement ponds on site and ultimately to the Whelanbridge River (refer to Section 6.3.2.2).

Figure 2-1 below presents the regional hydrological environment as per the latest EPA mapping.



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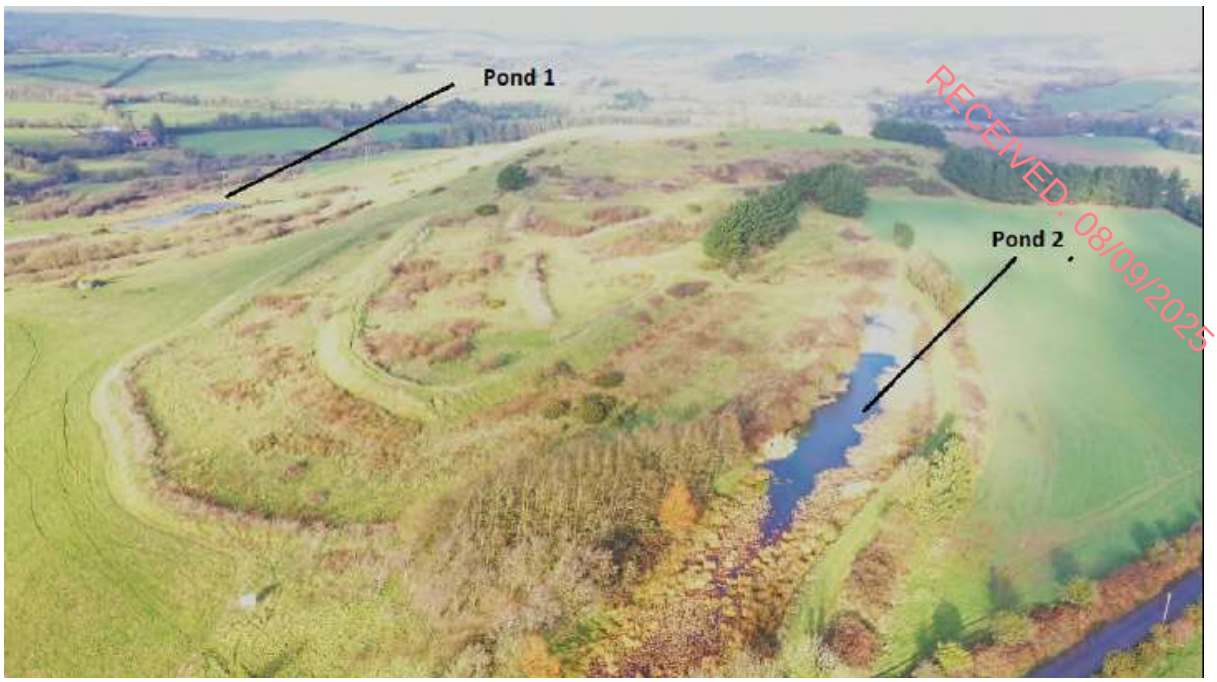
Figure 2-1 Regional Hydrological Environment (EPA, 2025)

2.1.2 Local Hydrological Environment

As stated above, the latest EPA mapping shows two watercourses flowing adjacent to the proposed development site. The Whelanbridge Trib 1 is located along the north-eastern boundary, flowing in a northerly direction before discharging to the Whelanbridge River c. 330m north-east (linear distance) and c. 520m downstream of the proposed development site. The Whelanbridge River is located along the western boundary of the site flowing in a north-easterly direction. The Whelanbridge River originates from the Knockaderry Reservoir located c. 1.38 km south-west (linear distance) and c. 1.6 km upstream of the site.

On site walkovers carried out in September 2024 and January 2025 it was concluded that within the area west of the farm track, there are features associated with the historical management of milk waste products, previously treated through a series of integrated constructed wetlands. Following the closure of the 'Kilmeaden Cheddar Cheese' factory and its relocation to Kilkenny, the functionality of these water management systems has diminished. Over time, many of these ponds have dried out, transitioning into areas dominated by scrub vegetation. However, 2 no. ponds still retain water.

The first pond is situated to the southwest of Blacknock Hill, adjacent to the farm trackway, and is bordered by gorse scrub and improved dry grassland. Observations on January 15th, 2025, indicate that water from this pond was flowing down Blacknock Hill into a previously dry pond, demonstrating overland flow across the field and down the slope into the Whelanbridge River. The second pond is located to the southeast of Blacknock Hill and also contained water during the site walkover on January 15th, 2025. The former settlement ponds to the south and east of the site were dry during initial surveys, but it is possible that they refill following significant rainfall events.



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Figure 2-2 Artificial Ponds and Drainage On Site (FERS, 2025)

2.1.3 Designated Sites

The NPWS (2025) on-line database have been reviewed to determine the location of areas of conservation within proximity to the proposed development site, and there are no Special Protected Areas (SPA) established under the EU Birds Directive (79/409/EEC), or Special Areas of Conservation (SAC) established under the Habitats Directive on or within the boundary of the proposed development site. Furthermore, there are no Natural Heritage Areas (NHA), or proposed Natural Heritage Areas (pNHA) established under the Wildlife Acts, 1976 and 2000 (as amended).

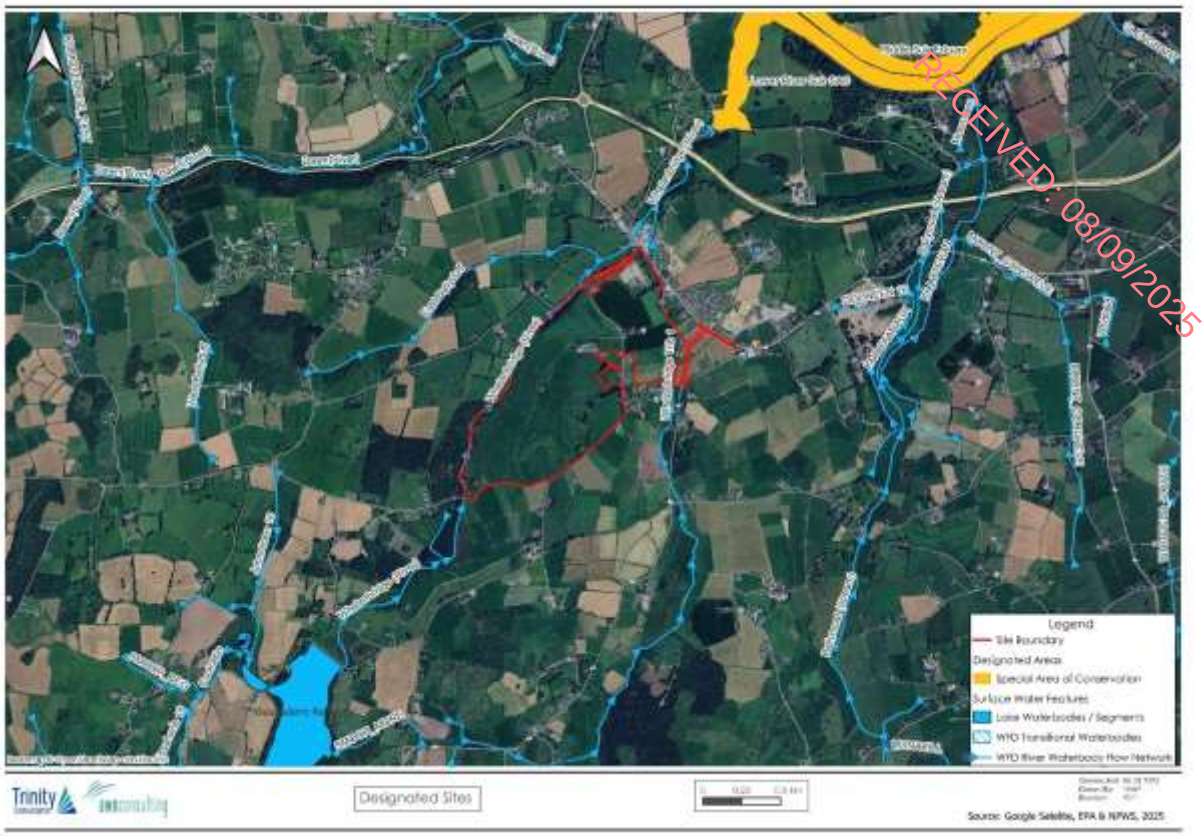
The European site in closest proximity to the proposed development site is as follows:

- Lower River Suir SAC (Site Code: 002137), located c. 915m north-east (linear distance) and c. 1.2km downstream of the proposed development site.

The proposed development site also has a hydrological pathway/connection with the River Barrow and River Nore SAC (Site Code: 002162), located c. 16.7km east (linear distance) and c. >20km downstream which eventually outfalls to Waterford Harbour coastal waterbody (European Code: IE_SE_100_0000).

These are lengthy hydrological pathways allowing significant time for settlement and dilution, should an accidental release (even without mitigation) to surface water occur.

Refer to Figure 2-3 below for locations of these EPA quality monitoring points in the context of the proposed development site.



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Figure 2-3 Designated Sites (NPWS, 2025)

2.1.4 Bathing Waters and Recreational Waterbodies

A review of the Environmental Protection Agency's (EPA) online mapping that includes the Register of Protected Areas (RPA) under the Water Framework Directive (WFD) has shown that there are no Recreational Waters or Bathing Waterbodies located in the vicinity of the site. The nearest bathing waterbody is Tramore Beach (BW ID: IESEBWC110_0000_0100) located >c. 20km south-east of the proposed development site and no hydrological/hydrogeological connection/linkages exist.

2.1.5 Water Supplies

A review of the Environmental Protection Agency's (EPA) online mapping, which includes the Register of Protected Areas (RPA) established under the Water Framework Directive (WFD), indicates that the Whelan's Bridge Stream_010, for which the Whelanbridge Trib 1 and the Whelanbridge River are located within, is situated within a designated Surface Water Drinking RPA. This classification of drinking water river lines has been delineated in accordance with the European Communities (Drinking Water) (No. 2) Regulations 2007 (SI No. 278/2007). This regulatory framework aims to ensure the protection of water resources utilized for human consumption, thus safeguarding public health and the environment.

A review of the EPA's surface water abstraction register (December 2024) identified 3 no. drinking water abstraction points located within the Whelan's Bridge Stream_010 (WAB0000023, L218519, Knockaderry 2), (WAB0001902, L122782, Knockaderry Impoundment) and (WAB0002270, L218752, Knockaderry 1). The Environmental Protection Agency (EPA) was consulted on January 9th, 2024, and the EPA confirmed on January 10th, 2025, that the 3no. drinking water abstraction points are located upstream of the proposed development site.

3. HYDROGEOLOGY

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3.1.1 Groundwater Quality

The Water Framework Directive (WFD) 2000/60/EC was adopted in 2000 as a single piece of legislation covering rivers, lakes, groundwater, transitional (estuarine) and coastal waters. In addition to protecting said waters, its objectives include the attainment of 'Good Status' water bodies that are of lesser status at present and retaining 'Good Status' or better where such status exists at present. 'Good Status' was to be achieved in all waters by 2015, as well as maintaining 'high status' where the status already exists. The EPA co-ordinates the activities of the River Basin Districts, local authorities and state agencies in implementing the directive, and operates a groundwater quality monitoring programme undertaking surveys and studies across the Republic of Ireland.

The groundwater body (GWB) underlying the site is the Waterford Groundwater Body (European Code: IE_SE_G_149), which has been investigated by the GSI and is described as having a 'Productive Fissured Bedrock' aquifer. Based on the most recent data (www.epa.ie), the Waterford GWB for which the site is located entirely within, has a WFD status of "*Good*" (WFD Period: 2016-2021) and a WFD risk score (3rd Cycle) of "*Not at Risk*" of not achieving good status, meaning it has achieved its objectives end the overall status is considered good.

Refer to Figure 3-1 below for the WFD groundwater bodies status (WFD Period: 2016-2021) in the context of the proposed development site.

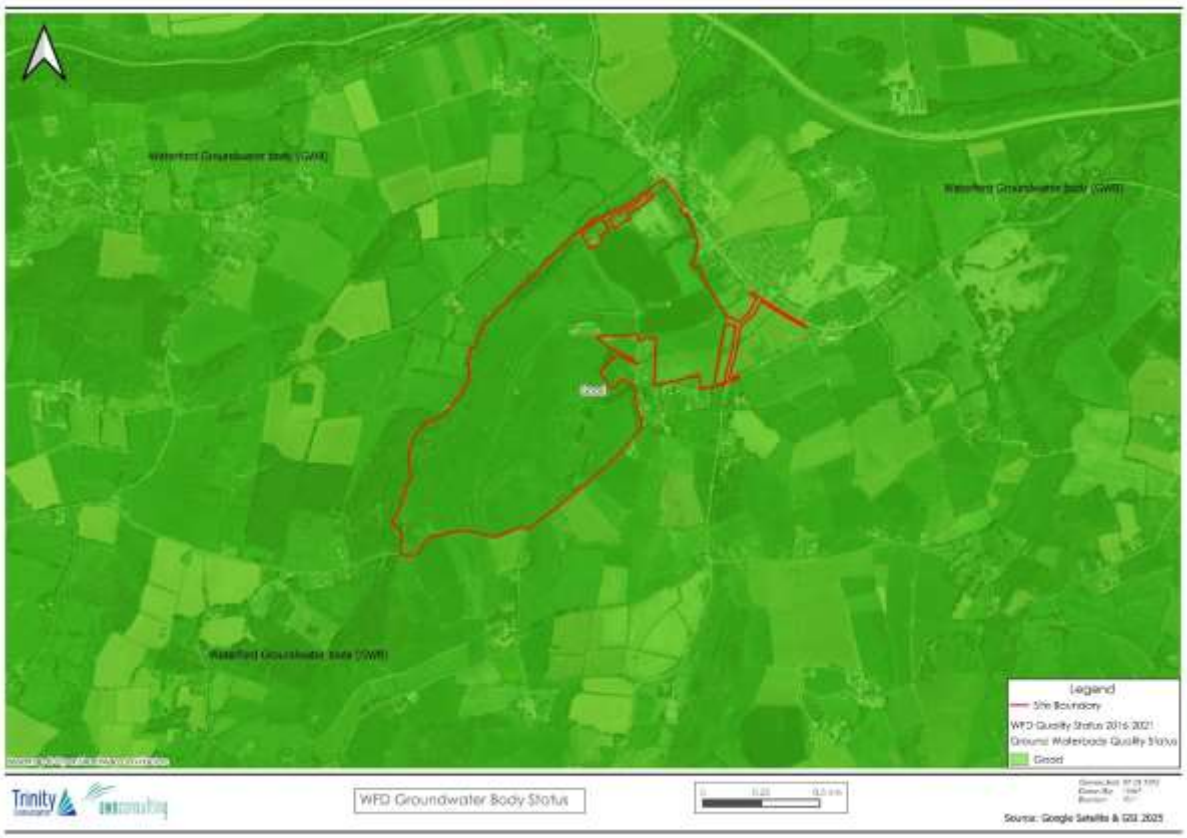


Figure 3-1 WFD Groundwater Bodies Status (GSI, 2025)

There are no recorded Public Supply Source Protection Area or Group Scheme Preliminary Source Protection Areas in the vicinity of the proposed development site. The nearest Group Scheme Preliminary Source Protection area is Ballydurn, located c. 10.7km north-west of the proposed development site. The nearest Public Supply Source Protection area is Kilmacthomas PWS Ballyogarty located c. 10.8km south-west of the proposed development site.

Neither of these areas share a hydrological or hydrogeological connection to the site and are located within separate Sub-Catchments i.e. Clodiagh[Portlaw]_SC_010 (Sub-Catchment ID: 16_17) and Mahon_SC_010 (Sub-Catchment ID: 17_3), respectively.

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3.1.2 Aquifer Classification & Vulnerability

The GSI has devised a system for classifying the bedrock aquifers in Ireland. The aquifer classification for bedrock depends on a number of parameters including, the area extent of the aquifer (km^2), well yield (m^3/d), specific capacity ($m^3/d/m$) and groundwater throughput (mm^3/d). There are three main classifications: regionally important, locally important and poor aquifers. Where an aquifer has been classified as regionally important, it is further subdivided according to the main groundwater flow regime within it. This sub-division includes regionally important fissured aquifers (Rf) and regionally important karstified aquifers (Rk). Locally important aquifers are sub-divided into those that are generally moderately productive (Lm) and those that are generally moderately productive only in local zones (Ll). Similarly, poor aquifers are classed as either generally unproductive except for local zones (Pl) or generally unproductive (Pu).

Presently, from the GSI (2025) National Bedrock Aquifer Map, classifies the bedrock aquifer beneath the subject site as a '*Locally Important Aquifer*' (LI), which is described by the GSI as bedrock as a "*Regionally Important Aquifer – Fissured Bedrock*" (Rf). This aquifer is capable of supplying regionally important supplies (e.g., large public water supplies). Groundwater movement in this category of aquifer is through joints and fractures, rather than through the rock mass.

The GSI/ Teagasc (2025) mapping denotes 2 no. principal soil types occurring across the site, which are identified as follows:

- The northeastern section of the site is underlain by River alluvium with poorly drained mineral soils.
- The southwestern section of the site is underlain by Fine loamy drift with igneous & metamorphic stones with well drained mineral soils.

Based on a review of GSI online mapping, the proposed development is predominantly underlain by tills from acidic volcanic rocks subsoils while the northeastern section of the site is underlain by tills from Devonian sandstone subsoils. Alluvium was identified along the northern and eastern boundary of site in the vicinity of the Whelanbridge River and its tributary. The central and western section of the site is shown to have hilly terrain and its described to be underlain by bedrock outcrop and subcrop.

Groundwater vulnerability is an indication of how easily the aquifer can become contaminated by human activity. It is dependent on the thickness and permeability of the overlying soils and depth to the water table. For example, a bedrock aquifer with minimal thickness of overburden or with a thin layer of permeable overburden will be more vulnerable to contamination than a bedrock aquifer which has a thick layer of low permeability overburden. Extreme groundwater vulnerability is also associated with karst landforms as these are a direct pathway for water and contaminants to enter the aquifer from the surface.

The GSI presently classifies the aquifer underlying the proposed development site with several vulnerability classifications. The east of the proposed development site is classified by the GSI as having 'Moderate' (M) to 'High' (H) vulnerability. The western portion of the proposed development site is classified as having 'Extreme' (E) to 'Rock at or Near Surface or Karst' (X) in the area of Blacknock Hill, where a higher elevation is experienced and bedrock outcrops are recorded.

The GSI vulnerability classification is relatively consistent with data obtained from the site investigations carried out by Malone O' Regan (MOR), phased between July and November 2009 at the proposed development site, where ground conditions at the proposed development site of the main 3 no. ICT buildings, energy centre and village centre comprised made ground generally

consisting of hardcore and/or concrete overlying reworked clay/silt or gravel to a maximum depth of 2.6m BGL at PH13. Natural soil encountered beneath the made ground comprised of firm to stiff sandy clay and/or silt with varying portions of sand and gravel, localised lenses of gravel were associated with top of weathered bedrock.

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Bedrock was encountered at the site at depths ranging from 0.2m BGL at MW10 in the west of the site where the proposed solar farm is located, to 9.0m BGL at MW12 in the north-east of the site where the proposed village centre is located. Therefore, bedrock is not anticipated to be encountered during excavation works at this location. The bedrock conditions encountered generally comprised of limestone, mudstone/siltstone and sandstone.

A review of aerial maps from 1995 to present revealed that the land use hasn't changed since 1995 (OSI, 2025).

Perched groundwater was also encountered as minor seepages/saturated soil at depths ranging from 0.2m BGL at PH2 (beneath the proposed ICT buildings) to 4.9m BGL at TP3 (c. 200m west of the proposed energy centre). The perched water was generally associated with granular material or top of weathered bedrock.

Refer to Figure 3-2 below for the groundwater vulnerability at the proposed development site.

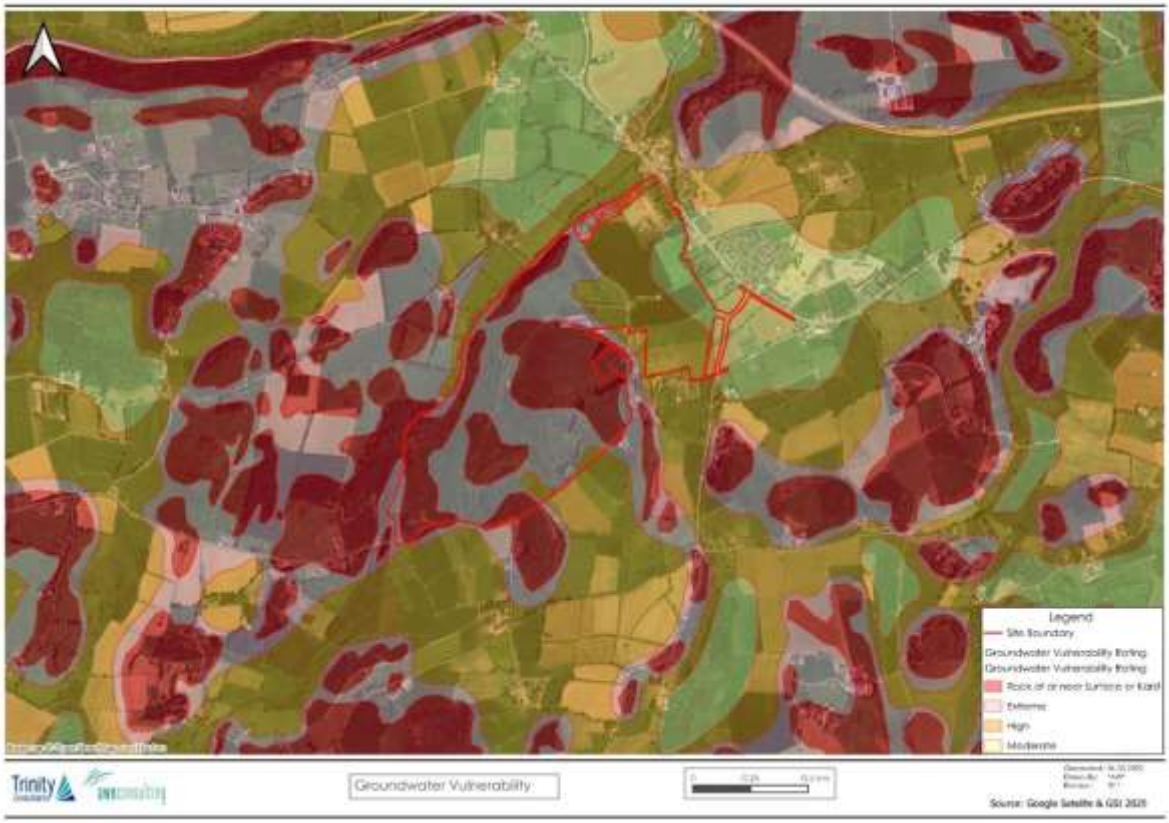


Figure 3-2 Groundwater Vulnerability (GSI, 2025)

4. WATER BODY IDENTIFICATION & STATUS

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This section presents the water bodies identified for assessment, reasoning and water body status.

The proposed development site lies within the Suir Catchment (Catchment ID: 16) and the Dawn [River]_SC_010 Sub-Catchment (Sub-Catchment ID: 16_7).

This WFD Screening has identified 2 no. WFD surface water bodies and 1 no. groundwater body which need to be considered: The Whelan's Bridge Stream_010 (European Code: IE_SE_16W010400) for which the Whelanbridge Trib 1 and Whelanbridge River are located herein; the Upper Suir Estuary transitional waterbody (European Code: IE_SE_100_0600) ; and Waterford groundwater body (European Code: IE_SE_G_149). There are no adverse effects likely on the aforementioned surface waterbodies, or the Natura 2000 sites located within the Upper Suir Estuary transitional waterbody during construction or operation of the proposed development, due to the proposed design and mitigation measures, the length of pathway from the proposed development site, the potential loading of contaminant from the site and significant dilution that will occur through its pathway. To receptors.

There is an existing '*indirect*' hydrological connection/pathway through the site drainage to the Whelanbridge Trib 1 (European Code: IE_SE_16W010400) and the Whelanbridge River. The Whelanbridge Trib 1 is located along the north-eastern boundary of the site, flowing in a northerly direction before discharging to the Whelanbridge River c. 330m north-east (linear distance) and c. 520m downstream of the proposed development site. The Whelanbridge River flows in a north-easterly direction along the western boundary of the site before its confluence with the Whelanbridge Trib 1. The Whelanbridge River flows north before discharging to the Upper Suir Estuary Transitional Waterbody (European Code: IE_SE_100_0600) c. 1.7km north-east (linear distance) and c. 2.12km downstream. The Upper Suir Estuary Transitional Waterbody is located entirely within the Lower River Suir SAC (Site Code: 002137).

There is also an '*indirect*' hydrological connection/pathway with the Whelanbridge Trib 1, where it is proposed to attenuate surface water generated on site during the operation of the proposed development and discharge to the Whelanbridge Trib 1, post attenuation. It is envisaged that there will be 2 no. discharge locations for the village centre and 1 no. discharge location for the technology park. The proposed bridge crossing spanning the Whelanbridge Trib 1, to facilitate the new access roads off the R680 and R681 regional roads will not involve any temporary damming and culvert (fluming) works. The proposed bridge typical details and sections are presented in the civil engineering drawings. The final bridge will be designed in accordance with OPW and Local Authority requirements as well as being designed for the 100yr flood event with a minimum of 300mm freeboard. It is proposed to use 800mm deep beams spanning approximately 20m with 200mm precast flat top and road constructed on this. The beams will sit on cast insitu abutments which will sit on a piled foundation. During construction, the proposed bridge crossing on the Whelanbridge Trib 1 will require surface water management to prevent pollution and degradation of habitats from a chemical spill or run off containing excessive suspended solids that complies with guidelines and best practices such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) and "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016)". Therefore, during construction and operation there will be no impacts on the Whelanbridge Trib 1 associated with the proposed clear span crossing.

The groundwater body (GWB) underlying the site is the Waterford GWB (European Code: IE_SE_G_149). Depending on the time of year development works are carried out, local minor dewatering may be required during excavation works and groundworks at the proposed development site i.e. at the location of the new village centre and three (3) no. ICT buildings. During the site investigations carried out by Malone O'Regan (MOR) in 2009, perched groundwater

was encountered as minor seepages/saturated soil at depths ranging from 0.2m BGL at PH2 (beneath the proposed ICT buildings) to 4.9m BGL at TP3 (c. 200m west of the proposed energy centre). The perched water was generally associated with granular material or top of weathered bedrock.

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Groundwater levels encountered during the environmental site assessment carried by Malone O'Regan (MOR) in 2009 showed groundwater levels were generally well below the proposed excavation depths at the location of the proposed Data Centre, Energy Centre, Village Centre and warehouses. In addition, the proposed development site is underlain by a "*Regionally Important Aquifer – Fissured Bedrock*". There is no potential for change in groundwater levels as a result of local changes in the groundwater regime at the site due to the natural recharge capacity of the underlying aquifer which allows for the maintenance of groundwater levels.

The aforementioned surface and groundwater bodies are listed in Table 4-1 below. For each waterbody, the most recent WFD status (Period: 2016-2021), risk score and location in relation to the proposed development site are provided (EPA, 2025).

Note: The Whelanbridge Trib 1 and Whelanbridge River belong to the Whelan's Bridge Stream_010 WFD surface waterbody.

Table 4-1 WFD Waterbodies relevant to the Study Area

Type	WFD Classification	WFD Name/ID	WFD Status (2016-2021)	WFD Risk Score	Location
Surface Water	River Waterbody	Whelan's Bridge Stream_010 (European Code: IE_SE_16W010400)	*'Poor'*	*'At Risk'*	Located adjacent to site
	Transitional Waterbody	Upper Suir Estuary (European Code: IE_SE_100_0600)	*'Bad'*	*'At Risk'*	Located c. 1.7km north-east (linear distance) and c. 2.12km downstream
Groundwater	Groundwater Body	Waterford GWB (European Code: IE_SE_G_149)	*'Good'*	*'Not at Risk'*	Underlying site

Figures 4-1 and 4-2 below summarise the surface water quality of the Whelan's Bridge Stream_010 and the Upper Suir Estuary WFD surface waterbodies. Figure 4-3 summarises the groundwater quality of the underlying aquifer "Waterford" groundwater body (GWB). This data was obtained from the most recent Sub-Catchment Assessment carried out by the EPA in January 2019 on the Dawn[River]_SC_010 Sub-Catchment (Sub-Catchment ID: 16_7) for the Whelan's Bridge Stream_010 and Waterford GWB and the PIL_SC_010 Sub-Catchment (Sub-Catchment ID: 16_27) for the Upper Suir Estuary transitional waterbody (Catchments.ie, 2025).

4.1 The Whelan's Bridge Trib WFD River Waterbody

The Whelanbridge Trib 1 and the Whelanbridge River belong to the Whelan's Bridge Stream_010 WFD surface waterbody (European Code: IE_SE_16W010400). The Whelan's Bridge Stream_010 WFD surface waterbody has a most recent WFD surface water status (WFD Period: 2016-2021) of '*Poor*' and its current WFD risk score (3rd risk cycle) of '*At risk*' of not achieving good status. This '*Poor*' status is related to its ecological status or potential, biological status or potential and supporting chemistry conditions. The most recent Sub-Catchment Assessment (January, 2019) carried out by the EPA on the Dawn [River]_SC_010 Sub-Catchment states the main pressure

identified on the Whelan's Bridge Stream_010 WFD surface waterbody is from agriculture, likely attributing to the poor ecological and biological status or potential, particularly invertebrate status or potential.

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SW 2016-2021

Status	Assessment Technique	Status Confidence	Value
▾ Ecological Status or Potential	Monitoring	medium confidence	Poor
▾ Biological Status or Potential			Poor
Invertebrate Status or Potential			Poor
▾ Supporting Chemistry Conditions			Pass
▾ General Conditions			Pass
▾ Oxygenation Conditions			Pass
Dissolved Oxygen (% Sat)			Pass
Other determinand for oxygenation conditions			Good
▾ Acidification Conditions			Pass
pH			Pass
▾ Nutrient Conditions			Pass
▾ Nitrogen Conditions			Moderate
Nitrate			Moderate
Ammonium			High
▾ Phosphorous Conditions			High
Orthophosphate			High

Figure 4-1 Surface Water Quality for the Whelan's Bridge Stream_010 WFD Surface Waterbody (Catchments.ie, 2025)

4.2 The Upper Suir Estuary Transitional Waterbody

The Upper Suir Estuary Transitional Waterbody (European Code: IE_SE_100_0600), is currently classified by the EPA as having '*Bad*' WFD water quality status (WFD Period: 2016-2021) and a WFD risk score (3rd risk cycle) of '*At risk*' of not achieving good status. This '*Bad*' status is related to its ecological status or potential, phytoplankton status or potential and chemical surface water status. The status failure reasons provided by the EPA is a result of Benzo(a)pyrene concentrations. The most recent Sub-Catchment Assessment (September 2022) carried out by the EPA on the PIL_SC_010 Sub-Catchment (Sub-Catchment ID: 16_27) states that the main pressure on the Upper Suir Estuary Transitional Waterbody is from agriculture.

SW 2016-2021

Status	Assessment Technique	Status Confidence	Value
▾ Ecological Status or Potential	Monitoring	high confidence	Bad
▾ Biological Status or Potential			Bad
Phytoplankton Status or Potential			Bad
▾ Supporting Chemistry Conditions			Moderate
▾ General Conditions			Moderate
▾ Oxygenation Conditions			Moderate
Dissolved Oxygen (% Sat)			Moderate
Other determinand for oxygenation conditions			Moderate
▾ Nutrient Conditions			Moderate
Phosphorous Conditions			Good
Specific Pollutant Conditions			Pass
Chemical Surface Water Status			Failing to achieve good

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Figure 4-2 Surface Water Quality for the Upper Suir Estuary Transitional Waterbody (Catchments.ie, 2025)

4.3 The Waterford Groundwater Body (GWB)

As stated in Section 3.1.1 above, the site is underlain by the Waterford Groundwater Body (European Code: IE_SE_G_149), which has been investigated by the GSI and is described as having a 'Productive Fissured Bedrock' aquifer. Based on the most recent data (www.epa.ie), the Waterford GWB has a WFD status of "*Good*" (WFD Period: 2016-2021) and a WFD risk score (3rd Cycle) of "*Not at Risk*" of not achieving good status, meaning it has achieved its objectives end the overall status is considered good. The most recent Sub-Catchment Assessment (September 2022) carried out by the EPA on the PIL_SC_010 Sub-Catchment (Sub-Catchment ID: 16_27) states that the main pressure on the Upper Suir Estuary Transitional Waterbody is from agriculture. This" Good'" status is related to the overall groundwater status i.e. quantitative groundwater status and chemical groundwater status.

GW 2016-2021

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Status	Assessment Technique	Status Confidence	Value	
▾ Overall Groundwater Status			Good	
▾ Quantitative Groundwater Status			Good	
Saline (or Other) Intrusions Test			Good	
Impact of Groundwater on Surface Water Ecological/Quantitative Status Test			Good	
Groundwater Dependent Ecosystems (GWDTE) - Quantitative Assessment Test			Good	
Water Balance Test			Good	
▾ Chemical Groundwater Status			Good	
Saline (or Other) Intrusions Test			Good	
Impact of Groundwater on Surface Water Ecological/Chemical Status Test			Good	
Groundwater Dependent Ecosystems (GWDTE) - Chemical Assessment Test			Good	
Drinking Water Protected Area Test			Good	
General Chemical Assessment Test			Good	

Figure 4-3 Groundwater Quality for Waterford Groundwater Body (Catchments.ie, 2025)

5. DESCRIPTION OF THE PROPOSED DEVELOPMENT

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The purpose of this section is to provide an overview of the key relevant details of the construction phase and operational phase of the proposed development. The information presented in this section is informed by the project design, but it is not a complete description of the proposed development. Therefore, it should be read in conjunction with the full development package. The information provided focusses on the data required for WFD assessment. For a more comprehensive understanding of the proposed development, please refer to Chapter 2 'Description of the Proposed Development' of the EIA Report. Chapter 2 provides a detailed overview of the lifecycle of the project, including reference to the architectural and civil engineering, drawings, plans, reports, and other relevant document in order to define the proposed development.

The proposed masterplan layout is presented in Figure 5-1 below.

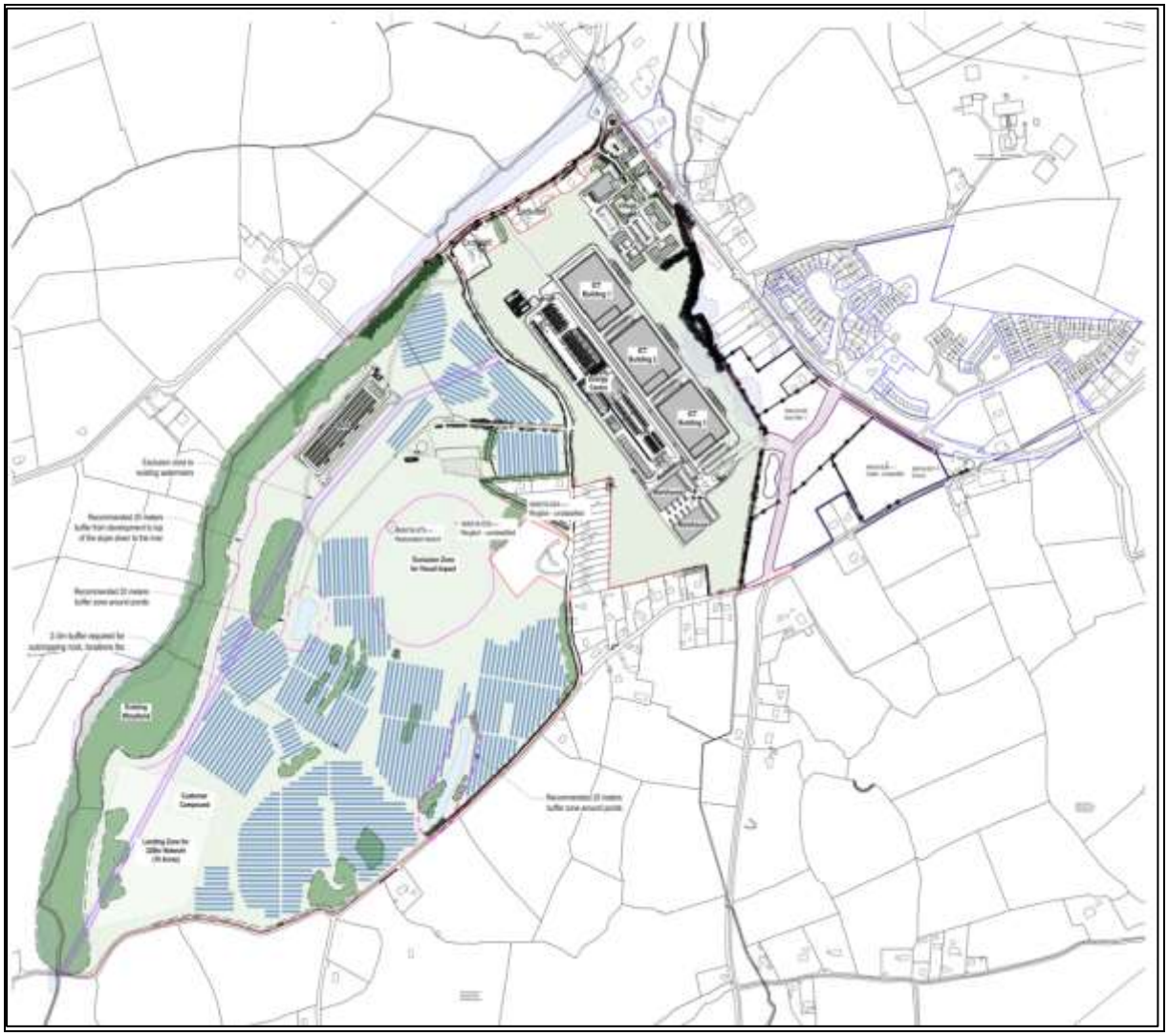


Figure 5-1 Proposed Masterplan Layout - Drawing No. KMMP-HYP-ZZ-ZZ-DR-A-0100 (Hyphen, 2024)

The elements of the development which would have potential impact are summarised in Sections 5.1.1 and 5.1.2 below.

5.1 Construction Phase

The activities required for the construction phase of the proposed development represents the greatest risk of potential impact on the hydrological and hydrogeological environment. These activities primarily pertain to the site preparation, excavation and infilling activities required to facilitate construction of the proposed development.

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There is potential for run-off water to become contaminated with pollutants released during construction activity. During construction the contractor will be obliged to operate in compliance with a Construction & Environmental Management Plan (CEMP) and mitigation measures as outlined in the EIAR as approved by the planning authority.

If not mitigated, contaminated water can pose a temporary risk to the Whelanbridge River and Whelanbridge Trib 1 (Whelan's Bridge Stream_010 WFD surface waterbody) which ultimately discharge to the Lower River Suir SAC (Upper Suir Estuary transitional waterbody) c. 1.2km downstream, and the underlying "*Regionally Important Aquifer – Fissured Bedrock*" i.e. the Waterford GWB (European Code: IE_SE_G_149). In particular, the proposed development will require the construction of a bridge across the Whelanbridge Trib 1 EPA river waterbody, to facilitate the new access roads off the R680 and R681 regional roads. The proposed bridge typical details and sections are presented in the civil engineering drawings provided with planning. The final bridge will be designed in accordance with OPW and Local Authority requirements as well as being designed for the 100yr flood event with a minimum of 300mm freeboard. It is proposed to use 800mm deep beams spanning approximately 20m with 200mm precast flat top and road constructed on this. The beams will sit on cast insitu abutments which will sit on a piled foundation. If the installation is not executed correctly, there is a potential risk of compromising the integrity and stability of the river banks during the bridge installation process. This could lead to erosion or destabilisation of the surrounding areas and potentially impact the aquatic habitat. However the construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects comprising of and not limited to; CIRIA C648 Control of Water Pollution from Constructional Sites; Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA 2008); and Inland Fisheries Ireland (IFI) – A Guideline on Planning for Watercourses in the Urban Environment.

During construction of the development, the potential of contamination is associated with the following sources:

- Suspended solids (muddy water with increased turbidity (measure of the degree to which the water loses its transparency due to the presence of suspended particulates)) – arising from excavation and ground disturbance;
- Excavations/ top and sub soil stripping- Increase sediment run off (erosion during rainfall periods), Pollutant mobilisation (heavy metal runoff), Loss of vegetation;
- Cement/concrete (increase turbidity and pH) – arising from construction materials;
- Hydrocarbons and other construction chemicals (ecotoxic) – accidental spillages from construction plant or onsite storage; and
- Wastewater (nutrient and microbial rich) – arising from accidental discharge from on-site toilets and washrooms. Construction phase sewerage will be contained in a tank and taken by tanker off site for disposal at a licensed waste management facility.

In the absence of mitigation, rainfall run-off during the construction phase may contain increased silt levels or otherwise become polluted from construction activities. Suspended solids in runoff water may result in an increase in suspended sediment load, resulting in increased turbidity, which may in turn impact on local infiltration capacity, downstream infrastructure or watercourses. Concreting operations pose a potential risk of discharging concrete materials into exposed surfaces and percolate to the underlying groundwater. Concrete, especially the cement component, has a high alkalinity level.

There is also the potential risk of unintentional discharge of stored materials like fuels, oils, and paints. However, these are temporary short-lived events that will not impact on the status of the Whelanbridge River, Whelanbridge Trib 1, The Lower River Suir SAC (Site Code: 002137) or the underlying Waterford groundwater body (GWB) in the long-term. Such short term events will not cause any significant deterioration or change in water quality status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland.

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Excavations and levelling of the site to the necessary foundation base levels for the proposed village centre and technology park will require the excavation of an estimated c. 244,148 m^3 of material. The estimated fill is 87921 m^3 with approximately 46,838 m^3 of material needing to be removed and transported off site and c. 109,289 m^3 being reused on site for landscaping and berms. The construction will require excavations down to a maximum depth of 4.5m BGL from existing ground levels. This will temporarily increase the aquifer vulnerability which is classified by the GSI as having '*Moderate*' (M) to '*High*' (H) vulnerability in the east of the site where the proposed village centre and technology park are located, prior to paving and installation of stormwater drainage and services. However, as stated in Section 3.1.1 above, bedrock was encountered at the site 9.0m BGL at MW12 in the north-east of the site where the proposed village centre is located. Therefore, bedrock is not anticipated to be encountered during excavation works at this location and there is sufficient protection present to the underlying bedrock aquifer

The gradual introduction of impermeable surfaces and the compaction of soils across the construction site as a result of the land clearing and earthworks will reduce the infiltration capacity and increase the rate and volume of direct surface run-off. The potential impact of this is a possible increase in surface water run-off along with sediment loading, which could potentially impact local drainage if not adequately mitigated. This increase in the rate and volume of direct surface run-off can result in increased sediment loading, scouring impacts on local drainage and watercourses, and downstream impacts. Prior to the installation of attenuation ponds there may be a resultant minor increase in flow to offsite drainage.

There are no surface water or groundwater abstractions proposed, therefore no potential impacts on the quantity of surface water or groundwater.

There are no proposed permanent diversions of any drainage ditches or waterbodies as part of the proposed development and as such no potential for impact in terms of hydromorphological impacts which could impact on water body status.

There is no potential impacts from wastewater on the hydrological and hydrogeological environment as this will be collected and discharged of to sewer.

At a minimum, the works will be carried out according to standard best international practice including, but not limited, to:

- CIRIA, (2001), *Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors, (C532)* Construction Industry Research and Information Association;
- CIRIA (2002) *Control of water pollution from construction sites: guidance for consultants and contractors (SPI56)* Construction Industry Research and Information Association;
- CIRIA (2005), *Environmental Good Practice on Site* (C650); Construction Industry Research and Information Association;
- BPGCS005, *Oil Storage Guidelines*; and
- CIRIA 697 (2007), *The SUDS Manual*; and *UK Pollution Prevention Guidelines,* (PPG) UK Environment Agency, 2004.

5.2 Operational Phase

There is no requirement for abstraction of groundwater during operational phase. The proposed SuDS design will involve a combination of infiltration to ground, attenuation and treatment through interceptors prior to discharging to the downstream network. This will provide an improvement in water quality prior to discharge to receiving waters.

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As hydrotreated vegetable oil (HVO) is proposed to be used rather than bulk diesel to power the power generation facility, there is minimal impact for contamination of surface water or groundwater bodies in the event of a spill/leak. HVO is considered less harmful than traditional fossil oils when it spills on the ground due to its renewable nature and biodegradability. When HVO spills, it tends to degrade rapidly through natural processes involving microorganisms, which can metabolize it into less harmful substances. This quick degradation helps minimize its impact on the hydrological environment, reducing the risk of contamination in water sources and soil. Additionally, HVO has a lower toxicity profile compared to fossil oils, making it less harmful to aquatic life and groundwater systems.

Storm drainage from the generator yards is drained through an oil interceptor to treat any accidental leaks. In addition, interceptors are located above and below the attenuation pond i.e. prior to stormwater discharging from the site. In the scenario of an accidental release of HVO or unmitigated leak of fuel from car park areas and roads, these are temporary short-lived events that will not impact on the status of the Whelanbridge River, Whelanbridge Trib 1, The Lower River Suir SAC (Site Code: 002137) or the underlying Waterford groundwater body (GWB) in the long-term. As such the proposed development will not cause any significant deterioration or change in water quality status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland.

As such, surface water runoff from roads, car parking, and hardstanding areas are the potential are the primary potential source of contamination such as petroleum hydrocarbons. The proposed drainage network and surface runoff will comply with Waterford County Council and SUDs requirements. All surface water generated from the proposed development is to be attenuated on site and discharge to the Whelanbridge Trib 1 located along the eastern boundary of the site. The proposed SuDS design will involve discharge to ground beneath the north car park of the village centre to allow for surface water storage, as well as infiltration to the surrounding soil prior to discharging to the downstream network. However, all discharges will be adequately attenuated via SuDS measures i.e. porous asphalt on the proposed car parks, filter drains/swale drains along the drainage route in open spaces, permeable paving (Grasscrete) outside the proposed building, attenuation ponds, infiltration tank and rainwater harvesting. These proposed design measures ensure there is no long-term negative impact to the WFD water quality status of the Whelanbridge Trib 1, Whelanbridge River, the Lower River Suir SAC (Site Code: 002137) or the underlying Waterford groundwater body (GWB).

With regard to the wastewater discharge, all foul water generated on the proposed development will be sent to the existing to Ballyduff Lower-Kilmeaden Waste Water Treatment Plant (WWTP) (Reg: A0370), located c. 620m north-east of the site along the Lacka Road. A Pre-Connection enquiry application was submitted to Uisce Éirrean in December 2024 for the wastewater discharge of the proposed development (Ref: DIV24393. Connection to the WWTP is subject to permission from Irish Water. According to Uiscé Éireann's (Irish Water) Wastewater Treatment Capacity Register (June 2023), there is capacity available at Ballyduff Lower-Kilmeaden WWTP. Therefore, no impacts are anticipated on the Whelanbridge River, the Lower River Suir SAC or the Waterford GWB.

6. ASSESSMENT OF SOURCE-PATHWAY-RECEPTOR (SPR) MODEL

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A conceptual site model is developed based on a good understanding of the hydrological and hydrogeological environment, plausible sources of impact and knowledge of receptor requirements. This in turn allows possible Source Pathway Receptor (S-P-R) linkages to be identified. If no S-P-R linkages are identified, then there is no risk to identified receptors.

The proposed development site is located in the South Eastern River Basin District (IESE) (Hydrometric Area No. 16) and lies within the Suir Catchment (Catchment ID: 16) and the Dawn [River]_SC_010 Sub-Catchment (Sub-Catchment ID: 16_7).

As stated in Section 3.1.1 above, the site is underlain by the Waterford groundwater body (GWB) (European Code: IE_SE_G_149), which has been investigated by the GSI and is described as a 'Productive Fissured Bedrock' and is a "Regionally Important Aquifer – Fissured Bedrock" (Rf). This aquifer is capable of supplying regionally important supplies (e.g., large public water supplies). Groundwater movement in this category of aquifer is through joints and fractures, rather than through the rock mass.

Depending on the time of year development works are carried out, local minor dewatering may be required during excavation works and groundworks at the proposed development site i.e. at the location of the new village centre and three (3) no. ICT buildings. This will temporarily increase the aquifer vulnerability which is classified by the GSI as having '*Moderate*' (M) to '*High*' (H) vulnerability in the east of the site where the proposed village centre, ICT buildings and technology park are located, prior to paving and installation of stormwater drainage and services.

During the site investigations carried out by Malone O'Regan (MOR) in 2009, perched groundwater was encountered as minor seepages/saturated soil at depths ranging from 0.2m BGL at PH2 (beneath the proposed ICT buildings) to 4.9m BGL at TP3 (c. 200m west of the proposed energy centre). The perched water was generally associated with granular material or top of weathered bedrock. However, there is no potential for change in groundwater levels as a result of local changes in the groundwater regime at the site due to the limited extent of dewatering activities and the natural recharge capacity of the underlying "*Regionally Important Aquifer – Fissured Bedrock*", which allows for the maintenance of groundwater levels. This ensures that the aquifer's integrity and functionality remain unaffected by any temporary dewatering measures. In addition, the mitigation measures that will be implemented during construction (as set out in the CEMP) and operational design measures (SuDS) will ensure there are no potential impacts on the hydrogeological and hydrological environment.

There is an existing *'indirect'* hydrological connection/pathway with the Lower River Suir SAC (Site Code: 002137), located c. 915m north-east (linear distance) and c. 1.2km downstream of the proposed development site, through the Whelanbridge Trib 1 (WFD Name: Whelan's Bridge Stream_010) located along the north-eastern boundary of the site and the Whelanbridge River (WFD Name: Whelan's Bridge Stream_010) located along the western boundary of the site before its confluence with the Whelanbridge Trib 1. The Whelanbridge River flows north before discharging to the Upper Suir Estuary Transitional Waterbody (European Code: IE_SE_100_0600) c. 1.7km north-east (linear distance) and c. 2.12km downstream. The Upper Suir Estuary Transitional Waterbody is located entirely within the Lower River Suir SAC. This is a lengthy hydrological pathway allowing significant time for settlement and dilution, should an accidental release (even without mitigation) to surface water occur. Therefore, no impacts are anticipated during construction and operation.

If not mitigated, contaminated water can pose a temporary risk to the Whelanbridge River and Whelanbridge Trib 1 (Whelan's Bridge Stream_010 WFD surface waterbody) which ultimately

discharge to the Lower River Suir SAC (Upper Suir Estuary transitional waterbody) c. 1.2km downstream, and the underlying "*Regionally Important Aquifer – Fissured Bedrock*" i.e. the Waterford GWB (European Code: IE_SE_G_149). In particular, the proposed development will require the construction of a bridge across the Whelanbridge Trib 1 EPA river waterbody, to facilitate the new access roads off the R680 and R681 regional roads. The proposed bridge typical details and sections are presented in the civil engineering drawings. The final bridge will be designed in accordance with OPW and Local Authority requirements as well as being designed for the 100yr flood event with a minimum of 300mm freeboard. It is proposed to use 800mm deep beams spanning approximately 20m with 200mm precast flat top and road constructed on this. The beams will sit on cast insitu abutments which will sit on a piled foundation. If the installation is not executed correctly, there is a potential risk of compromising the integrity and stability of the riverbanks during the bridge installation process. This could lead to erosion or destabilisation of the surrounding areas and potentially impact the aquatic habitat. However, the construction works, and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects as outlined in Section 5.1 above.

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The proposed development site also has a hydrological pathway/connection with the River Barrow and River Nore SAC (Site Code: 002162), located c. 16.7km east (linear distance) and c. >20km downstream which eventually outfalls to Waterford Harbour coastal waterbody (European Code: IE_SE_100_0000). However, this is an extremely lengthy hydrological pathway allowing significant time for settlement and dilution, should an accidental release (even without mitigation) to surface water occur. Therefore, no impacts are anticipated during construction and operation.

A hydrogeological connection may also exist to the Lower River Suir SAC through the underlying "*Regionally Important Aquifer – Fissured Bedrock*" (Rf), but there is a significant dilution factor allowing significant time for settlement and dilution, should an accidental release (even without mitigation) to ground occur.Therefore it is not likely that there would be a significant effect on the Lower River Suir SAC.

There is also an *'indirect'* hydrological connection/pathway with the Upper Suir Estuary Transitional Waterbody and the designated site located therein i.e. the Lower River Suir SAC; through the proposed foul sewer connection to Ballyduff Lower-Kilmeaden Waste Water Treatment Plant (WWTP) (Reg: A0370), located c. 620m north-east of the site along the Lacka Road (post treatment and in accordance with EPA licence conditions). According to Uiscé Éireann's (Irish Water) Wastewater Treatment Capacity Register (June 2023), there is capacity available at Ballyduff Lower-Kilmeaden WWTP. Therefore, no impacts anticipated on the Whelanbridge River, the Lower River Suir SAC or the Waterford groundwater body (GWB).

Table 6-1 below describes the S-P-R model for the proposed development site and includes the robust mitigation and design measures which will be incorporated into the proposed development throughout the construction phases.

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Table 6-1 Pollutant Linkage Assessment (without mitigation)

Source	Pathways	Receptors Considered	Risk of Impact	Mitigation Measures
Construction Impacts (Summary)				
Unmitigated leak from an oil tank to ground/ unmitigated leak from construction vehicle (1,000 litres worst case scenario). Discharge to ground of runoff water with High pH from cement process/ hydrocarbons from construction vehicles/run-off containing a high concentration of suspended solids. Release of sediments, pollutants and construction material during Bridge construction.	Vertical migration through overburden to underlying "*Regionally Important Aquifer – Fissured Bedrock*" (Rf), classified by the GSI as having a '*Moderate*' (M) to '*High*' (H) vulnerability i.e. where the proposed development is located (new village centre, grid scale battery storage, and a data centre with associated energy centre). It is estimated that c. 244,148 m^3 of material will be excavated and c. 46,838 m^3 of material will be removed off site. This will temporarily increase the aquifer vulnerability	Underlying "*Regionally Important Aquifer – Fissured Bedrock*" (Rf). Whelan's Bridge Stream_010 WFD surface waterbody (Whelanbridge Trib 1 & Whelanbridge River) located adjacent to site. Upper Suir Estuary transitional waterbody located c. 915m north-east (linear distance) and c. 1.2km downstream. Lower River Suir SAC (Site Code: 002137) located c. 915m north-east (linear distance) and c. 1.2km downstream.	No likely impact on the status of the locally important aquifer due to low potential loading, maximum depth of excavations (4.5m) and mitigation measures (i.e. CEMP). No perceptible risk to water requirements for Whelan's Bridge Stream_010 WFD surface waterbody, Upper Suir Estuary transitional waterbody and Lower River Suir SAC based on low potential of loading, mitigation measures (i.e. CEMP), and high level of dilution in the surface water drainage and the river network. No perceptible risk to water requirements for Whelan's Bridge Stream_010 WFD surface waterbody, Upper Suir Estuary transitional waterbody and Lower River Suir SAC based on low potential of loading, mitigation measures (i.e. CEMP), and high level of dilution in the surface water drainage and the river network.	Only potential for temporary impacts due to accidental releases. Mitigation measures outlined in a CEMP which will be a live document. It sets out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the CEMP and any subsequent conditions relevant to the proposed development. These include management of soils, re-fuelling of machinery and chemical handling, control of water during the construction phase and treatment of discharge water where required.

Source	Pathways	Receptors Considered	Risk of Impact	Mitigation Measures
	Lateral migration via groundwater within the underlying "*Regionally Important Aquifer – Fissured Bedrock*" (Rf) to the hydrological environment i.e. Whelan's Bridge Stream_010 WFD surface waterbody (Whelanbridge Trib 1 & Whelanbridge River), Upper Suir Estuary transitional waterbody and the Natura 2000 site located herein (Lower River Suir SAC). Accidental discharge to the to the hydrological environment i.e. Whelan's Bridge Stream_010 WFD surface waterbody			
Operational Impacts (Summary)				

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Source	Pathways	Receptors Considered	Risk of Impact	Mitigation Measures
Discharge to ground of hydrocarbons from roads, car parking, and hardstanding areas. Discharge of foul water to the Lower River Suir SAC (Site Code: 002137) post treatment at Ballyduff Lower-Kilmeaden Waste Water Treatment Plant (WWTP) (Reg: A0370). Discharge to ground of Hydrotreated Vegetable Oil (HVO) used to power backup generators. Discharge to ground of chemicals from the Battery Energy Storage System (BESS).	Indirect pathway to the Lower River Suir SAC through the proposed foul sewer connection (post treatment) at Ballyduff Lower-Kilmeaden Waste Water Treatment Plant (WWTP) (Reg: A0370). Indirect pathway through stormwater drainage to the Whelan's Bridge Stream_010 WFD surface waterbody (i.e. Whelanbridge Trib 1) and eventually to the Whelanbridge River, Upper Suir Estuary transitional waterbody and the Natura 2000 site located herein (Lower River Suir SAC).	Underlying "*Regionally Important Aquifer – Fissured Bedrock*" (Rf). Whelan's Bridge Stream_010 WFD surface waterbody (Whelanbridge Trib 1 & Whelanbridge River) located adjacent to site. Upper Suir Estuary transitional waterbody located c. 915m north-east (linear distance) and c. 1.2km downstream. Lower River Suir SAC (Site Code: 002137) located c. 915m north-east (linear distance) and c. 1.2km downstream.	No perceptible risk due to the implementation of the design measures which includes SuDS and the use of interceptors along the drainage system. Furthermore, the extent of loading of contaminant, distance between the source and the protected sites along with significant dilution in the surface water sewer and drainage network will ensure any released hydrocarbons and other contaminants are at background levels (i.e., with no likely impact above water quality objectives as outlined in S.I. No. 272 of 2009, S.I. No. 386 of 2015 and S.I. No. 77 of 2019). No perceptible risk to the hydrological or hydrogeological environment following treatment in the EPA licenced Ballyduff Lower-Kilmeaden Waste Water Treatment Plant (WWTP) (Reg: A0370).	The proposed development is designed to ensure the protection of the hydrological and hydrogeological environment by incorporating SuDs measures in design including porous asphalt in car parks, filter drains and swale drains in open spaces, permeable paving (Grasscrete) around the buildings, attenuation ponds, infiltration tanks, and a rainwater harvesting system. These features will effectively manage surface water flows, directing them to the attenuation ponds and infiltration tanks to maximize their storage potential. Flow control devices will be installed downstream of the ponds' outlet pipes to ensure that surface water runoff is stored efficiently before entering the downstream network, i.e. the Whelanbridge Trib 1. Wastewater discharge to be agreed with Uisce Éireann (formerly IW, Irish Water) in a Wastewater Connection Application.

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Source	Pathways	Receptors Considered	Risk of Impact	Mitigation Measures
	Lateral migration via groundwater within the underlying "Regionally Important Aquifer – Fissured Bedrock" (Rf) to the hydrological environment i.e. Whelan's Bridge Stream_010 WFD surface waterbody (Whelanbridge Trib 1 & Whelanbridge River), Upper Suir Estuary transitional waterbody and the Natura 2000 site located herein (Lower River Suir SAC).			

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7. NO DETERIORATION ASSESSMENT

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7.1 HYDROLOGICAL ENVIRONMENT

As stated in Section 6.0 above, at present there is an *'indirect'* hydrological connection/pathway with the Upper Suir Estuary Transitional Waterbody and the designated site located therein i.e. the Lower River Suir SAC (Site Code: 002137), located c. 915m north-east (linear distance) and c. 1.2km downstream of the proposed development site, through the Whelanbridge Trib 1 (WFD Name: Whelan's Bridge Stream_010) located along the north-eastern boundary of the site and the Whelanbridge River (WFD Name: Whelan's Bridge Stream_010) located along the western boundary of the site before its confluence with the Whelanbridge Trib 1. The Whelanbridge River flows north before discharging to the Upper Suir Estuary Transitional Waterbody (European Code: IE_SE_100_0600) c. 1.7km north-east (linear distance) and c. 2.12km downstream.

The proposed development site also has a hydrological pathway/connection with the River Barrow and River Nore SAC (Site Code: 002162), located c. 16.7km east (linear distance) and c. >20km downstream which eventually outfalls to Waterford Harbour coastal waterbody (European Code: IE_SE_100_0000). This is an extremely lengthy hydrological pathway allowing significant time for settlement and dilution, should an accidental release (even without mitigation) to surface water occur. Therefore, no impacts are anticipated during construction and operation.

There is also an existing *'indirect'* hydrological connection/pathway with the Upper Suir Estuary Transitional Waterbody and the designated site located therein i.e. the Lower River Suir SAC; through the proposed foul sewer connection to Ballyduff Lower-Kilmeaden Waste Water Treatment Plant (WWTP) (Reg: A0370), located c. 620m north-east of the site along the Lacka Road (post treatment and in accordance with EPA licence conditions). According to Uiscé Éireann's (Irish Water) Wastewater Treatment Capacity Register (June 2023), there is capacity available at Ballyduff Lower-Kilmeaden WWTP. Therefore, no impacts are anticipated on the Whelanbridge River, the Lower River Suir SAC or the Waterford groundwater body (GWB).

During construction, there are mitigation and design measures which will be implemented to protect the hydrological (and hydrogeological) environment. There is a potential for accidental discharges should mitigation fail during the construction phase, however these are temporary short-lived events that will not impact on the water status of waterbodies long-term and as such will not impact on trends in water quality and over all status assessment. The project-specific Construction and Environmental Management Plan (CEMP) will implement strict mitigation measures to ensure the protection of the hydrological (and hydrogeological) environment during construction which will ensure that there will be no negative impact on the quantitative or qualitative or morphology of the nearby watercourses.

During operation, to mitigate potential contamination from surface water runoff, which may originate from roads, car parks, and hardstanding areas, a sustainable urban drainage system (SuDS) will be implemented. This system is designed to minimize the risk of contaminants, such as hydrocarbons, entering the stormwater drainage network and subsequently impacting surface water bodies like the Whelanbridge River, Whelanbridge Trib 1, the Upper Suir Estuary transitional waterbody and the Lower River Suir SAC; as well as groundwater bodies i.e. the Waterford GWB underlying the site.

The surface water drainage strategy integrates various measures, including porous asphalt in car parks, filter drains and swale drains in open spaces, permeable paving (Grasscrete) around the buildings, attenuation ponds, infiltration tanks, and a rainwater harvesting system. These features will effectively manage surface water flows, directing them to the attenuation ponds and infiltration tanks to maximize their storage potential. The flow control devices will be installed downstream of

the ponds outlet pipes to ensure the surface water runoff is stored maximising storage potential, prior to entering the network downstream i.e. the Whelanbridge Trib 1 located along the sites eastern boundary.

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Furthermore, the use of hydrotreated vegetable oil (HVO) instead of bulk diesel for the power generation facility, will further mitigate potential impacts on local hydrology and hydrogeology in the event of a spill/leak. Storm drainage from the generator yards is drained through an oil interceptor to treat any accidental leaks.

The SuDS and proposed measures have been designed in detail with the ultimate aim of protecting the hydrological (& hydrogeological) environment. The proposed operational design of the proposed development will not contribute towards degrading the WFD status of the aforementioned waterbodies.

There are no proposed diversions of any drainage ditches or waterbodies as part of the proposed development.

Overall, the potential effects on the current status of the surface waterbodies are considered *no impact i.e. no change to the WFD status or elements in terms of the hydrological environment*.

7.2 HYDROGEOLOGICAL ENVIRONMENT

Depending on the time of year development works are carried out, local minor dewatering may be required during excavation works and groundworks at the proposed development site i.e. at the location of the new village centre and three (3) no. ICT buildings. This will temporarily increase the aquifer vulnerability which is classified by the GSI as having '*Moderate*' (M) to '*High*' (H) vulnerability in the east of the site where the proposed village centre and technology park are located, prior to paving and installation of stormwater drainage and services.

During the site investigations carried out by Malone O'Regan (MOR) in 2009, perched groundwater was encountered as minor seepages/saturated soil at depths ranging from 0.2m BGL at PH2 (beneath the proposed ICT buildings) to 4.9m BGL at TP3 (c. 200m west of the proposed energy centre). The perched water was generally associated with granular material or top of weathered bedrock. However, there is no potential for change in groundwater levels as a result of local changes in the groundwater regime at the site due to the limited extent of dewatering activities and the natural recharge capacity of the underlying "*Regionally Important Aquifer – Fissured Bedrock*", which allows for the maintenance of groundwater levels. This ensures that the aquifer's integrity and functionality remain unaffected by any temporary dewatering measures. In addition, the mitigation measures that will be implemented during construction (as set out in the CEMP) and operational design measures (SuDS) will ensure there are no potential impacts on the hydrogeological (and hydrological) environment.

Therefore, there is no potential for change in water quality or levels as a result of local changes in the groundwater regime at the site. There are no planned discharges to groundwater during the operational phase and no long-term groundwater dewatering for the project. The proposed development design includes hardstand cover across the site (i.e. at the proposed ICT buildings, energy centre and village centre).

During construction, there is limited potential of accidental discharges. However, should these occur they are temporary short-lived events that will not impact on the water status of the underlying bedrock aquifer long-term and as such will not impact on trends in water quality and over all status assessment. The project-specific Construction and Environmental Management Plan (CEMP), will implement strict mitigation measures to ensure the protection of the hydrogeological

environment during construction which will ensure that there will be no negative impact on the quantitative or qualitative of the underlying "*Regionally Important Aquifer – Fissured Bedrock*",

In terms of the operational phase, the risk to the aquifer is considered to be low due to the presence of handstand and a drainage system incorporating use of oil / hydrocarbon / petrol interceptors (or equivalent) on the stormwater drainage system prior to discharge from the site.

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Overall, the potential effects on the WFD status to the groundwater bodies are considered no impact *i.e., no change to the current status or elements in terms of the underlying hydrogeological environment*.

7.3 ASSESSMENT IN TERMS OF FUTURE GOOD STATUS

The Whelan's Bridge Stream_010 WFD surface waterbody i.e. the Whelanbridge Trib 1 and the Whelanbridge River (European Code: IE_SE_16W010400); has a most recent WFD surface water status (WFD Period: 2016-2021) of '*Poor*' and its current WFD risk score (3rd risk cycle) is '*At risk*' of not achieving good status. The most recent Sub-Catchment Assessment (January, 2019) carried out by the EPA on the Dawn [River]_SC_010 Sub-Catchment states the main pressure identified on the Whelan's Bridge Stream_010 WFD surface waterbody is from agriculture, likely contributing to the poor ecological and biological status or potential, particularly invertebrate status or potential (Catchments.ie, 2025).

The Upper Suir Estuary Transitional Waterbody (European Code: IE_SE_100_0600), is currently classified by the EPA as having '*Bad*' WFD water quality status (WFD Period: 2016-2021) and a WFD risk score (3rd risk cycle) of '*At risk*' of not achieving good status. This '*Bad*' status is related to its ecological status or potential, phytoplankton status or potential and chemical surface water status. The status failure reasons provided by the EPA is a result of Benzo(a)pyrene concentrations. The most recent Sub-Catchment Assessment (September, 2022) carried out by the EPA on the PIL_SC_010 Sub-Catchment (Sub-Catchment ID: 16_27) states that the main pressure on the Upper Suir Estuary Transitional Waterbody is from agriculture.

Presently, the groundwater body in the region of the site (Waterford GWB - for which the site is located entirely within, has a WFD status of "*Good*" (WFD Period: 2016-2021) and a WFD risk score (3rd Cycle) of "*Not at Risk*" of not achieving good status, meaning it has achieved its objectives end the overall status is considered good. The most recent Sub-Catchment Assessment (September, 2022) carried out by the EPA on the PIL_SC_010 Sub-Catchment (Sub-Catchment ID: 16_27) states that the main pressure on the Upper Suir Estuary Transitional Waterbody is from agriculture. This" Good" status is related to the overall groundwater status i.e. quantitative groundwater status and chemical groundwater status.

At present there are no local targeted measures within the catchments to maintain or achieve improvements to the status of the water bodies. However, the following are some pressures associated with waterbody catchments:

- Physical Modifications.
- Management of pollution from agricultural activities.
- Management of pollution from sewage and waste water.
- Management of pollution from urban environments.
- Changes to natural flow and levels of water.
- Managing invasive non-native species.

The proposed development will incorporate SuDs measures within the landscape and drainage design in order to manage run-off quality and foul sewers management will be in compliance with

UÉ specifications. No dewatering is required during operation. All discharges will be adequately treated through the proposed SuDs measures as outlined in Section 5.2 above i.e. porous asphalt on the proposed car parks, filter drains/swale drains along the drainage route in open spaces, permeable paving (Grasscrete) outside the proposed building, attenuation ponds, infiltration tank and rainwater harvesting. As such there will be no change to the existing status as a result of the proposed development.

Based on the above information it is ***not*** considered that any aspects of the proposed development will prevent the WFD objectives from being achieved or to meet the requirements and/or objectives in the Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government & Heritage, Sept 2024).

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8. CONCLUSIONS

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Appendix A contains the background information and the WFD classification elements for surface water and groundwater body status. The colour coded system referred to in Appendix A – Table 1 and Table 2 are used to give a visual impression of the surface water and groundwater assessment, respectively
Appendix B presents the methodology for the surface water and groundwater assessments.

The WFD assessment indicates that, based on the current understanding of the proposed development, there is no potential for adverse or minor temporary/ long-term or localised effects on the Whelan's Bridge Stream_010 WFD surface waterbody i.e. the Whelanbridge Trib 1 and the Whelanbridge River; the Upper Suir Estuary Transitional Waterbody (European Code: IE_SE_100_0600) or the Natura 2000 site located herein i.e. the Lower River Suir SAC (Site Code: 002137). Therefore, it has been assessed that the proposed development will not cause any significant deterioration or change in water body status or prevent the attainment, or potential to achieve, future good status or to meet the requirements and/or objectives of the Water Framework Directive and in the Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government & Heritage, Sept 2024).

The WFD assessment indicates that there is no potential for adverse or minor temporary or localised effects on the Waterford GWB (European Code: IE_SE_G_149). Therefore, it has been assessed that it is unlikely that the proposed development will cause any significant deterioration or change on its water body status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government & Heritage, Sept 2024).

In summary, as a result of the design of the project and prevention and mitigation measures to be taken:

- Surface waters will be managed and SuDs measures incorporated in the development thereby contributing to the improvement of the water environment.
- There is not likely to be a significant effect on surface and groundwater quantity and quality from the proposed development.
- The project is not likely to cause a deterioration in surface or groundwater quality status.
- nor will the project compromise the ability of any surface or groundwater to meet the objectives of the WFD or the Water Action Plan 2024.
- It is not likely that there will be any significant discharges of pollutants from priority or other polluting substances into groundwater or surface water so that the chemical status of the surface and groundwater will not deteriorate.
- Moreover, as demonstrated in the NIS and EIAR the ecological status of surface waters or groundwaters is not likely to be significantly affected by any discharge to water or water abstraction and there is not likely to be a significant effect on any European or other protected site.
- The developer will comply with Priority Pathway Action Plans (PPAP) relating to invasive species and soils and spoil, where appropriate.

No further assessment of WFD is recommended given that no significant deterioration or change in water body status is expected based on the current understanding of the proposed development during construction and operation.

APPENDIX A.

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WATER FRAMEWORK DIRECTIVE ASSESSMENT MATRIX

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Risk screening of potential to cause deterioration of current WFD status										
	Surface Water	Scheme Elements	**Proposed Development**						Mitigation Measures	Overall Impact with mitgation measures
	Whelan's Bridge Stream_010 WFD surface waterbody (IE_SE_16W010400) Upper Suir Estuary Transitional Waterbody (IE_SE_100_0600)	Phase (Construction/ Operation)	Construction	Construction	Construction	Construction	Operation	Operation		
		Identified Quantitative Impacts	Increased run-off and sediment loading	Temporary land-take during the construction phase	Pollution due to accidental discharges or spillages during the construction phase	Release of sediments, pollutants and construction material during Bridge construction.	Increase in Hardstanding	Storage of Fuel		
WFD Status	Macrophytes and phytobenthos - combined	Predicted change to status elements (green = none, amber = possibly, red = likely)	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	**Construction:** The project-specific CEMP will include robust mitigation measures to protect the underlying hydrogeological environment. The CEMP will be a live document and it will go through a number of iterations before works commence and during the works. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent conditions relevant to the proposed development. These include management of soils, re-fuelling machinery and chemical handling and control of water during the construction phase. **Operation:** The proposed development is designed to ensure the protection of the hydrological environment such as delivery and distribution and use of oil interceptors on the stormwater system and the use of SuDS techniques. In order to limit the surface water discharge from the site to pre-development, greenfield rates, and to ensure improvement in the overall surface water quality before ultimate discharge the principles of Sustainable Drainage Systems, (SuDS) are to be implemented. Details are to be agreed with local county council authorities .	No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Macroinvertebrates		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Fish		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
Physio-Chemical Status	Total Ammonia	Predicted change to status elements (green = none, amber = possibly, red = likely)	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Total Nitrogen		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Ortho-Phosphate		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
Hydromorphological Elements	Quantity and dynamics of river flow	Predicted change to status elements (green = none, amber = possibly, red = likely)	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Connection to Groundwater		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	River continuity		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	River depth and width variation bed		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Structure and substrate of river bed		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Structure of riparian zone		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status

Risk screening of potential to cause deterioration of current WFD status									
	Groundwater	Scheme Elements	**Proposed Development**					Mitigation Measures	Overall Impact
	IE_SE_G_149 Waterford Groundwater Body (GWB)	Phase (Construction/ Operation)	Construction	Construction	Construction	Operation	Operation		
		Identified Quantitative Impacts	Increased run-off and sediment loading	Release of sediments, pollutants and construction material during Bridge construction.	Pollution due to accidential discharges or spillages during the construction phase	Increase in Hardstanding	Storage of Fuel		
Quantitative Elements	**Saline or other intrusions.** To identify groundwater bodies where the intrusion of poor quality water as a result of groundwater abstraction is leading to sustained upward trends in pollutant concentrations or significant impact on one or more groundwater abstractions.	Predicted change to status elements (green = none, amber = possibly, red = likely)	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	**Construction:** The project-specific CEMP will include robust mitigation measures to protect the underlying hydrogeological environment. The CEMP will be a live document and it will go through a number of iterations before works commence and during the works. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent conditions relevant to the proposed development. These include management of soils, re-fuelling machinery and chemical handling and control of water during the construction phase. No signficant dewatering is required which could impact on quantitaive status. **Operation:** The proposed development is designed to ensure the protection of the underlying hydrogeological environment such as use of oil interceptors on the stormwater system and prior to discharge from the site and the use of SuDS techniques. In order to limit the surface water discharge from the site to pre-development, greenfield rates, and to ensure improvement in the overall surface water quality before ultimate discharge the principles of Sustainable Drainage Systems, (SuDS) are to be implemented. No signficant abstraction is required which could impact on quantitaive status. The proposed foul drainage drainage system willeventually discharge to the licenced facility at Ballyduff Lower-Kilmeaden WWTP	No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Surface water. To assess the impact of groundwater abstractions on the ecological status of surface water bodies.		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Groundwater Dependent Terrestrial Ecosystems (GWDTE's) To assess the impact of groundwater abstractions on the condition of GWDTE'S.		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Water balance To identify groundwater bodies where abstractions exceed the available resource.		Not Applicable (no dewatering anticipated)	Not Applicable (no dewatering anticipated)	Not Applicable (no dewatering anticipated)	Not Applicable (no water supply from borehole anticipated)	Not Applicable (no water supply from borehole anticipated)		Not Applicable
Chemical Elements	**Saline or other intrusions.** To identify groundwater bodies where the intrusion of poor quality water as a result of groundwater abstraction is leading to sustained upward trends in pollutant concentrations or significant impact on one or more groundwater abstractions.	Predicted change to status elements (green = none, amber = possibly, red = likely)	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Surface water. To assess the impact of groundwater abstractions on the ecological status of surface water bodies.		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Groundwater Dependent Terrestrial Ecosystems (GWDTE's) To assess the impact of nutrient concentrations in groundwater (primarily phosphates) on GWDTE's.		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	Drinking Water Protected Areas (DrWPAs) To identify groundwater bodies failing to meet the DrWPA objectives defined in Article 7 of the WFD or at risk of failing in the future.		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status
	General quality assessment To identify groundwater bodies where widespread deterioration in quality has or will compromise the strategic use of groundwater.		No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.	No measurable change anticipated.		No anticipated impacts to the hydrological environment with no deterioration to the WFD Status

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APPENDIX 7.1

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Appropriate Assessment Screening Report and Natura Impact Statement

FERS, 2025

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APPROPRIATE ASSESSMENT SCREENING REPORT AND NATURA IMPACT STATEMENT IN SUPPORT OF APPROPRIATE ASSESSMENT OF A PROPOSED DEVELOPMENT AT KILMEADEN VILLAGE, CO. WATERFORD.

July 2025









DOCUMENT CONTROL

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Document:	Appropriate assessment screening report and Natura Impact Statement in support of appropriate assessment of a proposed development at Kilmeaden village, Co. Waterford.
Clients:	Kent Homes and Echelon Data centres.
Prepared by:	Ciarán Byrne, FERS Ltd, Lackabeg, Kildavin, Enniscorthy, Co. Wexford. ciaran.byrne@fers.ie
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Completion date:	25/07/25

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EXECUTIVE SUMMARY

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The proposed development at Kilmeaden, Co. Waterford comprises four distinct but connected areas including a new village centre, a solar farm and rewilding area including grid scale battery storage, and a data centre with associated energy centre. The proposed development covers an area of 908.64 hectares comprising the proposed Technology Park and Village Centre, and the proposed Solar Panel Farm.

Although the potential development will primarily impact on habitats of low ecological significance, it is located within an ecologically sensitive area, being proximate to several Natura 2000 sites. As such, in accordance with the Precautionary Principle, the proposed development required Appropriate Assessment screening in order to comply with article 6(3) of the Habitats Directive. FERS Ltd was commissioned to undertake an Appropriate Assessment screening exercise regarding the potential impacts of the proposed development on the Natura 2000 network.

Screening having identified potential significant impacts on the Lower River Suir SAC, Phase II Appropriate Assessment and the preparation of a Natura Impact Statement was deemed to be required.

In order for Appropriate Assessment (AA) to comply with the criteria set out in the Habitats Directive and Part XAB of the Planning and Development Act 2000, an AA undertaken by the Competent Authority must include an examination, analysis, evaluation, findings, conclusions and a final determination. This document comprises the findings of the Appropriate Assessment (Habitats Directive) screening report and the Natura Impact Statement prepared in respect of the proposed development.

Following an examination, analysis and evaluation of the relevant information, and applying the precautionary principle, it is the professional opinion of the authors of this report that assuming the implementation of all mitigation measures in full as outlined in the EIAR and herein, the proposed development will not alone or in combination with other plans and projects adversely affect the integrity of the Lower River Suir SAC (the only European Site for which Stage 2 appropriate assessment was required) in view of the conservation objectives of its Qualifying Interests. This is the legal test for the NIS which must be met.

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1 Introduction

1.1 FERS Ltd. Company background

Forest, Environmental Research and Services have been conducting ecological surveys and research since the company's formation in 2005 by Dr Patrick Moran and Dr Kevin Black. Dr Moran, the principal ecologist with FERS, holds a 1st class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA management (UCD) a Diploma in Environmental and Planning Law (King's Inn), a M.Sc. in Geographical Information Systems and Remote Sensing (University of Ulster, Coleraine) and a M.Sc. in Environmental and Climate Law (UCD). Patrick has in excess of 20 years of experience in carrying out ecological surveys on both an academic and a professional basis. Dr Emma Reeves, senior ecologist with FERS holds a 1st class honours degree in Botany, and a Ph.D. in Botany. Emma has in excess of 15 years of experience in undertaking ecological surveys on an academic and professional basis. Ciarán Byrne, a senior ecologist with FERS holds a 1st class honours degree in Environmental Management (DIT) and a M.Sc. in Applied Science/Ecological Assessment (UCC). Ciarán has in excess of 10 years in undertaking ecological surveys on both an academic and a professional basis. Senan Clynch, a junior ecologist with FERS holds a 1st class honours in Environmental Science from Trinity College Dublin. Senan has several years of academic and professional experience undertaking ecological surveys.

FERS client list includes National Parks and Wildlife Service, An Bord Pleanála, various County Councils, the Heritage Council, Teagasc, University College Dublin, the Environmental Protection Agency, Inland Waterways Association of Ireland, the Department of Agriculture, the Office of Public Works and Coillte in addition to numerous private individuals and companies. FERS Ltd. has prepared in excess of 300 Appropriate Assessment Screenings/Natura Impact Statements for a wide range of plans and projects.

1.2 The aim of this report

This report has been prepared in compliance with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG 2010a) and the European Communities (Birds and Natural Habitats) Regulations 2011, as amended in support of the Appropriate Assessment of a proposed development at Kilmeaden village, Co. Waterford. This report provides the information required in order to establish whether or not the proposed development is likely to have a significant ecological impact on any Natura 2000 sites, in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

1.3 Methodology for Appropriate Assessment

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1.3.1 Guidance

A number of guidance documents on the appropriate assessment process have been consulted during the preparation of this NIS. These are:

- DoEHLG (2010a) *Appropriate Assessment of Plans and Projects in Ireland. Revision February 2010.* Department of Environment, Heritage and Local Government, Dublin.
- DoEHLG (2010b) *Circular NPW 1-10 & PSSP 2-10*. Department of Environment, Heritage and Local Government, Dublin.
- European Commission (2002) *Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC: Novembre 2001*. Publications Office, Luxembourg.
- European Commission (2007) *Guidance Document on Article 6(4) of the 'Habitats Directive' 92/43/EEC. Clarification of the Concepts of: Alternative Solutions, Imperative Reasons of Overriding Public Interest, Compensatory Measures, Overall Coherence, Opinion of the Commission.* Publications Office, Luxembourg.
- European Communities (Birds and Natural Habitats) Regulations 2011 (as amended) , S.I. No. 477 of 2011. Stationery Office, Dublin.
- European Commission (2019) *Managing Natura 2000 Sites: The Provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*. Publications Office, Luxembourg.
- OPR (2021) *OPR Practice Note PN01 Appropriate Assessment Screening for Development Management*. Office of the Planning Regulator, Dublin.

The assessment requirements of Article 6 are generally dealt with in a stage-by-stage approach. The stages as outlined in DoEHLG (2010a) are:

Stage (1) Screening – Appropriate Assessment (Habitats Directive) Screening report

This initial process identifies the likely impacts of a proposed project or plan upon a Natura 2000 site, either alone, or in combination with other projects or plans and considers whether these impacts are likely to be significant. Please note that judgement in the ECJ (C323/17) found that:

"…Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site…"

The deliverable of the screening process is a screening report.

Stage (2) Appropriate Assessment – preparation of Natura Impact Statement (NIS)

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The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts. The deliverable of this stage in the Appropriate Assessment process is a Natura Impact Statement.

Stage (3) Assessment of Alternative Solutions

The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site.

Stage (4) Assessment where Adverse Impacts Remain

An assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

At each stage, there is a determination as to whether a further stage in the Appropriate Assessment process is required. If, for example, the conclusions of the Screening stage indicate that there will be no significant impacts on the Natura 2000 site, there is no requirement to proceed further. Appropriate Assessment stages 1 and 2 deal with the main requirements for assessment under Article 6.3. Stage 3 may be part of Article 6(3) or a necessary precursor for Stage 4.

This report has been undertaken in accordance with the European Commission's Guidance on Appropriate Assessment (European Commission, 2002) which comprises the following:

1. Description of the Plan.
2. Identification of Natura 2000 sites likely affected by the Plan.
3. Identification and description of individual and cumulative impacts likely to result from the Plan.
4. Assessment of the significance of the impacts identified on the conservation objectives of the site(s).
5. Exclusion of sites where it can be objectively concluded that there will be no likely impacts on conservation objectives.

1.3.2 Desktop study

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A desk study to collate relevant environmental information pertaining to the proposed development was undertaken to inform this appropriate assessment. The following sources were consulted:

- NPWS boundary data shapefiles for SACs (SAC_ITM_2024_10), SPAs (SPA_ITM_2023_05), NHAs (NHA_ITM_2019_06) and pNHAs (pNHA_ITM_2015_11).
- NPWS habitat/species datasets including National Survey of Native Woodlands (2003-2008), Ancient and Long-established Woodland), *Margaritifera* sensitive areas, Irish Semi-natural Grassland Survey.
- National Biodiversity Data Centre mapping of species of conservation concern, available from https://maps.biodiversityireland.ie/
- Site documents for relevant Natura 2000 sites including Site Synopses, Conservation Objectives and Natura 2000 Standard Data forms.
- Information outlined in NPWS (2019a) and NPWS (2019b) Article 17 reporting on the conservation status of habitats (Annex I) and species (Annex II, IV and V).
- EPA online mapping data including surface and groundwater quality, water features, river catchment boundaries, groundwater bodies, wastewater/IPPC/waste emission points, pressures on rivers/lakes/groundwater, rivers/groundwater in SAC habitats, rivers/surface waters in SPA habitats, drinking water – rivers/lakes/groundwater, etc.
- OSI Geohive online mapping data including historic 6-inch mapping (1837-1842), satellite imagery (1995, 2000, 2005, 2005-2012, Aerial Premium), contours, soils, geology etc.

2 Appropriate Assessment Screening

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Following the guidelines set out by DoEHLG (2010a), Appropriate Assessment Screening (Phase I Appropriate Assessment) is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3) of the EU Habitats Directive. According to the guidelines, Appropriate Assessment Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

(1) Is the plan or project directly connected to or necessary for the management of the site?

(2) Is the plan or project, alone or in combination with other such plans or projects likely to have significant negative effects on a Natura 2000 site(s) in view of the conservation objectives of that site(s)?

The proposed development cannot be screened out via the first screening test (i.e. the proposed development is not directly connected to, or necessary for the management of any Natura 2000 site). The screening exercise will therefore inform the Appropriate Assessment process in determining whether the proposed development, alone or in combination with other plans and projects, has any potential to have significant effects on the Natura 2000 sites within the study area. If the effects are deemed to be significant, potentially significant, or uncertain, or it the screening process becomes overly complicated, then applying the Precautionary Principle and in accordance with Article 6(3) of the Habitats Directive, a Stage 2 Appropriate Assessment is required stage, i.e., "*The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.*"

2.1 Location of proposed development

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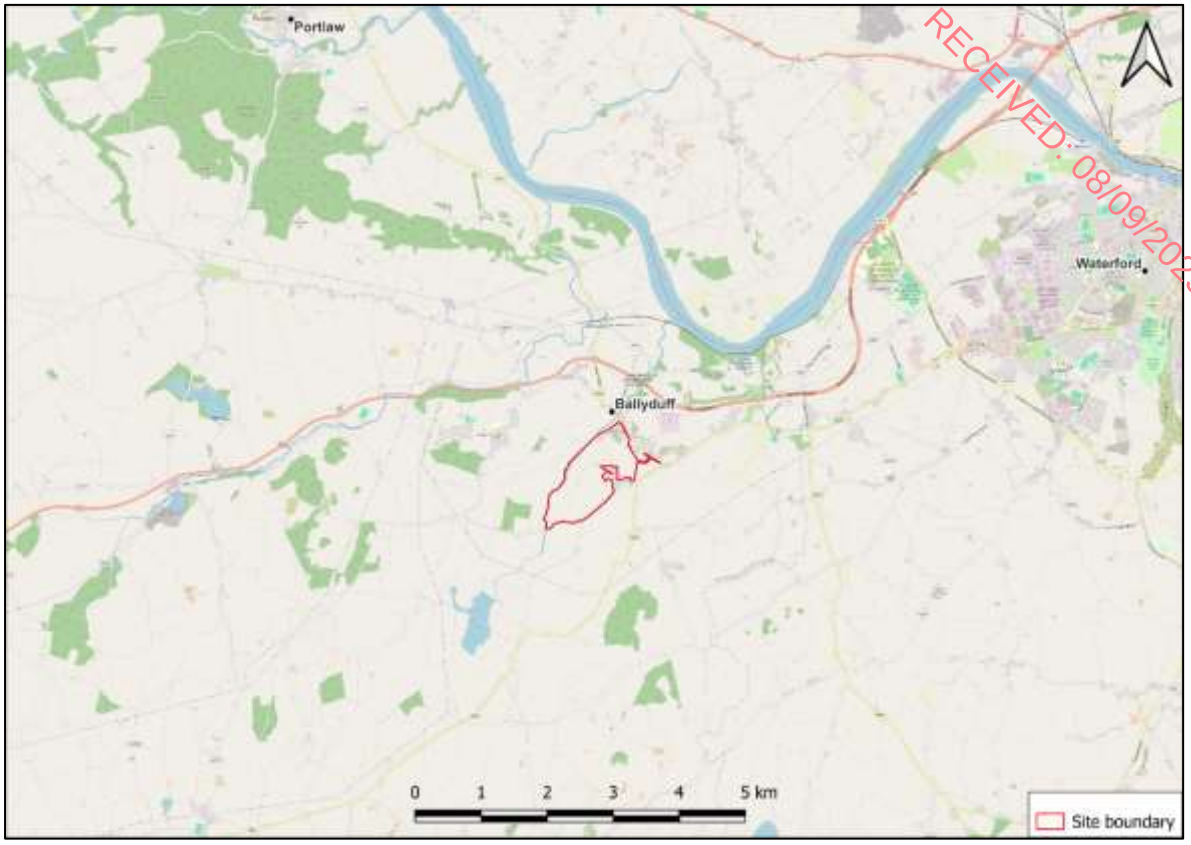
The proposed development is located at Kilmeaden village and environs, Co. Waterford. Kilmeaden village is located on the R680 regional road, approximately 10km west of the centre of Waterford city. The site primarily comprises the site of a previously demolished factory, along with lands which were associated with the management of water discharged from the factory. Figure 1 and Figure 2 below gives an overview of the proposed development site at Kilmeaden village and environs. The approximate location of the proposed development site is illustrated in Figure 3, Figure 4 and Figure 5.



Figure 1: Drone overview of the north-eastern section of the proposed development site showing the demolished Kilmeaden cheese plant.



Figure 2: Drone overview of the constructed wetlands at Kilmeaden.



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Figure 3: Location of proposed development (1:60,000).



Figure 4: Location of proposed development (1:20,000).

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Figure 5: Proposed development relative to surrounding habitats (1:10,000).

2.2 Description of proposed development

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2.2.1 Proposed development overview

The proposed development comprises four distinct but connected areas including a new village centre, a solar farm and rewilding area including grid scale battery storage, and a data centre with associated energy centre. The proposed development covers an area of 108.64 hectares comprising the proposed Technology Park and Village Centre, and the proposed Solar Panel Farm.

The various development areas will be connected with landscaped areas, as well as pedestrian and cycling routes, to provide for an integrated and permeable form of development, which will enhance the economic prosperity and amenity of Kilmeaden.

A 220 kV substation development is also proposed for development within the red line boundary, which will act as the landfall point for an offshore windfarm off the coast of Waterford. Planning for the 220kv grid connection and gas connection will be undertaken under via a separate consenting process undertaken by Gas Networks Ireland.

2.2.2 Characteristics of the proposed development

The proposed development is presented in Figure 6 described below. Details of the layout are presented in the planning drawings prepared by Hyphen Architects and AtkinsRealis. The development comprises a Village Centre and Technology Park with new connections provided from the village to the proposed area of green infrastructure.

For a full description of the proposed development see EIAR Chapter 2 Description of the Proposed Development. The Proposed Development as set out in the public notices consists of:

The proposed development comprises the development of the former cheese factory site and adjoining lands to provide for a mixed use village centre, technology park, and renewable energy development on a total site area of 108.79 hectares. The proposed development will consist of the following:

The demolition of 2 no. existing single storey outbuildings and 1 no. AGI building (126 sq.m. GFA in total) in the northern portion of the site, along with all site clearance and enabling works required to facilitate the proposed development.

In the northern portion of the site the construction of a new village centre comprising the following:

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- A two-storey mixed-use building (fronting onto the R680) comprising a gym, café, health centre, pharmacy, and office space, with a total GFA of c. 1,856 sq.m. (c. 10.3m in height).
- A two-storey community centre (with a GFA of c. 847 sq.m. and c. 11m in height).
- 2 no. three-storey apartment buildings (Apartment Blocks A and B) comprising 48 no. units in total, including 6 no. 1 bedroom apartments and 42 no. 2 bedroom apartments. The apartment buildings have a combined gross floor area (GFA) of c. 5,374 sq.m. and the buildings are c. 14.3m in height. Each of the apartment buildings include private open space in the form of patios and balconies, along with bin stores, communal open space, and access arrangements.
- A two-storey supermarket (including off-licence) comprising a GFA of c. 1,605 sq.m. (c. 1,514 sq. m at ground floor level and c. 91 sq. m . at first floor level) with a height of c. 8.2m . A bring bank will be provided to the south of the supermarket.
- A two-storey childcare facility building with a GFA of c. 1,345 sq.m. (c. 10m in height), along with adjacent outdoor play area.
- A Multi-Use Games Area (MUGA), located adjacent to Apartment Block A and the childcare facility.
- A two-storey commercial / office building comprising 4 no. commercial units, (with a GFA of c. 614 sq.m. and c. 10.1m in height).
- 2 no. two storey warehouse buildings (each with a GFA of c. 562 sq. m. including ancillary office space and staff welfare facilities, with an overall height of c. 10m).
- A District Heating Plant Room (with a GFA of c. 14 sq. m. and c. 3.8m in height) to provide district heating from the technology park to the village centre, bin stores, lighting, access arrangements, and the provision of areas of public realm and open recreational spaces including a new village square.

In the central portion of the site the construction of a new technology park comprising the following:

- 3 no. two storey (with two mezzanine level), information and communication technology (ICT) facility buildings, each with a GFA of c. 24,033 sq.m (c. 72,099 sq.m GFA in total), and with a height (to parapet level) of c. 19.8m and a maximum flue height of c. 25m.
- Each of the 3 no. ICT facility buildings will accommodate ICT equipment rooms, associated electrical and mechanical equipment rooms, loading bays, maintenance and storage space, office administration areas, and staff facilities, emergency generators and flues, and plant at roof level. External plant rooms (with an overall height of c. 3.7m) and modular water tanks will be provided adjacent to each of the ICT facility buildings.

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- An energy centre building (with a GFA of c. 3,720 sq.m and with a parapet height of c. 13.8m) including 16 no. gas powered turbines, associated flues (with a height of c. 29.8m), associated ancillary containers and tanks, backup fuel pumps and tanks, fire tanks (with a height of c. 12.8m) and pump house, MCC control room (with a GFA of c. 41 sq.m.), welfare and storage facilities (with a GFA c. 60 sq.m.), a three storey control room building with basement (with a GFA of c. c. 5,343 sq.m. and an overall height of c. 18.9m), a single storey with basement MV building (with a GFA of c. 1,246 sq.m. and an overall height of c. 5.3m), step up and step down transformers, and 7 no. blackstart generators.
- 2 no. warehouses with ancillary office space, with a GFA of c. 3,121 sq.m. each, and with a height of c. 14.2 metres
- A gas above ground installation (AGI) and pressure regulating and metering station (PRMS) compound, (comprising an AGI Building, Boiler House Kiosk, E&I Kiosk, Control Room and Skid House) with a combined GFA of c. 202 sq.m.), 3 no. ICT pumphouses (c. 40 sq.m. each), and two single storey guardhouses (each with a GFA of c.29 sq.m).

In the southern portion of the site the construction of a of a solar farm with PV arrays consisting of 43,056 PV panels mounted on concrete footings, 3 no. single storey transformer cabins (with a combined GFA of c. 54.6 sq.m), a battery energy storage system (BESS) compound with an area of c. 6,682 sq.m.(comprising modular battery units within a fenced compound, along with associated electrical equipment and transformers), internal access tracks, and security fencing.

In the western portion of the site the construction of a new vehicular access (including a bridge over an existing watercourse) to the Technology Park to be provided between the R680 and the R681. The primary vehicular access to the village centre will be facilitated via the existing access from the local road to the north. Pedestrian and cycling access to the village centre will be facilitated via both the local road and R680. Access to the Solar farm is provided via the local road to the north of the solar farm.

Provision of areas of public open space and a walking/cycling route which extends from the village centre to the southeast of the Technology Park. The development provides 441 no. car parking spaces and 267 no. cycle spaces. The development includes provision of landscaping and planting throughout, PV panel zones at roof level, boundary treatments, signage zones, site lighting, and all associated site services and development works, including underground foul and storm water drainage network and sustainable urban drainage systems, and all ancillary works.

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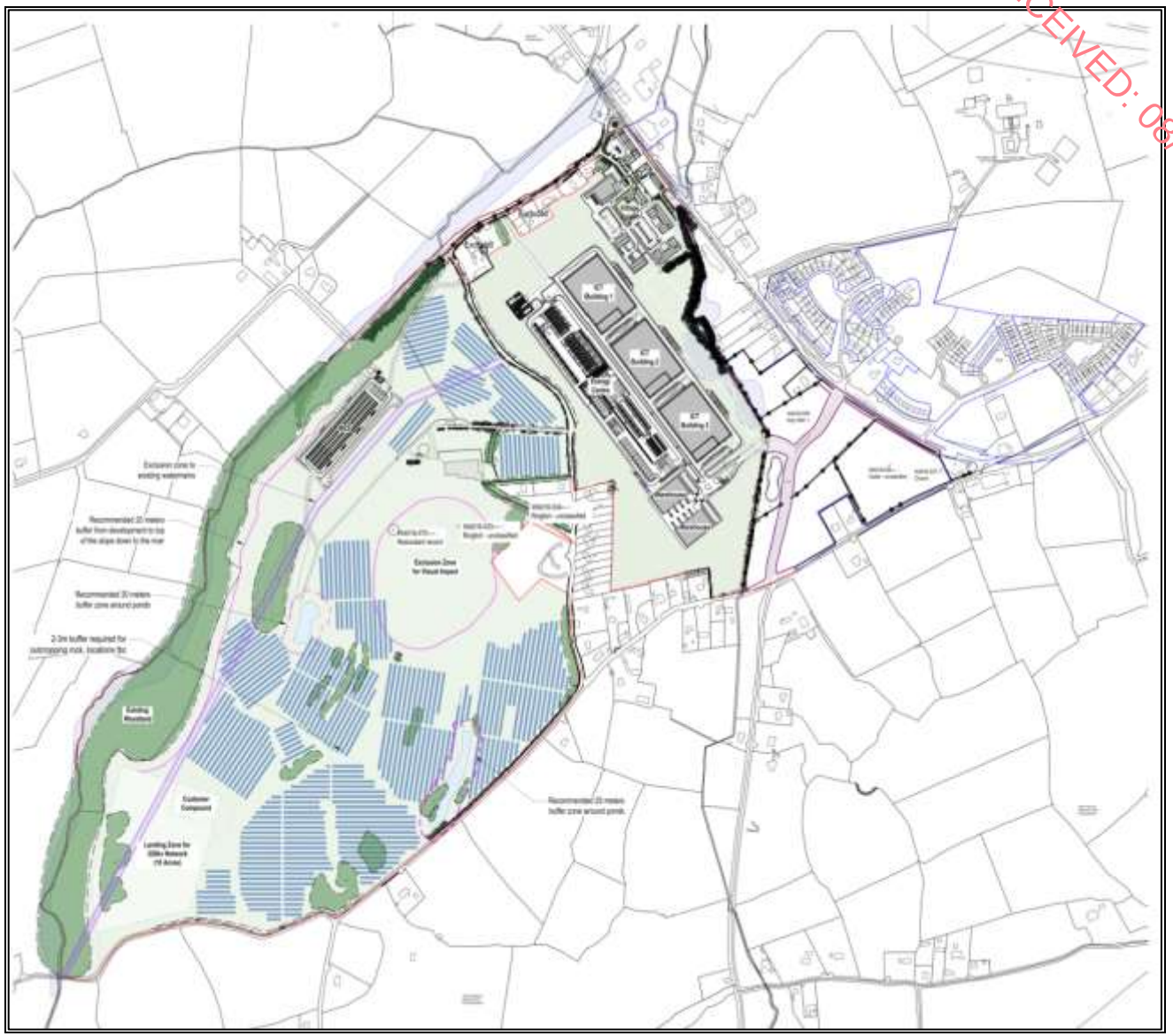


Figure 6: Proposed Masterplan Layout (Source: Hyphen DRG No. KMMP-HYP-ZZ-ZZ-DR-A-0100) Redline – Site Boundary.

2.3 Desktop study

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2.3.1 National Biodiversity Data Centre notable records

The geographical scope of the assessment is to determine if the proposed development has the potential to have any likely significant effects on the Natura 2000 sites occurring within the zone of influence of the proposed development based on Source-Pathway-Receptor linkages. The NBDC database was accessed on 15/01/2025 in order to query records of species of "Conservation Concern (including invasive species)" intersecting the Blackknock townland in which the proposed development is located (See Figure 7). Species of conservation concern whose recorded grid square intersects the queried Blackknock townland are illustrated in Table 1. Invasive species whose recorded grid square intersects the queried Blackknock townland are illustrated in Table 2. Of note, the habitats present have changed markedly since the plant has ceased to operate and only records dating back to 2011 are presented here as older records must be considered historical and no longer of relevance.



Figure 7: Queried Blackknock townland in relation to the proposed development site boundary (1:10,000).

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Table 1: Species of conservation concern recorded in queried grid squares intersecting Blackknock townland in which the proposed development is located. BD = Birds Directive, HD = Habitats Directive, FPO = Flora Protection Order 2015, WA = Wildlife Acts, BOCCI = Birds of Conservation Concern 2020-2026.

SPECIES	YEAR OF LAST RECORD	ANNEX I BD	ANNEX II HD	ANNEX IV HD	ANNEX V HD	FPO	WA	RED LIST STATUS	BOCCI
Bar-tailed Godwit Limosa lapponica	2011	I							Red
Black-headed Gull Larus ridibundus	2011								Amber
Black-tailed Godwit Limosa limosa	2011								Red
Brambling Fringilla montifringilla	2011								Amber
Chough Pyrrhocorax pyrrhocorax	2011	I							Amber
Common Gull Larus canus	2011								Amber
Common Sandpiper Actitis hypoleucos	2011								Amber
Cormorant Phalacrocorax carbo	2011								Amber
Corncrake Crex crex	2011	I							Red
Curlew Numenius arquata	2011								Red
Dunlin Calidris alpina	2011								Red
Goldcrest Regulus regulus	2011								Amber
Golden Plover Pluvialis apricaria	2011	I							Red
Goosander Mergus merganser	2011								Amber
Great Crested Grebe Podiceps cristatus	2011								Amber
Great Northern Diver Gavia immer	2011	I							Amber
Greenfinch Chloris chloris	2011								Amber
Grey Plover Pluvialis squatarola	2011								Red
Grey Wagtail Motacilla cinerea	2011								Red
Hen Harrier Circus cyaneus	2011	I							Amber
Herring Gull Larus argentatus	2011								Amber
House Martin Delichon urbicum	2011								Amber

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House Sparrow Passer domesticus	2011								Amber
Kestrel Falco tinnunculus	2011								Red
Kittiwake Rissa tridactyla	2011								Red
Knot Calidris canutus	2011								Red
Lapwing Vanellus vanellus	2011								Red
Lesser Black-backed Gull Larus fuscus	2011								Amber
Light-bellied Brent Goose Branta bernicla hrota	2011								Amber
Little Egret Egretta garzetta	2011	I							Green
Long-tailed Duck Clangula hyemalis	2011								Red
Mallard Anas platyrhynchos	2011								Amber
Meadow Pipit Anthus pratensis	2011								Red
Mediterranean Gull Larus melanocephalus	2011	I							Amber
Mute Swan Cygnus olor	2011								Amber
Oystercatcher Haematopus ostralegus	2011								Red
Pochard Aythya ferina	2011								Red
Razorbill Alca torda	2011								Red
Red-breasted Merganser Mergus serrator	2011								Amber
Redshank Tringa totanus	2011								Red
Red-throated Diver Gavia stellata	2011	I							Amber
Redwing Turdus iliacus	2011								Red
Ringed Plover Charadrius hiaticula	2011								Amber
Sand Martin Riparia riparia	2011								Amber
Scaup Aythya marila	2011								Red
Shag Phalacrocorax aristotelis	2011								Amber
Shelduck Tadorna tadorna	2011								Amber
Skylark Alauda arvensis	2011								Amber

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Smew Mergellus albellus	2011	I							Amber
Snipe Gallinago gallinago	2011								Red
Spotted Flycatcher Muscicapa striata	2011								Amber
Spotted Redshank Tringa erythropus	2011								Amber
Starling Sturnus vulgaris	2011								Amber
Stock Dove Columba oenas	2011								Red
Swallow Hirundo rustica	2011								Amber
Swift Apus apus	2011								Red
Teal Anas crecca	2011								Amber
Tufted Duck Aythya fuligula	2011								Amber
Turnstone Arenaria interpres	2011								Amber
Whooper Swan Cygnus cygnus	2011	I							Amber
Willow Warbler Phylloscopus trochilus	2011								Amber
Woodcock Scolopax rusticola	2011								Red
Yellowhammer Emberiza citrinella	2011								Red
Irish/Mountain Hare Lepus timidus	2011				V		WA	LC	
Soprano Pipistrelle Pipistrellus pygmaeus	2016			IV			WA	LC	

Table 2: Invasive species recorded in queried grid squares intersecting Blackknock townland in which the proposed development is located including historical species, which may still occur in the vicinity.

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SPECIES	DATE OF LAST RECORD	INVASIVE DESIGNATION
Cherry Laurel Prunus laurocerasus	2002	High Impact
Curly waterweed Lagarosiphon major	1999	Third Schedule | EU Reg. 1143/2014 | High Impact
Field penny-cress Thlaspi arvense	2006	Medium Impact
Himalayan honeysuckle Leycesteria formosa	2001	Medium Impact
Japanese knotweed Fallopia japonica	2008	Third Schedule | High Impact
Parrot's feather Myriophyllum aquaticum	1999	Third Schedule | EU Reg. 1143/2014 | High Impact
Sycamore Acer pseudoplatanus	2001	Medium Impact
American Mink Mustela vison	2008	High Impact
Common Garden Snail Cornu asperum	1975	Medium Impact
European rabbit Oryctolagus cuniculus	2014	Medium Impact
Fallow Deer Dama dama	2008	High Impact
Jenkins's spire snail Potamopyrgus antipodarum	1940	Medium Impact
Wrinkled helicellid Candidula intersecta	1940	Medium Impact

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2.3.2 Map of Irish Wetlands

The Map of Irish Wetlands online resource was queried on 16/01/2025 in order to establish if there are any recorded wetland habitats in the immediate vicinity of the proposed development site. (See Figure 8 below).



Figure 8: Excerpt from Map of Irish Wetlands showing proposed development site boundary relative to proximate wetland sites (1:9,000).

Details of protection status, site evaluation and main wetland types of sites proximate to the proposed development is provided below in Table 3 and Table 4.

Table 3: Map of Irish Wetlands database information pertaining to "Blackknock Ponds".

Site Name	BLACKKNOCK PONDS
Site Code	WMI_WD100
County	Waterford
Site Evaluation	F Rating:
Site Protected	No
Main Wetland Type	ARTIFICIAL POND, SCRUB
Description	Constructed wetland ponds with reed swamp and other wetland communities. These constructed wetlands were designed to treat creamery effluent, and provide a series of pools, some of which may be flooded, others of which may have lower levels (providing exposed mud), at any one time.

Table 4: Map of Irish Wetlands database information pertaining to "Blackknock Wet Woodland".

Site Name	BLACKKNOCK WET WOODLAND

Site Code	WMI_WD195
County	Waterford
Site Evaluation	C+ Rating: County Conservation value
Site Protected	No
Main Wetland Type	RIVER, WET WOODLAND (OAK ASH OR WILLOW ALDER)
Description	The dominant woodland type is wet willow-alder-ash, with all three of these species present: grey willow (*Salix cinerea*) and alder (*Alnus glutinosa*) in the canopy and ash (*Fraxinus excelsior*) mostly in the understorey.

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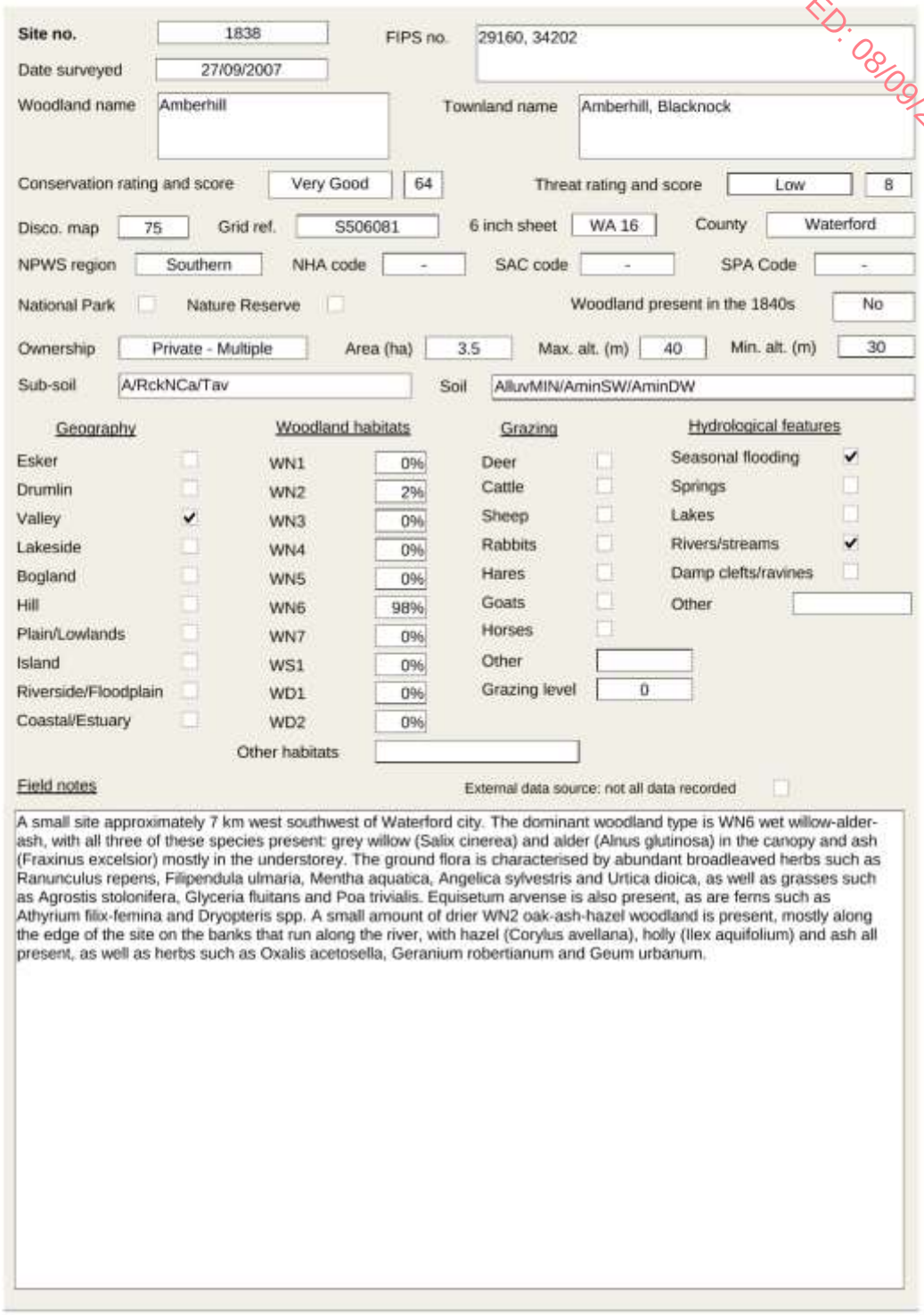
2.3.3 National Survey of Native Woodlands

"Amberhill" woodland (see Figure 9 below), site code 1838 with an area of 3.5ha was surveyed as part of the National Survey of Native Woodlands on the 27/09/2007 (Perrin et al, 2008). The dominant Fossitt (2000) habitat type was WN6 – Wet willow-alder-ash woodland, with small areas of drier WN2 – Oak-ash-hazel woodland along the edges. An excerpt of the survey data from 2007 is provided below in Figure 10. The site was assessed as annexed habitat 91EO Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Pandion, Alnion incanae, Salicion albae).



Figure 9: NSNW site "Amberhill", site code: 1838 along the Whelanbridge River (1:9,000).

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Site no.	1838	FIPS no.	29160, 34202
Date surveyed	27/09/2007		
Woodland name	Amberhill	Townland name	Amberhill, Blacknock
Conservation rating and score	Very Good	64	Threat rating and score: Low 8
Disco. map	75	Grid ref.	S506081
6 inch sheet	WA 16	County	Waterford
NPWS region	Southern	NHA code	-
SAC code	-	SPA Code	-
National Park	☐	Nature Reserve	☐
Woodland present in the 1840s	No		
Ownership	Private - Multiple	Area (ha)	3.5
Max. alt. (m)	40	Min. alt. (m)	30
Sub-soil	A/RckNCa/Tav	Soil	AlluvMIN/AminSW/AminDW

Geography		Woodland habitats		Grazing		Hydrological features	
Esker	☐	WN1	0%	Deer	☐	Seasonal flooding	✔
Drumlin	☐	WN2	2%	Cattle	☐	Springs	☐
Valley	✔	WN3	0%	Sheep	☐	Lakes	☐
Lakeside	☐	WN4	0%	Rabbits	☐	Rivers/streams	✔
Bogland	☐	WN5	0%	Hares	☐	Damp clefts/ravines	☐
Hill	☐	WN6	98%	Goats	☐	Other	
Plain/Lowlands	☐	WN7	0%	Horses	☐		
Island	☐	WS1	0%	Other			
Riverside/Floodplain	☐	WD1	0%	Grazing level	0		
Coastal/Estuary	☐	WD2	0%				
		Other habitats					

Field notes

External data source: not all data recorded ☐

A small site approximately 7 km west southwest of Waterford city. The dominant woodland type is WN6 wet willow-alder-ash, with all three of these species present: grey willow (Salix cinerea) and alder (Alnus glutinosa) in the canopy and ash (Fraxinus excelsior) mostly in the understorey. The ground flora is characterised by abundant broadleaved herbs such as Ranunculus repens, Filipendula ulmaria, Mentha aquatica, Angelica sylvestris and Urtica dioica, as well as grasses such as Agrostis stolonifera, Glyceria fluitans and Poa trivialis. Equisetum arvense is also present, as are ferns such as Athyrium filix-femina and Dryopteris spp. A small amount of drier WN2 oak-ash-hazel woodland is present, mostly along the edge of the site on the banks that run along the river, with hazel (Corylus avellana), holly (Ilex aquifolium) and ash all present, as well as herbs such as Oxalis acetosella, Geranium robertianum and Geum urbanum.

Figure 10: Excerpt from Perrin et al (2008) survey data for “Amberhill”, site code: 1838.

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2.3.4 Margaritifera sensitive areas

GIS shapefiles of Margaritifera sensitive areas were consulted to identify any river catchments within the vicinity of the proposed development in which Freshwater Pearl Mussels (*Margaritifera margaritifera*) have been recorded. The catchment limits are based on sub-basin boundaries from the EPA Water Framework Directive geodatabase (filename: EPA_WFD_v3.mdb), and catchments are divided up into three categories:

1. Catchments of SAC populations
2. Catchments of other extant populations
3. Catchments with previous records of Margaritifera, but current status unknown.

The proposed development is within "Catchments with previous records of Margaritifera, but current status unknown" as illustrated below in Figure 11.

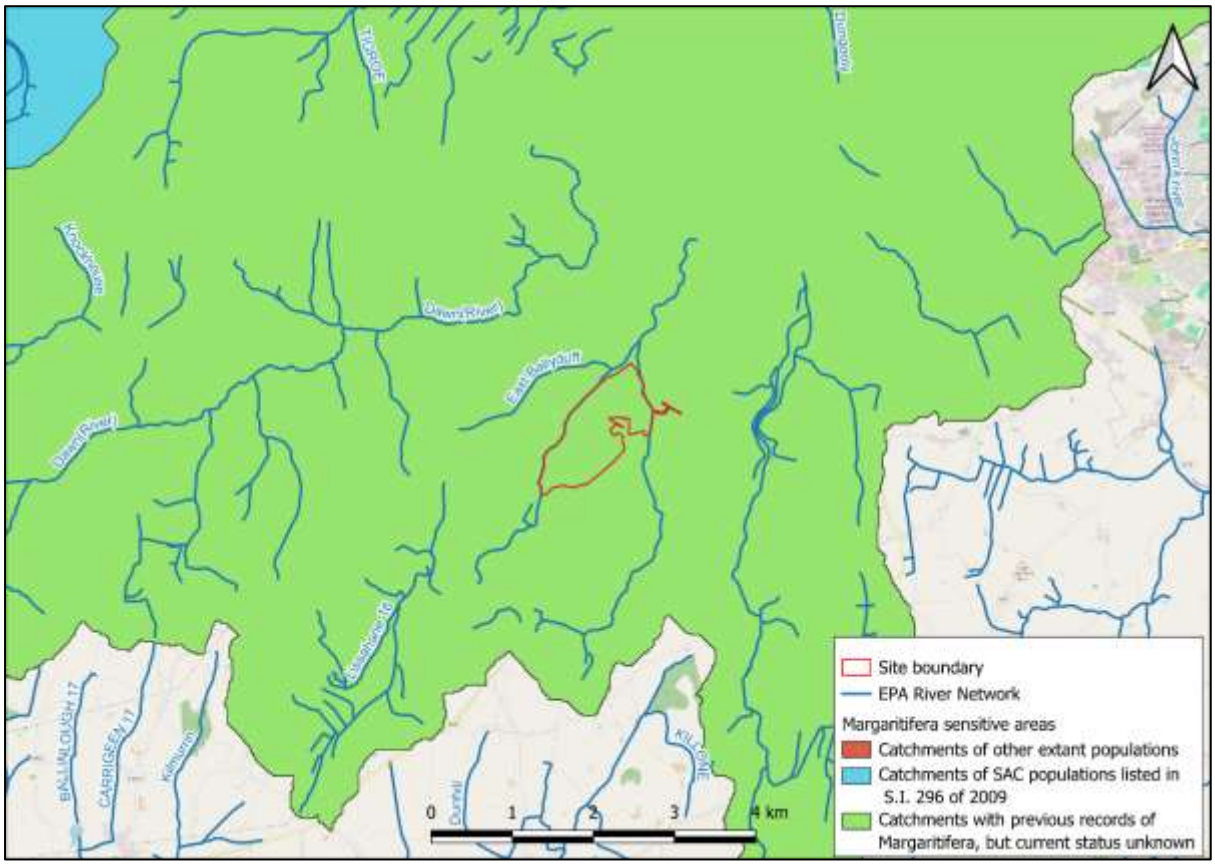


Figure 11: Margaritifera sensitive areas proximate to the proposed development (1:50,000).

2.3.5 I-WeBS data

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"Kilmeaden Cream (Blackknock)", Irish grid reference S5108 was surveyed as part of the Irish Wetland Bird Survey (I-WeBS). The I-WeBS national monitoring programme, which commenced during the 1994/1995 season is funded by the National Parks and Wildlife Service and coordinated by the I-WeBS Office based at BirdWatch Ireland. I-WeBS monitors coastal wetland sites together with inland lakes, turloughs, rivers and callows. I-WeBS aims to monitor all non-breeding waterbirds in Ireland to provide the principal data on which the conservation of their populations and wetland habitats is based. To this end, I-WeBS has three main objectives (Birdwatch Ireland, 2008):

- to assess the importance of individual sites for waterbirds;
- to assess the size of non-breeding waterbird populations in Ireland;
- to assess trends in their numbers and distribution.

The Waterford Birds (2005) webpage "Site guide: Kilmeaden pools birds" provides background information relevant to the site in relation to its importance to birds. The habitat is described as "constructed wetlands with settling ponds and marsh habitat", with the main interest described as "waterfowl and waders". Regular/annual species listed include Green Sandpiper and Water Rail, while scarcer species and rarities at the site include Garganey, Hen Harrier, Ruff, Wood Sandpiper, Little Gull and Water Pipit. An excerpt of further details relevant to the site as outlined by Waterford Birds (2005) is reproduced below as follows:

"These constructed wetlands were designed to treat creamery effluent, and provide a series of pools, some of which may be flooded, others of which may have lower levels (providing exposed mud), at any one time. Large numbers of Moorhen are resident, and Water Rails also occur in the marshes. A good mix of dabbling duck (including Shoveler) occurs in winter, and Garganey has occurred as a migrant. Large numbers of Snipe occur in winter, and Green Sandpiper may occur in almost any month. Passage waders have included Ruff and Wood Sandpiper, and there is potential for rare species. Sedge Warblers breed in the marsh habitat here, and small numbers of Chiffchaffs winter. Water Pipits have occurred in winters 2003/2004 and 2004/2005, up to two birds each winter, and the marsh habitat here seems to be ideal for the species. A few Choughs are occasionally recorded feeding nearby (c.10 km inland)".

2.4 Description of existing conditions on site

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Site visits were undertaken between September 2024 and June 2025 by Senior Ecologists Dr. Emma Reeves and Ciarán Byrne and Junior Ecologist Senan Clynch. Owing to the ecological sensitivity of the site and surroundings, a summary of the results of these surveys are presented in the following sections. Please see the Chapter 7 (Biodiversity) of the EIAR for more detailed information.

2.4.1 Botanical/habitat surveys

Habitats occurring within the proposed development area were classified to Fossitt (2000) level 3. An overview of the habitats observed, and the dominant species present within habitat types are presented in the following paragraphs, along with photographs of representative areas of habitat. The Biodiversity chapter of the EIAR should be referred to for a map of the habitats occurring. The presence of invasive alien species as listed on the third schedule of the European Communities (Birds and Natural Habitats) Regulations 2011-24 within the proposed development area is also described and illustrated.

The location of the site is proximate to Kilmeaden village in Co. Waterford with the site extending away from the village to the southwest. The fields closest to the village consist of lush agricultural grassland dominated by Perennial Rye-grass *(Lolium perenne)* (probably cut for silage as no animals were observed here during the survey period). Large crop fields also occur which, at the start of survey work on the 3rd of September 2024 contained Maize. Harvesting occurred in October. At the most northerly corner of this section of the site the demolished Kilmeaden plant occurs (see Figure 12 and Figure 13). What remains here are large, concreted and tiled areas, levelled rubble piles, tarmac access roads and carpark with Bramble (*Rubus fruticosus* agg.) scrub and a small area of abandoned lawn. A treeline of Poplar (*Populus* sp.) is distinctive on the southeastern boundary of the demolition area. Some pump houses remain within this demolished area, which will be removed to facilitate the proposed development. Static bat monitors deployed to assess the use of the buildings by bats during the winter months detected no activity. Bat surveys in May and June 2025 identified no roosts within the application footprint.



Figure 12: Satellite imagery of the Kilmeaden factory in 2013 (MapGenie imagery).



Figure 13: Satellite imagery of the demolished Kilmeaden factory in 2025 (Google Earth imagery).

A portion of Whelan's Bridge River flows parallel to the town along the northeastern boundary (see Figure 14). For the sake of clarity, the waterways on site occur on the north-eastern boundary and on the western boundary. Both arise from the Knockaderry Reservoir and are components of the Whelan's Bridge River. They converge to the north of the R680. The NE boundary is flanked by hawthorn hedgerow in parts and by a line of mature Monterey Pine (*Pinus radiata*). The northwestern boundary is comprised of curtilage and private homes . On the eastern boundary, this section of the site is adjacent to a local road which runs through the Ballyduff townland and parallel to the R680. A well-managed hedge runs the length of this boundary.



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Figure 14: The Whelan's bridge Stream which runs along the northeastern boundary of the site parallel to the village.

Moving in a south-westerly direction, a farm track runs through the centre of the site and parallel to the Whelan's Bridge River. Along the farm track, Griselinia and Sycamore (*Acer pseudoplatanus*) treelines are notable and lead to an abandoned farmyard. The shed/barn occurs on the lower slopes of Blackknock hill, below it sloping fields of agricultural grassland fall away to the Western boundary of the site. These fields have been reseeded in recent years and are dominated by Perennial Rye-grass (*Lolium perenne*) (see Figure 15). The western boundary of the site is characterised by a significant area of Norway spruce plantation which adjoins the Whelan's Bridge River. Greater spotted woodpecker was noted to be calling in these trees on the 15th of January. Similarly, Common Crossbill were seen flying through and from this plantation on two separate occasions in December 2024 and January 2025.

Grass fields onsite are all grazed by heifers in a rotational manner. Cattle were taken off the land by December 2024. In agricultural terms, the fields become slightly less productive towards the south of the site being dominated by Yorkshire-fog (*Holcus lanatus*) rather than Perennial Rye-grass (*Lolium perenne*). These fields have a higher proportion of herb species such as Yarrow (*Achillea millefolium*), Ribwort Plantain (*Plantago lanceolata*) and Common Bird's-foot-trefoil (*Lotus corniculatus*) with a greater diversity of grass species such as Crested Dog's-tail (Cynosurus cristatus), Creeping Bent (*Agrostis stolonifera*) and Meadow Foxtail (*Alopecurus pratensis*). This grassland has been modified through grazing and other agricultural practices to produce improved dry meadow type grassland (GSi2).



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Figure 15: Reseeded agricultural grassland (GA1) with Norway spruce plantation in the middle-ground, along the Western boundary.

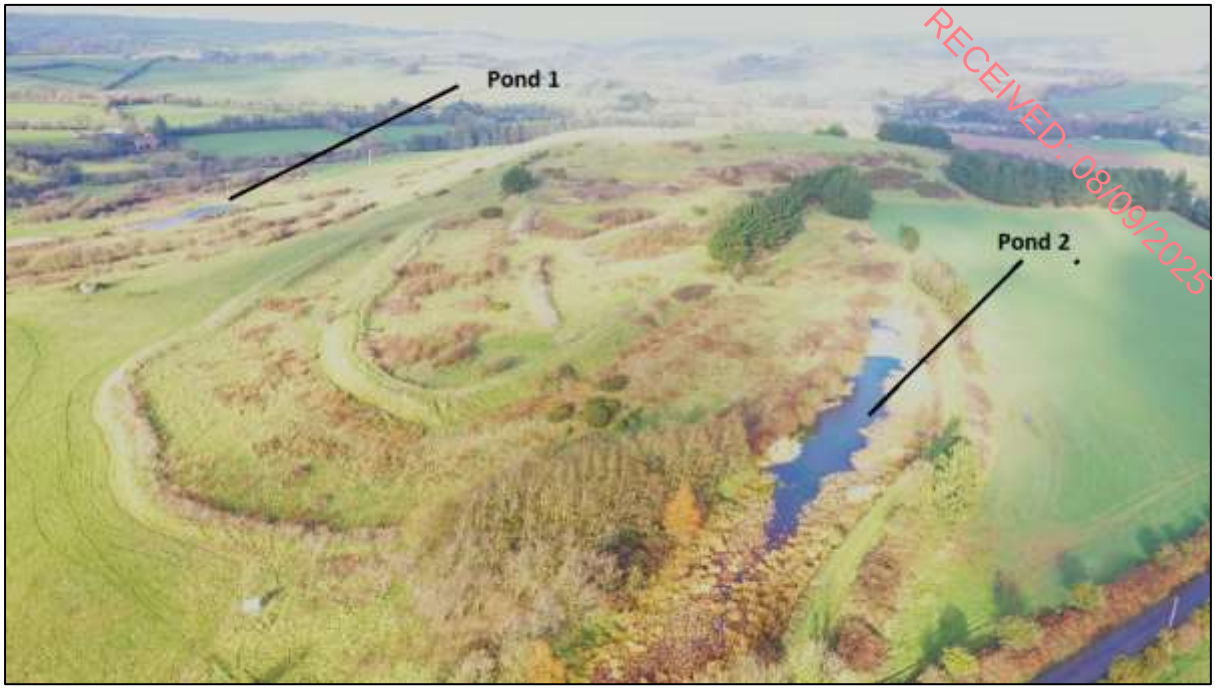
Within the grasslands found to the West of the farm track are island habitats associated with the previous workings of the site as a repository of milk waste products treated though a series of integrated constructed wetlands. The closure of the Kilmeaden factory (cheese production ceased in 2005) and relocation in Kilkenny, has limited the functionality of these 'wetlands'. For the most part these ponds, which require maintenance, have dried out over the years and have become scrubbed over with a mosaic of willow scrub and wet grassland. However, there are two which regularly contain some water (see Figure 16 and Figure 17).

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The first pond lies to the southwest of the Blackknock hill immediately adjacent to the farm trackway. The pond is surrounded by Gorse (Ulex europaeus) scrub and improved dry grassland. This first pond (Figure 18) is entirely artificial and it categorised as FL8 according to the Fossitt classification system. Common Club-rush (*Schoenoplectus lacustris*), Reed Sweet-grass (*Glyceria maxima*) and Soft-rush (*Juncus effusus*). Galingale (*Cyperus longus*), an introduced plant not often recorded in Ireland was noted to be growing alongside this pond. One Schedule three species was identified within this pond, New Zealand Pigmyweed (*Crassula helmsii*) (Figure 19). On the 15th January 2025, water from this pond was noted to be flowing further down Blackknock hill into a previously dry pond. Over land flow of water was evident from this previously dry pond across the field and down the slope into the Whelan's bridge River. Propagules of New Zealand Pigmyweed could be distributed via this pathway.



Figure 16: The constructed wetland system at Kilmeaden in 1996.



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Figure 17: Remaining artificial ponds containing aquatic habitats.



Figure 18: Pond 1 to the southwest of Blackknock hill.

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Figure 19: New-Zealand Pygmyweed found in pond 1.

Pond 2 also falls under the artificial pond category FL8, this pond is found to the southeast of Blackknock hill. It is of a similar size to pond 1. Much of the vegetation is similar to that found in Pond 1. , Water Fern (*Azolla filiculoides*), one of a number of species listed on Part 1 of the First Schedule of the European Union (Invasive Alien Species) occurs within this habitat. A small Alder-willow woodland is located next to the pond.

An Alien Invasive Species Management and Control/Eradication Plan is crucial to preventing any threats to the surrounding environment during and post construction in accordance with the 2024 regulations, which address deficiencies in Irish law implementing the EU Invasive Alien Species Regulation were signed into law.

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Figure 20: Image of Pond 2 to the southeast of Blackknock hill.

There are a variety of grassland habitats onsite which fall into the category of semi improved dry grassland (GSi2) particularly on the mounded soil which once bounded the integrated constructed wetland. Topographically these earthen mounds add structural diversity to the site which enhances biodiversity.

Large swaths of land are entirely dominated by nettles and thistles, particularly around the abandoned farm site. These habitats are very important for the many finches occurring onsite. Similarly, Monterey Pine (*Pinus radiata*) occurs in several areas around the site as treelines, buffering the habitats onsite. These are likely to be very important for transient crossbill populations identified on site.

The old settlement ponds present on the south and east of the site were dry during the initial surveys. It is suggested that these ponds may refill following severe inundation, anecdotal evidence suggests that these areas have been dry for some years. They contain a flora which in some areas contains elements of wet grassland, dominated by Soft-rush (Juncus effusus), Compact Rush (Juncus conglomeratus) and various sedges (*Carex rostrata*, *C. hirta*, *C. nigra*). Scrubbing over of these old settlement ponds is evident with Willow being the dominant tree.

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The presence of outcropping rock on the western side of Blackknock hill was noted during surveys, these rocks occur sporadically through out what is largely semi-improved dry grassland and are too small in size to map as ecological features. Plants noted included Navelwort (*Umbilicus rupestris*) and English Stonecrop (*Sedum anglicum*).

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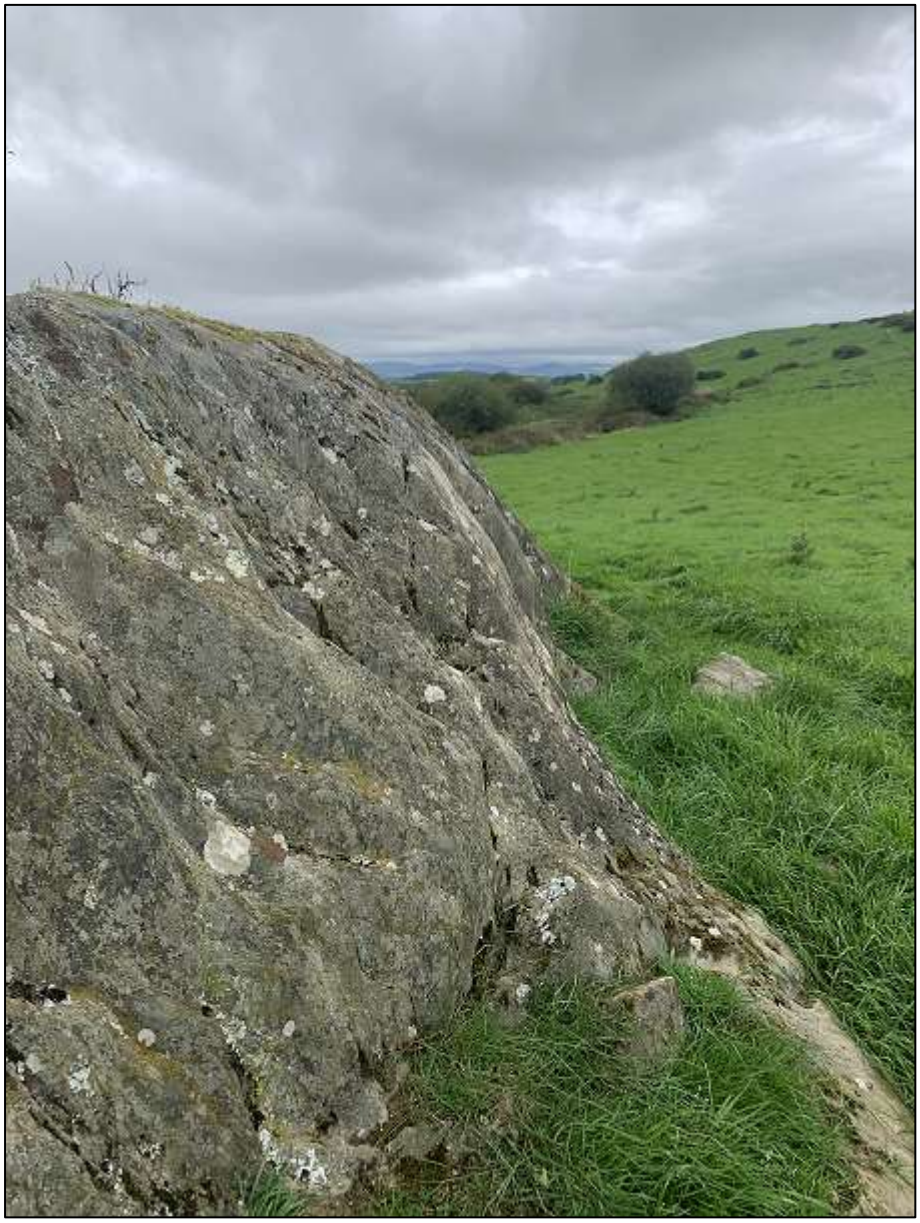


Figure 21: Outcropping rock.

The Norway Spruce plantation ends abruptly along the western boundary and the Whelan's Bridge River. Where the plantation ends a native woodland of Willow and Alder begins (Figure 22). The woodland occurs in a steep sloped valley through which the River runs. It is approximately 7 acres in size. It is largely a wet Willow and Alder woodland (WN6) although there are patches of Oak, Ash and Hazel (WN2) along raised banks by the river's edge. This area of woodland was investigated during the National Survey of Native Woodlands on the 27/09/2007 (see Figure 23). Assessment of the woodland (see Figure 24) indicate that there have been no changes to its status.



Figure 22: The Willow Alder woodland (WN6) (muted pink).

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Site no.	1838	FIPS no.	29160, 34202
Date surveyed	27/09/2007		
Woodland name	Amberhill	Townland name	Amberhill, Blacknock
Conservation rating and score	Very Good	64	Threat rating and score: Low 8
Disco. map	75	Grid ref.	S506081
6 inch sheet	WA 16	County	Waterford
NPWS region	Southern	NHA code	-
SAC code	-	SPA Code	-
National Park	☐	Nature Reserve	☐
Woodland present in the 1840s	No		
Ownership	Private - Multiple	Area (ha)	3.5
Max. alt. (m)	40	Min. alt. (m)	30
Sub-soil	A/RckNCa/Tav	Soil	AlluvMIN/AminSW/AminDW

Geography		Woodland habitats		Grazing		Hydrological features	
Esker	☐	WN1	0%	Deer	☐	Seasonal flooding	✔
Drumlin	☐	WN2	2%	Cattle	☐	Springs	☐
Valley	✔	WN3	0%	Sheep	☐	Lakes	☐
Lakeside	☐	WN4	0%	Rabbits	☐	Rivers/streams	✔
Bogland	☐	WN5	0%	Hares	☐	Damp clefts/ravines	☐
Hill	☐	WN6	98%	Goats	☐	Other	
Plain/Lowlands	☐	WN7	0%	Horses	☐		
Island	☐	WS1	0%	Other			
Riverside/Floodplain	☐	WD1	0%	Grazing level	0		
Coastal/Estuary	☐	WD2	0%				
		Other habitats					

Field notes

External data source: not all data recorded ☐

A small site approximately 7 km west southwest of Waterford city. The dominant woodland type is WN6 wet willow-alder-ash, with all three of these species present: grey willow (Salix cinerea) and alder (Alnus glutinosa) in the canopy and ash (Fraxinus excelsior) mostly in the understorey. The ground flora is characterised by abundant broadleaved herbs such as Ranunculus repens, Filipendula ulmaria, Mentha aquatica, Angelica sylvestris and Urtica dioica, as well as grasses such as Agrostis stolonifera, Glyceria fluitans and Poa trivialis. Equisetum arvense is also present, as are ferns such as Athyrium filix-femina and Dryopteris spp. A small amount of drier WN2 oak-ash-hazel woodland is present, mostly along the edge of the site on the banks that run along the river, with hazel (Corylus avellana), holly (Ilex aquifolium) and ash all present, as well as herbs such as Oxalis acetosella, Geranium robertianum and Geum urbanum.

Figure 23: Excerpt from Perrin et al (2008) survey data for “Amberhill”, site code: 1838.



Figure 24: Wet Willow and Alder woodland (WN6).

Ulex europaeus (Gorse scrub) (WS1) occurs though out the site, this is particularly important for nesting birds and overall cover for birds and mammals. It is most prevalent on the western side of Blackknock hill where it occurs in agricultural grassland on the steep slopes of the hill. A smaller population occurs next to the local road to the south of the site. A small area to the North of Blackknock hill adjacent to residential premises also is dominated by Gorse but with a significant population of Bracken (*Pteridium aquilinum*). Similarly, Bracken is found on the slopes flanking the Whelan's bridge stream to the southwest of the site, in this region however, Dense Bracken (HD1) is the dominant habitat with a lesser quantity of Gorse/Hawthorn scrub.

No Annex I-listed habitat occurred within the application footprint

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2.4.2 Avifauna

A comprehensive assessment of the Bird species occurring within the application footprint and adjacent was undertaken during the period September 2024 – June 2025. The results of this assessment are presented in the Biodiversity Chapter of the EIAR.

Herring Gull and Curlew were the only species comprising a Qualifying Interest of proximate SPAs recorded within this extensive suite of surveys. Herring Gull were observed on a small number of occasions flying over/adjacent to the site and were not utilising the habitats occurring. Curlew were infrequently heard calling in the distance . No Qualifying Interests were observed to utilise the habitats occurring, including post-sunset. The area is not utilised as an *ex situ* foraging/roosting habitat during the winter or breeding season.

2.4.3 Mammals including bats

Comprehensive mammal surveys were undertaken, the results of which are presented in the Biodiversity Chapter of the EIAR. The following non-volant mammal species were identified on site:

- Stoat
- Pine Marten
- Grey Squirrel
- Hare
- Wood mouse
- Hedgehog
- Badger

Of note, although a potential Otter track was observed on one occasion, targeted Otter surveys of the water-course, including the deployment of trail cameras, yielded no evidence of Otter present within the application footprint.

A potential bat roost assessment, winter assessment of buildings on site, summer static monitoring and an emergence and dawn survey (June 2025) indicate that while the site is utilised by foraging bats (Common Pipistrelle, Soprano Pipistrelle, Nathusius' Pipistrelle, Leisler's Bat, Daubenton's Bat, Whiskered Bat, Natterer's Bat and Brown Long-eared Bat were recorded), there are no significant roosts within the application footprint or immediately adjacent. Of note, the primary habitat to be

impacted upon is open grassland habitat, which is not heavily utilised by foraging bats. The ponds present, which support the majority of bat activity on-site will be retained.

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2.4.4 Amphibians, Reptiles, and selected Invertebrates

A comprehensive assessment of amphibians, reptiles and selected invertebrates was undertaken and the results are presented in the Biodiversity Chapter of the EIAR. Common Frog is widespread in suitable habitat. There was no observations of Common Lizard, Pearl Mussel or White-clawed Crayfish. Of note, the primary habitat to be impacted upon is grassland. The ponds present will be retained.

2.4.5 Other

While no adult lamprey were observed during in-stream surveys, the presence of Ammocoetes within sediment cannot be ruled out.

2.5 Identification of Natura 2000 sites potentially impacted upon by the development

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It has been general practice, when screening a plan or project for compliance with the Habitats Directive, to identify all Natura 2000 sites within the functional area of the plan/project itself and within 15 km of the boundaries of the area the plan/project applies to. This approach was recommended in the DoEHLG (2010a) Guidance for Planning Authorities. OPR Guidelines, however, recommend the identification of an appropriate "Zone of Influence" identified from any Source-Pathway-Receptor linkages.

The maintenance of habitats and species within individual Natura 2000 sites at favourable conservation condition contributes to the overall maintenance of favourable conservation status of those habitats and species at a national level. It is therefore necessary to identify any potential impacts of the proposed development on the conservation status of Natura 2000 sites. The National Parks and Wildlife Service deem that the favourable conservation status of a habitat is achieved when:

- Its natural range, and area it covers within that range, is stable or increasing.
- The ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future.
- The conservation status of its typical species is favourable.

The National Parks and Wildlife Service deem that the favourable conservation status of a species is achieved when:

- Population data on the species concerned indicate that it is maintaining itself.
- The natural range of the species is neither being reduced, or likely to be reduced in the foreseeable future.
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

There are two areas designated as Special Areas of Conservation (SAC) within 15km of the proposed development site (See Table 5 and Figure 25). There are two areas designated as Special Protection Areas (SPA) within 15km of the proposed development (See Figure 26). These sites were utilised to identify zone of influence based on the S-P-R methodology as recommended by the OPR.

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Table 5: Natura 2000 sites within 15km of the proposed development.

SITE CODE	SITE NAME	DESIGNATION
002137	LOWER RIVER SUIR	SAC
000671	TRAMORE DUNES AND BACKSTRAND	SAC
004027	TRAMORE BACK STRAND SPA	SPA
004193	MID-WATERFORD COAST SPA	SPA

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Figure 25: Location of Special Area of Conservation (SAC) sites within 15 km of the proposed development (1:200,000).

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Figure 26: Location of Special Protection Area (SPA) sites outside 15 km of the proposed development (1:200,000).

2.6 Summary of Natura 2000 sites potentially impacted upon by the proposed development

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There are four Natura 2000 sites within 15km of the proposed development. There are no Natura 2000 sites within the envelope of the proposed development. Sites further away than 15km have been excluded as being outside the zone of influence based on distance from the proposed development.

A summary of the qualifying interests (QIs)/special conservation interests (SCIs), availability of detailed conservation objectives, general conservation objectives and distance of the Natura 2000 site from the proposed development is presented in Table 6.

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Table 6: Summary of Natura 2000 sites within 15km of the proposed development.

SITE CODE	SITE NAME	QIs/SCIs	DETAILED CONSERVATION OBJECTIVES DOCUMENT	CONSERVATION OBJECTIVES (GENERIC)	NEAREST DISTANCE FROM PROPOSED DEVELOPMENT/ SENSITIVITES
002137	LOWER RIVER SUIR SAC	• Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260] • Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] • Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] • Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0] • Taxus baccata woods of the British Isles [91J0] • Margaritifera margaritifera (Freshwater Pearl Mussel) [1029] • Austropotamobius pallipes (White-clawed Crayfish) [1092] • Petromyzon marinus (Sea Lamprey) [1095] • Lampetra planeri (Brook Lamprey) [1096] • Lampetra fluviatilis (River Lamprey) [1099]	YES	• To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	• 0.9km north-west

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SITE CODE	SITE NAME	QIs/SCIs	DETAILED CONSERVATION OBJECTIVES DOCUMENT	CONSERVATION OBJECTIVES (GENERIC)	NEAREST DISTANCE FROM PROPOSED DEVELOPMENT/ SENSITIVITES
		• Alosa fallax fallax (Twaite Shad) [1103] • Salmo salar (Salmon) [1106] • Lutra lutra (Otter) [1355]			
04193	MID-WATERFORD COAST SPA	• Cormorant (Phalacrocorax carbo) [A017] • Peregrine (Falco peregrinus) [A103] • Herring Gull (Larus argentatus) [A184] • Chough (Pyrrhocorax pyrrhocorax) [A346]	YES	• To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.	• 8.6km south
000671	TRAMORE DUNES AND BACKSTRAND SAC	• Mudflats and sandflats not covered by seawater at low tide [1140] • Annual vegetation of drift lines [1210] • Perennial vegetation of stony banks [1220] • Salicornia and other annuals colonising mud and sand [1310] • Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330] • Mediterranean salt meadows (Juncetalia maritimi) [1410] • Embryonic shifting dunes [2110] • Shifting dunes along the shoreline with Ammophila arenaria (white dunes) [2120] • Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]	YES	• To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected.	• 8.9km south-east
004027	TRAMORE BACK STRAND SPA	• Light-bellied Brent Goose (Branta bernicla hrota) [A046] • Golden Plover (Pluvialis apricaria) [A140]	YES	• To maintain or restore the favourable conservation condition of the bird species	• 9.05km south-east

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SITE CODE	SITE NAME	QIs/SCIs	DETAILED CONSERVATION OBJECTIVES DOCUMENT	CONSERVATION OBJECTIVES (GENERIC)	NEAREST DISTANCE FROM PROPOSED DEVELOPMENT/ SENSITIVITES
		• Grey Plover (Pluvialis squatarola) [A141] • Lapwing (Vanellus vanellus) [A142] • Dunlin (Calidris alpina) [A149] • Black-tailed Godwit (Limosa limosa) [A156] • Bar-tailed Godwit (Limosa lapponica) [A157] • Curlew (Numenius arquata) [A160] • Wetland and Waterbirds [A999]		listed as Special Conservation Interests for this SPA. • To maintain or restore the favourable conservation condition of the wetland habitat at Tramore Back Strand SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.	

2.7 Identification and evaluation of likely significant effect

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2.7.1 Description of source-pathway-receptor linkages and identification of "Zone of Influence"

The basis for identifying potential impacts/significance thereof and defining the zone of influence is the "Source-Pathway-Receptor" (S-P-R) model. This model underpins all water-protection schemes in Ireland, as well as the EU Water Framework Directive on which both surface water and groundwater regulations are based. This model is applied to all possible impacts (i.e. not just water-based impacts). When examining S-P-R relationships in regard to impacts on Natura 2000 sites, the main questions to be considered are:

1. Source characterisation – Identification of potential source(s) of the impact(s);
2. Pathways analysis – Identification of means through which potential impacts could take place, for example is there a hydrogeological or hydrological link that can deliver a pollutant source to a nearby receptor; and
3. Receptor identification – identification of Natura 2000 sites/qualifying interests potentially affected.

There are no Natura 2000 sites within the immediate boundary of the proposed development. Taking into account the potential impacts associated with the proposed development, the pathways through which potential impacts could take place, a zone of influence over which an impact can have potential effects is identified. Considering the above, the zone of influence of the proposed development will comprise the following potential receptors:

- Natura 2000 sites in downstream catchments with Qualifying Interests (QIs) or Special Conservation Interests (QCIs) that include habitats or species that are water dependent or otherwise hydrologically connected.

- Natura 2000 sites with QIs or SCIs with a foraging and breeding range that includes the proposed development site.

The source(s), pathways(s) and receptor(s) are identified as follows.

2.7.2 Sources of potential impacts

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It is important to note that the potential development will primarily impact on habitats of low ecological significance, such as Improved Agricultural Grassland. Potential impacts on Natura 2000 sites associated with the proposed development could arise from:

- Impacts on water quality from sediment and hydrocarbons from works associated with the demolition of existing buildings on site or construction activities associated with various elements of the proposed development;
- Introduction and dispersal of propagules of Alien Invasive Plant Species, in particular any listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 as amended;
- In combination effects.

2.7.3 Presence of pathway and receptor

The Whelanbridge (River) (EPA Code: 16W01) forms an extensive boundary of the proposed development site to the west. The Whelanbridge (River) flows for approximately 1.6km along the boundary of the proposed development. The Whelanbridge Trib 1 (EPA Code: 16W29) flows along the north-eastern boundary of the proposed development site for approximately 820 metres, before joining the Whelanbridge (River). The Whelanbridge (River) joins the River Suir approximately 1.7km from the proposed development sites northernmost boundary. The hydrological connectivity of the aforementioned watercourses and the Lower River Suir SAC is illustrated below in Figure 27.

There is a potential for works on site in such close proximity to these sensitive ecological receptors to result in negative impacts owing to, for example:

- Accidental contamination associated with leaks of hydraulic fluid/diesel/petrol, etc from works associated with the demolition of existing buildings on site or construction activities associated with various elements of the proposed development;
- Sediment release associated with onsite machinery operations;
- Introduction of propagules of Alien Invasive Plant Species, in particular any listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 as amended.

In the absence of mitigation, any impacts on water quality could have direct and/or secondary impacts on QI's of the Lower River Suir SAC. Please note that this SAC is adjacent to River Barrow and River

Nore SAC (002162). The conservation objectives for this site have been used in conjunction with those for the adjacent site as appropriate

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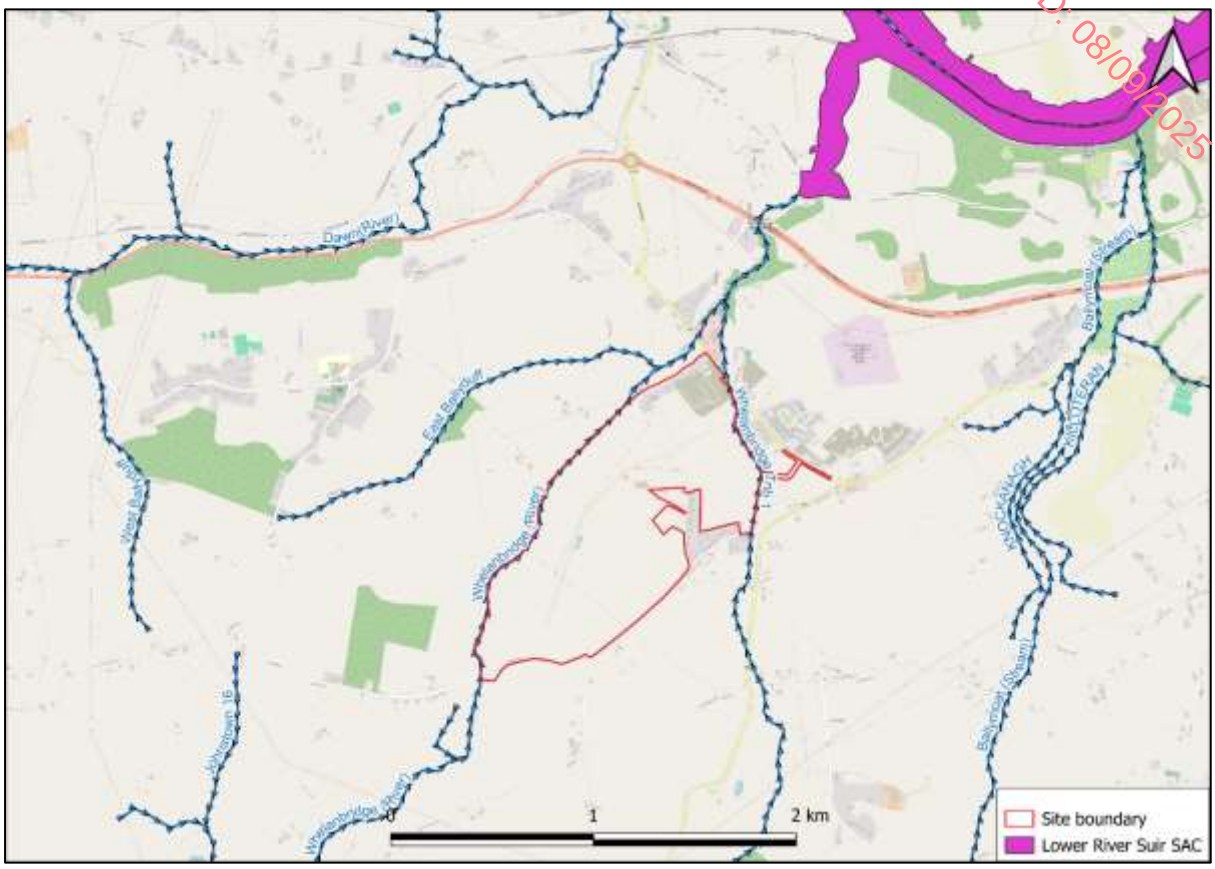


Figure 27: Hydrological connectivity between proposed development site and the Lower River Suir SAC (1:20,000).

The Mid-Waterford Coast SPA is 8.6km south of the proposed development, while the Tramore Back Strand SPA is 9.05km south-east of the proposed development. QIs of the Mid-Waterford Coast SPA include (breeding populations of) Cormorant (Phalacrocorax carbo), [A017], Peregrine (*Falco peregrinus*), [A103] Herring Gull (*Larus argentatus*) and [A184] Chough (*Pyrrhocorax pyrrhocorax*) [A346]. There is no suitable breeding habitat for these species in the vicinity of the proposed development. QIs of the Tramore Back Strand SPA include (over-wintering populations of) Light-bellied Brent Goose (*Branta bernicla hrota*) [A046], Golden Plover (*Pluvialis apricaria*) [A140], Grey Plover (*Pluvialis squatarola*) [A141], Lapwing (*Vanellus vanellus*) [A142], Dunlin (*Calidris alpina*) [A149], Black-tailed Godwit (*Limosa limosa*) [A156], Bar-tailed Godwit (*Limosa lapponica*) [A157], Curlew (*Numenius arquata*) and [A160] Wetland and Waterbirds [A999].

Bird surveys undertaken during the period September 2024 – June 2025 indicate that none of the habitats occurring with the application footprints are used by significant populations of any Qualifying Interest. Although Herring Gull and Curlew were recorded with low frequency flying in the vicinity of

the application footprint they were not observed to utilise the habitats present within the application footprint.

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The lack of any direct S-P-R linkages and the distances involved would preclude any likely significant impacts on the conservation objectives of the qualifying interests of The Mid-Waterford Coast SPA, Tramore Back Strand SPA or Tramore Dunes and Backstrand SAC.

2.7.4 Natura 2000 site(s) with potential to be impacted upon and Zone of Influence

Adhering to the Precautionary Principal, there is potential for negative impacts associated with the proposed development on:

- LOWER RIVER SUIR SAC;

The "Zone of Influence" will, therefore extend to this Natura 2000 site.

2.7.5 Sources of potential Direct, Indirect or Secondary Impacts

2.7.5.1 Direct Impacts

The proposed development will not take place within any Natura 2000 site, therefore, no direct impacts are likely to occur through land-take, habitat fragmentation, etc.

2.7.5.2 Indirect Impacts

The proposed development is hydrologically connected to the Lower River Suir SAC. The construction and/or operation of the proposed development has potential for indirect impacts through impacts on water quality.

2.7.5.3 Secondary and or Residual Impacts

In the event of indirect impacts on water quality, there is potential for secondary/residual impacts on the Lower River Suir SAC such as bioaccumulation. There are no likely significant potential secondary and or residual impacts on Natura 2000 sites outside of the zone of influence.

It must also be noted that there are populations of several species listed on Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 occurring on site, including (but may not be limited to) New Zealand Pygmyweed (*Crassula helmsii*), Water Fern (*Azolla filiculoides*) and Japanese Knotweed (*Fallopia japonica*). These species have the potential to

impact on water quality and stream management. There is potential for impact associated with the spread of these species on and off site.

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A comprehensive assessment of the potential impacts of the proposed development on climate change, and vulnerability of the proposed development to impacts associated with climate change has been undertaken within Chapter 9 of the EIAR. The Potential impacts to the Proposed Development as a result climate change include:

- Flood risk due to increased precipitation, and intense periods of rainfall. This includes fluvial and pluvial flooding;
- Increased temperatures potentially causing drought, wildfires and prolonged periods of hot weather;
- Reduced temperatures resulting in ice or snow;
- Geotechnical impacts; and
- Major Storm Damage – including wind damage.

A summary of the potential for primary impacts upon Natura 2000 sites within the zone of influence of the proposed development is summarized in Table 7. The potential for impacts upon the Natura 2000 sites identified in the event of negative impacts is summarized in Table 8. The potential impacts on the QIs/SCIs of identified Natura 2000 sites are summarized in Table 9

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Table 7: Summary of the potential for impacts upon Natura 2000 sites.

SITE NAME	DIRECT IMPACTS	INDIRECT/ SECONDARY IMPACTS	RESOURCE REQUIREMENTS (WATER ABSTRACTION ETC.)	EMISSIONS (TO LAND, WATER OR AIR)	EXCAVATION REQUIREMENTS	DURATION OF CONSTRUCTION, OPERATION AND DECOMMISSIONING
LOWER RIVER SUIR SAC	No likely significant impact	Potential	Potential	Potential	None foreseen	Potential
MID-WATERFORD COAST SPA	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact
TRAMORE DUNES AND BACKSTRAND SAC	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact
TRAMORE BACK STRAND SPA	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact	No likely significant impact

Table 8: Summary of the potential for changes to Natura 2000 sites.

SITE NAME	REDUCTION OF HABITAT AREA	DISTURBANCE TO KEY SPECIES	HABITAT/SPECIES FRAGMENTATION	REDUCTION IN SPECIES DENSITY	CHANGES IN KEY INDICATORS OF CONSERVATION VALUE	CLIMATE CHANGE
LOWER RIVER SUIR SAC	Potential	Potential	Potential	Potential	Potential	Potential
MID-WATERFORD COAST SPA	No likely significant change	No likely significant change	No likely significant change	No likely significant change	No likely significant change	No likely significant change
TRAMORE DUNES AND BACKSTRAND SAC	No likely significant change	No likely significant change	No likely significant change	No likely significant change	No likely significant change	No likely significant change

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TRAMORE BACK STRAND SPA	No likely significant change	No likely significant change	No likely significant change	No likely significant change	No likely significant change	No likely significant change

Table 9: Summary of potential impacts on Qualifying Interests of Natura 2000 sites identified as at risk of impact.

SITE NAME	QUALIFYING INTEREST	POTENTIAL IMPACT
LOWER RIVER SUIR SAC	• Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	• Impacts unlikely owing to scale of development and distance from habitat.
	• Mediterranean salt meadows (Juncetalia maritimi) [1410]	• Impacts unlikely owing to scale of development and distance from habitat.
	• Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	• Potential impacts associated with changes in water quality, potential secondary impacts. • Changes in deposition of silt in habitat resulting in poor substrate quality.
	• Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	• Potential impacts associated with invasive alien species.
	• Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	• Impacts unlikely owing to scale of development and distance from habitat.
	• Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	• Potential impacts associated with invasive alien species
	• Taxus baccata woods of the British Isles [91J0]	• Impacts unlikely owing to scale of development and distance from habitat.
	• Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	• Change in chemical and/or nutrient status of water and/or silt.Changes in deposition of silt in habitat resulting in poor substrate quality.
	• Austropotamobius pallipes (White-clawed Crayfish) [1092]	• Change in chemical and/or nutrient status of water and/or silt. Changes in deposition of silt in habitat resulting in poor substrate quality.
	• Petromyzon marinus (Sea Lamprey) [1095]	• Change in chemical and/or nutrient status of water and/or silt. • Changes in deposition of silt in habitat. • Impacts on feeding ammocoetes through siltation and/or bioaccumulation.

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SITE NAME	QUALIFYING INTEREST	POTENTIAL IMPACT
	• Lampetra planeri (Brook Lamprey) [1096]	• Change in chemical and/or nutrient status of water and/or silt • Changes in deposition of silt in habitat. • Impacts on feeding ammocoetes through siltation and/or bioaccumulation.
	• Lampetra fluviatilis (River Lamprey) [1099]	• Change in chemical and/or nutrient status of water and/or silt. • Changes in deposition of silt in habitat. • Impacts on feeding ammocoetes through siltation and/or bioaccumulation.
	• Alosa fallax fallax (Twaite Shad) [1103]	• Change in chemical and/or nutrient status of water and/or silt. • Changes in deposition of silt in habitat resulting in poor substrate quality.
	• Salmo salar (Salmon) [1106]	• Change in chemical and/or nutrient status of water and/or silt. • Changes in deposition of silt in habitat resulting in poor substrate quality.
	• Lutra lutra (Otter) [1355]	• Change in chemical and/or nutrient status of water and/or silt. • Changes in deposition of silt in habitat resulting in poor substrate quality.

Of note, all potential impacts identified are associated with changes in water quality/hydrology (including indirect impacts through Alien Invasive Plant Species).

2.7.6 Identification of Potential cumulative impacts in association with other plans or projects

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Cumulative impacts can be defined as impacts on Natura 2000 sites that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the plan/project being assessed.

Article 6(3) of the Habitats Directive requires an assessment of a plan/project to consider other plans/projects that might, in combination with the proposed project, have the potential to adversely impact upon Natura 2000 sites. The main threats, pressures and activities for the Lower Suir SAC are outlined in Table 10. (Please note, O refers to outside site, I refers to within site, B refers to both inside and outside site with H, M and L referring the High, Medium and Low respectively).Identification of plans/projects which might act in combination is informed by identified threats to the structure and function the site.

Table 10: Lower River Suir SAC threats, pressures and activities with impacts on the site.

CODE	DESCRIPTION	INSIDE/ OUTSIDE	RANK
A08	Agriculture - Fertilisation	O	H
E01	Urbanisation, residential and commercial development - Urbanised areas, human habitation	B	H
E03	Urbanisation, residential and commercial development - Discharges	B	H
H01	Pollution - Pollution to surface waters (limnic, terrestrial, marine & brackish)	B	H
J02.12.02	Natural System modifications - human induced changes in hydraulic conditions - Dykes, embankments, artificial beaches, general - dykes and flooding defence in inland water systems	I	H
J02.01	Natural System modifications - human induced changes in hydraulic conditions - Landfill, land reclamation and drying out, general	B	M
A01	Agriculture - Cultivation	I	L
B	Sylviculture, forestry	O	L
D03.01	Transportation and service corridors - shipping lanes, ports, marine constructions - port areas	B	L
I01	Invasive, other problematic species and genes - invasive non-native species	I	L
J02.01.02	Natural System modifications - human induced changes in hydraulic conditions - Landfill, land reclamation and drying out, general - reclamation of land from sea, estuary or marsh	I	L

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The primary threats, pressures and activities with impacts on the Natura 2000 sites examined (with High Ranking) are Agriculture, Urbanisation/Human disturbances, Pollution and Natural System modification (primarily modifications in hydrology).

All identified potential likely impacts are associated with impacts to water/hydrology/hydrology (including the spread of alien invasive plant species, which can impact on erosion, sedimentation, etc.). The cumulative impact of the proposed development with any/all relevant other planned or permitted developments with regard to hydrology/hydrogeology are examined comprehensively in Chapter 6 of the EIAR, excerpts from which are presented as follows:

"…Existing developments that are already built and in operation contribute to the characterisation of the baseline environment. As such any further environmental impacts that the proposed development may have in addition to these already constructed and operational developments has been assessed in the preceding sections of this chapter.

Any future application on these lands will be subject to planning approval and environmental assessment as required. Any new development proposed on the lands after the submission of the proposed development would be accompanied by an EIA, or EIA Screening as required and take into consideration the development of this site.

- ***Construction Phase***

In relation to the potential cumulative impact on hydrology and hydrogeology during the construction phase, the construction works which would have potential cumulative impacts are as follows:

Surface water run-off during the construction phase may contain increased silt levels or become polluted from construction activities. Run-off containing large amounts of silt can cause damage to surface water systems and receiving watercourses.

Stockpiled material will be stored on hardstand away from surface water drains, and gullies will be protected during works to ensure there is no discharge of silt-laden water into the surrounding surface water drainage or to ground.

Contamination of surface water and groundwater from accidental spillage and leakage from construction traffic and construction materials is possible unless project-specific measures are put in place for each development and complied with.

The works contractors for other planned or permitted developments will be obliged to ensure that measures are in place to protect surface water and groundwater quality in compliance with legislative standards for receiving groundwater quality (European Communities Environmental Objectives

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(Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016) and surface water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019).

The implementation of mitigation and monitoring measures previously detailed above in section 6.6.1 and 6.7.1 as well as the compliance of other developments with their respective planning conditions, will ensure there will be minimal cumulative potential for change to the hydrological and hydrogeological environment during the construction phase of the proposed development.

The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible*** *and* ***short-term****.*

- ***Operational Phase***

In relation to the potential cumulative impact on hydrology and hydrogeology during the operational phase, the operational activities which would have potential cumulative impacts are as follows:

Increased hard standing areas will reduce local recharge to ground and increase surface water run-off potential if not limited to the green field run-off rate from the site. Cumulatively this development and others in the area will result in localised reduced recharge to ground and increase in surface run-off.

Increased risk of accidental discharge of hydrocarbons from car parking areas, and along roads is possible unless diverted to surface water system with petrol interceptor.

There will be a small loss of greenfield area locally as part of the proposed development.

Each specialist has considered the list of relevant planning permissions from the surrounding areas of the proposed development as presented in Chapter 2 – Description of Proposed Development - Appendix 2.1. The proposed development and other permitted developments will result in an increase in hard standing which will result in localised reduced recharge to ground.

The proposed development site is underlain by a "Regionally Important Aquifer – Fissured Bedrock". There is no potential for change in groundwater levels as a result of local changes in the groundwater regime at the site due to the natural recharge capacity of the underlying aquifer which allows for the maintenance of groundwater levels.

The implementation of SuDs measures on site will mitigate against and reduce the recharge rate to ground.

All developments are required to ensure they do not have an impact on the receiving water environment in accordance with the relevant legislative standards for receiving groundwater quality

(European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2010 and S.I. 266 of 2016) and surface water quality (European Communities Environmental Objectives (Surface Water) Regulations (S.I. 272 of 2009 and S.I. 77 of 2019).

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…The residual cumulative impact of the proposed development in combination with other planned or permitted developments can therefore be considered to be ***neutral, imperceptible*** *and* ***short-term****…"*

The primary source of any cumulative impacts concerns impacts on water quality. The proposed development is located within the Suir surface water catchment and the Dawn [River]_SC_010 sub-catchment.

The Suir catchment includes the area drained by the River Suir and all streams entering tidal water between Drumdowney and Cheekpoint, Co. Waterford, draining a total area of 3,542km² (EPA, 2024). The largest urban centre in the catchment is Waterford City. The other main urban centres in this catchment are Carrick-on-Suir, Clonmel, Caher, Thurles, Tipperary, Fethard and Templemore. The Suir catchment is divided into 29 subcatchments and has 179 surface water bodies and 43 groundwaterbodies. There are nine waterbodies with a High Ecological Status Objective (HSO) in the Suir Catchment, with seven currently not meeting their environmental objective of High (EPA, 2024). A total of 112 (50%) waterbodies are At Risk of not meeting their environmental objective in the Suir Catchment, while 41 (18%) are under Review and 69 (31%) are Not At Risk. EPA Q-values for stations proximate to the proposed development include:

- "WHELAN'S BRIDGE STREAM - Br W of Carrickadustara" (Station code: RS16W010200) southeast (upstream) of proposed development along the Whelanbridge (River) – Q-value 3-4 "Moderate" (Year: 1988).
- "Whelan's Bridge" (Station code: RS16W010400) (c.0.9km downstream of the proposed development) along the Whelanbridge (River) – Q-value 3 "Poor" (Year: 2023).

EPA (2024) state that significant pressure affecting the majority of river water bodies in the catchment is agriculture followed by forestry, hydromorphological pressures, peat, urban run-off, urban wastewater, industry, mines and quarries, domestic wastewater, invasive species and abstractions. EPA (2018) state issues related to farming in this catchment are phosphorus loss to surface waters from, for example, direct discharges; or runoff from yards, roadways or other compacted surfaces, or runoff from poorly draining soils. Sediment can also be a problem from land drainage works, bank erosion from animal access or stream crossings.

Projects within the Dawn [River]_SC_010 sub-catchment have the potential for in-combination impacts on aquatic conservation objectives of the Lower River Suir SAC.

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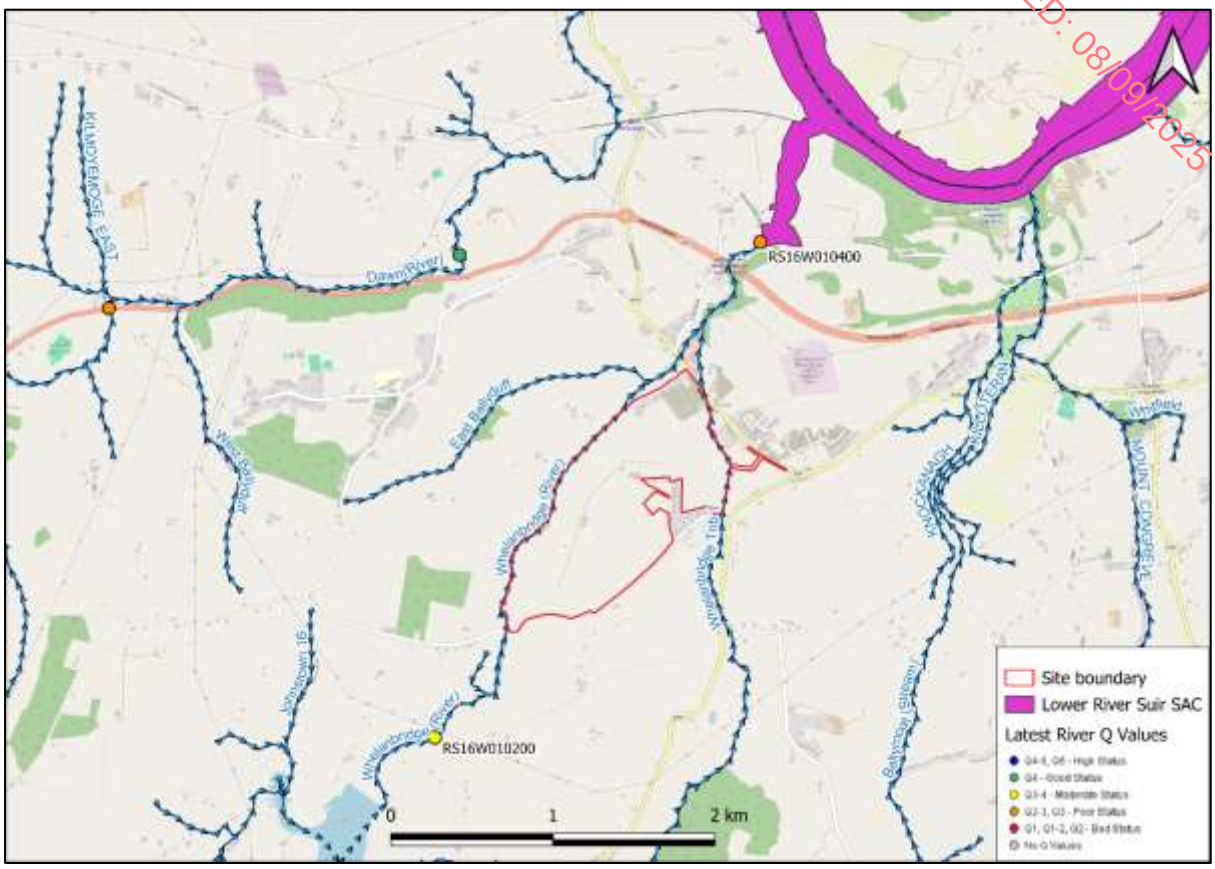


Figure 28: Latest EPA Q-vale scores proximate to the proposed development (1:25,000).

2.7.6.1 Planning application search

In order to identify projects with the potential for cumulative/in combination projects, a search of planning applications in the vicinity was undertaken. There are a number of granted planning permissions, and appealed planning permissions for residential or other small-scale developments in the immediate vicinity of the proposed development. A comprehensive list of these projects considered in the cumulative impacts assessment is presented in Table 11. Small scale developments, by virtue of their scale, nature or distance from the proposed development, in light of the cumulative impacts as identified in the Hydrology/Hydrogeology Chapter of the EIAR, are not likely to have any significant cumulative/in combination impact on the Natura 2000 network. Proximate developments requiring an EIAR were considered further.

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Table 11: Projects included in cumulative/in combination assessment

Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
2038	the erection of a farm gate to allow access to agricultural land and all associated site works	Whelans Bridge , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20114	to replace wing walls and entrance to achieve sight lines at farm entrance and to construct a cattle underpass beneath the public road L4410, adjacent to this farm entrance and together with associated site works	Mount Congreve & Knockanagh , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20209	to construct a storey and half dwelling house, installation of a wastewater treatment system and percolation area, new site entrance and associated site works at	Raheens , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20223	to raise field levels of existing agricultural lands using clean inert soil and stones (EU Waste Class 17 0504) in order to improve quality of said lands and an area to recycle construction materials	Ballycraddock , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20225	the construction of a new single storey side and rear extension, an amendment to the existing driveway entrance, the addition of one new rooflight to the front including all internal modifications to existing dwelling and all associated site works	Carrigadustra , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20260	for change of use of part of the existing Stores Area at the rear of the building to Retail use including Off-Licence and the amalgamation of this area into the existing Supermarket, relocation of the Offices/Staff Facilities into the Stores Areas, alter	Centra , Kilmeaden Adamstown , Kilmeaden	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20316	for a concrete batch manufacturing facility consisting of the following; one concrete batching plant unit including a control cabin, four no. cement silos (to 15 metres in height), six no. storage bins, a reserve water tank, a truck wash out area with se	Greenan and Ballyshonock , Kilmacthomas , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20335	to remove existing cottage remains and to replace with single storey dwelling house, storage shed, entrance, wastewater treatment system, percolation area and all ancillary site works at	Ballygarran , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
20400	to build 40 no. dwellinghouses, consisting of (i) 14 no. two storey, semi detached houses (ii) 16 no. two storey, terraced houses in two blocks and (iii) 10 no. two storey terraced houses in three blocks, with option of providing a third floor to any of	Adamstown , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20445	for construction of single storey extension to the side of the existing building and changes to front façade fenestration including new roof lights together with all additional site works at	Ashler , Ballyduff West , Kilmeaden	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20438	to construct a single storey dwelling, this is change of house design from that granted under PD10/409 and extended under PD16/22 and all ancillary site works at	Ballyshonock , Kilmacthomas , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20557	to construct a part single storey/part storey and a half dwelling and garage with site entrance, driveway and domestic waste water treatment plant and percolation area, a connection to the public water supply main and all ancillary and associated site wo	Carrickphilip , Kill , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20572	for the following works to my existing dwelling house comprising refurbishment and alterations to the existing dwelling house, conversion of the existing garage to a new utility room, boot room, and plant room, construction of 2 no. single storey extensi	Creamery House , Blackknock , Kilmeaden	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20593	the construction of a single-storey dwelling with detached garage, septic tank/wastewater treatment system and all associated site works	Caheruane , Kill , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20656	to construct a calf house / machinery shed and all associated ancillary site works	Lissahane , Kill , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20802	for a change of use from previous retail use (part of previous larger retail unit) to use as a full traditional fast food/hot food takeaway. Together with modifications in creating the floor plan layout, forming the entrance to the service area of the la	Unit 2 (part of) , of the Ground Floor , Kilmeaden Village Centre Adamstown	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
20948	the construction of a new dormer bungalow, a new driveway entrance and the installation of a waste water treatment system with polishing filters and percolation area and all associated site works	Ballydurn , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2114	for the construction of a steel finished garden shed located in the northern corner of the site, along with connection to existing surface water drainage and all associated site works at	Adamstown , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
2135	for the construction of a new extension to the rear of our existing Public House comprising the construction of a new single storey residential accommodation to the rear (south) of the existing Public House together with connection to the existing on-sit	Haughtons's Public House , Ross , Kilmeaden	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21199	two-storey extension to the side of my existing dwelling together with connection to on site services and all associated site works	Ballyduff , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21214	for the construction of 96 no. dwelling units incorporating 10 no. 2 storey 4 bed detached units (Type A) 32 No. 2 storey semi detached 4 bed units (Type 8), 28 No. 2 storey semi detached 3 bed units (Type C), 10 no. 2 storey semi detached 3 bed units (T	Adamstown , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21240	to construct a livestock shed containing a straw bedded area, feed passage, covering an existing U/G slatted tank and associated site works with the development at	Lahardan , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21324	to alter the footprint of the house plan from that granted planning permission under reference 20/335 and ancillary works at	Ballygarran , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21351	change of site boundaries from those granted planning permission under reference 20/948 and ancillary works at	Ballydurn , Kilmacthomas , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21416	for a new single storey extension to the side and rear of existing house and all associated site works at	22 Fan Glas , Adamstown , Kilmeaden Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21509	the following works to existing dwelling house, the de-commissioning of existing septic tank and percolation area, together with the construction, installation and re-location of a new packaged waste water treatment system and percolation area to serve e	The Pines , Ballyduff East , Kilmeaden	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21512	sub division of the existing site boundary to incorporate the existing garage and exiting site entrance (prev. granted under pl. perm. ref. no. 98/39) and extension of existing site boundary to the south together with the construction of a new storey and	Ballyduff East , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
21581	Decommission existing septic tank, connect existing dwelling to the public drainage system, construct a new single storey dwelling, and all ancillary site works	Adamstown , Kilmeaden , Co. Waterford	APPLICATION FINALISED	OUTLINE PERMISSION	CONDITIONAL	NO
21618	Construct single storey extensions to existing single storey house and associated works	Ballygarran , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21663	Erect deli kitchen/store extension and all associated works	Gala Express Filling Station , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21797	Section 254 Licence Application - The erection of overground electronic communications infrastructure and any associated physical infrastructure along public roads including:- 1. The erection of new overground fibre optic cables on existing timber poles	Comeragh MD , Municipal District	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21845	for the refurbishment of the existing cottage including raising the roof to allow a storey and a half, the addition of gable windows and rooflights to the front, elevational changes to the front faÃ§ade, the construction of a rear storey and a half exten	Carrolls Cross , Kilmacthomas , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21895	to construct a single storey dwelling, garage, waste water treatment system, percolation area, splayed entrance and all ancillary site works at	Crinalisk , Kill , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21908	Converting Broadleaf High Forest to Mixed High Forest (removal of diseased ash forest and replacement with a mixture of broadleaf and conifer species)	Johnstown , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21923	Planning Permission consequent on the grant of outline planning permission to decommission existing septic tank, connect existing dwelling to the public drainage system, construct a new single storey dwelling, connect to public drainage system, new entra	Adamstown , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
21967	for the construction of a new single storey dwelling house, new single storey garage, new bored well, together with a new waste water treatment system and percolation area together with all ancillary and associated site works, at	Carrickphilip , Kill , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
211067	SECTION 254 LICENCE for the erection of overground electronic communications infrastructure and any associated physical infrastructure along public roads including: 1. The erection of new overground fibre optic cables on existing timber poles. 2. The er	Comeragh MD ,	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
211108	the construction of a new single storey house with an attached garage, a wastewater treatment system, a bored well and an entrance along with all associated site works	Ballygarron , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
211109	construct cubicles shed with loose area and underground effluent tanks and all associated site works	Kilmoyemoge West , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
211126	Planning Permission is being sought to construct new single-storey dwelling, single-storey garage, upgrading of existing entrance, new waste water treatment system and percolation area and all associated site works	Crinalisk , Kill , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
211134	Planning permission is required for construction of a new single storey dwelling, site entrance, wastewater treatment system and percolation area and all ancillary site works	Hacketstown , Portlaw , Co. Waterford.	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
211218	the construction of a new dwelling, a new driveway entrance and the installation of a wastewater treatment system with polishing filters and percolation area and all associated site works	Ballydurn , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
211216	the construction of a new two storey split level dwelling house with new single storey carport, new bored well, together with a new waste water treatment system and percolation area together with all ancillary and associated site works	Stonehouse , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
211223	construct a single-storey dwelling and garage, together with landscaping, sewage treatment plant and percolation area, borehole, driveway and ancillary site works. The proposed development will be accessed via the existing farm entrance	Mount Congreve Farm , Knockanagh , Kilmeaden	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
224	erect a two-storey home, garage, driveway entrance, waste water treatment system, percolation area, borewell, landscaping and all associated site works	Grenan , Kill , Kilmacthomas	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
228	demolish existing dwelling house and build new dwelling, sewage treatment system and all ancillary works	Ballyrobin , Kill , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22163	demolish existing dormer dwelling, to decommission existing septic tank, to construct a replacement dwelling which is to be a dormer style dwelling, wastewater treatment system, percolation area, alterations to existing entrance from public road to impro	Greenan , Kilmacthomas , County Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22178	the Restoration of a disused rock and gravel quarry comprising some 3.26 hectares to agricultural use using imported inert soil and stone classified as Article 27 by-products of the construction industry. It is proposed to import some 270,000m3 of that	Powersknock , Kilmeaden , County Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	EIAR REQUIRED SEE EIA PORTAL REVIEW
22295	the following works to our existing GAA Club, the widening and enlarging of the existing vehicular entrance and access road way, the erection of new fencing to both sides of the new widened access roadway, the conversion of the existing dressing rooms to	Kildermody , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22309	construct a single storey dwelling, garage, wastewater treatment system, percolation area, splayed entrance and all ancillary site works	Ballygarran , Kilmeaden , County Waterford	APPLICATION FINALISED	OUTLINE PERMISSION	CONDITIONAL	NO
22507	the demolition of 2 no. existing habitable dwellinghouses and existing farm buildings comprising of haybarn, walker, lunge ring and stables. PLANNING PERMISSION is sought for the construction of 67 No. 2 storey dwelling units consisting of; 11 No. detac	Adamstown , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22615	for the development of a single-storey dwelling, garage, driveway entrance, wastewater treatment system, percolation area, well, landscaping and all associated site works	Lissahane , Kill , Co.Waterford	APPLICATION FINALISED	OUTLINE PERMISSION	CONDITIONAL	NO
22613	for erection of a dwelling house, sewage treatment system and all ancillary works.	Coolfin , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22666	for the demolition of the existing rear extension and for the construction of a new replacement rear extension and to include all associated and ancillary site works	Carrickadustra , Kilmeaden , Co Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22696	to construct a single storey extension to the side of the dwelling and all ancillary site works	Georgestown , Kill , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
22758	for development of a Biopharmaceutical Development and Manufacturing Campus.	Butlerstown IDA Business and Technology Park, Butlerstown, Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	EIAR REQUIRED SEE EIA PORTAL REVIEW
22766	to construct a single storey dwelling, garage, wastewater treatment system, percolation area, splayed entrance and all ancillary site works	Ballygarran , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION CONSEQUENT	CONDITIONAL	NO
22808	for change of use from stables to a dwelling house together with planning permission for sub-division of the site, waste water treatment plant and percolation area, soakaway, shared entrance, connection to mains water and all associated site works	Ballyduff , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22811	for single storey family dwelling together with detached garage, waste water treatment plant and percolation area, soakaway, boundary treatment, new entrance, connection to public services and all associated site works	Amberhill , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22821	to extend existing dwelling house with single storey separate living unit, entrance, upgrade existing septic tank system to wastewater treatment system and ancillary works	Carrigeen , Newtown , Kilmacthomas	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
22988	the refurbishment and extension to an existing dwelling house and outbuildings including limited demolition, restoration and adaptation of existing structures, new wastewater treatment system and other ancillary site works	Kilmagemogue , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
221006	Outline planning permission to construct a dormer style dwelling, garage, waste-water treatment system, percolation area, splayed entrance & all ancillary works	Ballyduff East , Kilmeaden , Co. Waterford	APPLICATION FINALISED	OUTLINE PERMISSION	CONDITIONAL	NO
2260010	Planning Permission to construct a dormer dwelling with attached carport and domestic garage, on site sewerage treatment, new entrance onto the public road and all associated works	Lissahane , Kill , Co.Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2322	To demolish a calf house and to construct a calf house and ancillary works	Kilmoyemoge West , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
2360057	for proposed new single-story dwelling house with detached garage, including new on-site proprietary wastewater treatment system and percolation area, new vehicular entrance and all associated groundworks and landscaping	Stonehouse , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360073	for single storey dwelling house and detached garage, proprietary waste water treatment system and percolation area and decommissioning of existing septic tank, demolition of part outbuilding on site, together with all associated site development works	Hacketstown , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360082	Planning permission for the construction of a garage along with all associated site works at Ballyshunnock, Kilmacthomas, Co. Waterford.	Ballyshunnock , Kilmacthomas , Co. Waterford.	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360099	construction of a one-and-a-half story dwelling and garage, upgrading the existing entrance, new wastewater treatment system and percolation area together with all associated site work.	Crinalisk , Kill , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360115	construction of an agricultural cubicle shed, slatted tank & feed passage. This shed is proposed to also cover the existing cubicle area & feed passage.	Coolagaddden , KIlmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
23114	to construct a single storey extension to existing dwelling and all associated site works	Penrose Cottage , Ballyduff , Kilmeaden	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
23137	permission consequent on the grant of outline planning permission to construct a dormer style dwelling, garage, wastewater treatment system, percolation area, splayed entrance and all ancillary site works. Outline planning permission granted under planni	Ballyduff East , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION CONSEQUENT	CONDITIONAL	NO
2360242	for renovation of existing derelict dwelling house, including extension and alterations, including all necessary site works.	Ballyshonock , Kilmacthomas , Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360250	construction of a calf shed, an extension to existing cubicle shed to contain a new slatted tank and all associated site works	Kilmovee , Portlaw , Co. Waterford.	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
2360277	for the restoration of part of an exhausted quarry void located within the former rock quarry at Carrollâ€™s Cross in the townland(s) of Greenan and Ballyshanock. The application area will be ca. 4.7 hectares and the void which will be subjected to resto	Former Roadstone Carrolls Cross Quarry , Greenan and Ballyshanock , Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360301	demolition of an existing two storey dwelling and construction of a new two storey dwelling, driveway, wastewater treatment plant & percolation area, landscaping and all ancillary site works	Kilmoyemoge West , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
23223	for the construction of a new dormer dwelling house, new single storey garage, new bored well, together with a new packaged waste water treatment system and partially raised polishing filter percolation area together with all ancillary and associated sit	Ballyvadd , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
23244	to construct a two storey dwelling, wastewater treatment system, percolation area, splayed entrance and all ancillary site works	Ballyhussa , Kilmacthomas , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
23254	for the construction of a new two storey extension to the existing dressing room block, comprising of the following; 2 no dressing rooms, showers and toilet facilities, meeting room and gym, together with all ancillary and associated accommodations, all	Ballyduff West , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360429	new bungalow (3bed 4/5 person), garage, waste treatment system, percolation area, landscaping, site entrance, with temporary siting of a mobile home for the duration of the build and all site development and associated works and connections	Carrigeen , Newtown , Kilmacthomas Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360486	Complete renovation of existing dwelling, including extensions to side and rear, new roof, new windows and doors, new vehicular entrance, replacement of waste water treatment system and new percolation area together with all associated site works.	Ballycraddock , Kilmeaden , Co. Waterford.	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2360528	to subdivide existing site to create a new development site. Permission includes for construction of new 2.1m high Dividing wall, a new vehicular entrance on the public road and permission to construct a 1.5 storey dwelling house along with associated si	Ballyduff West , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
23329	change of house type from that granted under planning permission 22/613	Coolfinn , Portlaw , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
243	to construct a dormer style dwelling, garage, wastewater treatment system, percolation area, splayed entrance and all ancillary site works	Ballyhussa , Kilmacthomas , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2414	to construct a new single storey dwelling, bio-crete waste water treatment unit, 45m2 polishing filter, recessed entrance and all associated site works	Carrickphilip , Kill , Co. Waterford	DECISION MADE	PERMISSION	CONDITIONAL	NO
2462	for the following works, comprising the construction of a new sensory garden area with associated fencing and access path to the side (east) of the existing school, together with all ancillary and associated site works	Ballyduff West , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2460163	for development of a 800MWh Battery Energy Storage Systems facility within a total site area of 5.45 hectares. The site will include 40No. Electrical Inverters, 20No. Electrical Transformers, 103No. Containerised Battery Storage Modules on Concrete Plint	Townlands of Glenhouse and Lahardan Co. Waterford , on a site approximately 15 kilometres , West of Waterford City.	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2460175	to construct a livestock calf shed, remove an existing round roof shed with lean-to and construct a livestock shed containing cubicles, feed passage and associated site works	Carrickphilip , Kill Kilmacthomas , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
24123	for development consisting of the construction of a new extension to an existing single storey house, which includes a new roof, three dormer windows to the front of the house, and extension to the rear on the ground and first floor. Refurbishment of the	Ballyduff West , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
24131	change of design for the refurbishment and extension to an existing dwellinghouse and outbuildings, including limited demolition, restoration and adaptation of existing structures, granted permission under PD22/988 and all associated ancillary site works	Kilmagemogue , Kilmeaden , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
24137	Change of use of part of the building from Cold Storage presently to that of a Packaging/Processing Area. Permission to demolish the existing Inspection Room and Canteen to be replaced by a new Canteen & Amenities building, to partition off the packagin	QK Coldstores LTD. , Carrolls Cross , Ballyshunnock Kilmacthomas	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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Application no.	Development description	Development address	Application status	Application type	Decision	Cumulative/ in-combination impact likely
2460431	the demolition of the existing rear extension and for the renovation and refurbishment of the original dwelling and for the construction of single storey and storey and a half type extensions to same, and including all ancillary and associated site works	KNOCKHOUSE , PORTLAW , CO. WATERFORD	FURTHER INFORMATION	PERMISSION	N/A	NO
2460442	The construction of a calf shed, and to carry out all ancillary siteworks	Balyvadd , Portlaw , Co. Waterford	APPEALED	PERMISSION	CONDITIONAL	NO
2460450	: alterations to north elevation windows; new timber roof window to replace leaking PVC roof window; four new windows to North elevation; modification of the existing ramps to be replaced with new landing, stairs and railings; new replacement timber exte	Pouldrew House , Portlaw , Co. Waterford	NEW APPLICATION	PERMISSION	N/A	NO
2460512	the renovation and extension of an existing vacant and derelict dwelling, bringing the dwelling up to modern living standards, and providing further accommodation including living spaces, additional bedrooms, a garden room/gym area, a new wastewater trea	Robertstown , Newtown , Co. Waterford	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO
2460564	the construction of a single storey extension and all other ancillary site works	KILMOYEMOGE WEST , PORTLAW , CO. WATERFORD	APPLICATION FINALISED	PERMISSION	CONDITIONAL	NO

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2.7.6.2 EIA Portal search

A search of projects requiring assessment under the European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment (the 'EIA Directive') as amended by Directive 2014/52/EU was carried out on the Department of Housing, Local Government and Heritage's EIA Portal[1]. Two developments requiring EIAR and Appropriate Assessment were identified proximate to the proposed development. The potential for cumulative/in-combination impact of these developments was assessed separately as indicated below

- Portal ID **2022023**: Restoration of a disused rock and gravel quarry comprising some 3.26 hectares to agricultural use using imported inert soil and stone classified as Article 27 by-products of the construction. An Appropriate Assessment screening report of the development found that the project would not have any cumulative impact on the Natura 2000 network
- Portal ID **2022162**: Biopharmaceutical Development and Manufacturing Campus, as an extension to the existing Horizon Development and Manufacturing Facility. A Natura Impact Statement was prepared for this development, which found that the "*…mitigation measures incorporated into the design of the proposed project allow a conclusion to be arrived at that there will be no significant adverse effects as a result of the proposed project either alone or in combination with other plans/projects…*"

[1] Available from: https://housinggovie.maps.arcgis.com/apps/webappviewer/index.html?id=d7d5a3d48f104ecbb206e7e5f84b71f1 Accessed 17 January 2025.



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Figure 29: Projects subject to assessment under the EIA Directive proximate to the proposed development.

In conclusion, with regard to cumulative/in-combination impacts, there is potential for cumulative/in combination impacts with regard to impacts on hydrology/water quality **in the absence of mitigation measures that would remove the potential for likely significant impact on hydrology/water quality associated with the proposed development.**

2.7.7 "Do nothing" scenario

Any potential negative impacts associated with the proposed development would be avoided. Of note, the do nothing scenario may result in the spread of propagules of alien invasive plant species.

2.7.8 Gauging of Impacts on Natura 2000 sites – potential for likely significant impact

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The potential for likely significant impact of the proposed development on Natura 2000 sites are gauged using a checklist, which aids in determining the potential of development to have a significant negative impact on any Natura 2000 site. This checklist consists of a number of pertinent questions as set out in Table 12.

Table 12: Potential of the proposed development to impact on Natura 2000 sites in the absence of suitable mitigation/preventative measures.

DOES THE PLAN HAVE THE POTENTIAL TO:	YES/NO
Cause delays in progress towards achieving the conservation objectives of the Natura 2000 site?	YES
Interrupt progress toward achieving the conservation objectives of the Natura 2000 site?	YES
Disrupt those factors helping to maintain the favourable conditions at the Natura 2000 site?	YES
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the Natura 2000 site?	YES
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the Natura 2000 site functions as a habitat or ecosystem?	YES
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the Natura 2000 site?	YES
Interfere with predicted or expected natural changes to the Natura 2000 site (such as water dynamics or chemical composition)?	YES
Reduce the area of key habitats within the Natura 2000 site?	YES
Reduce the population of key species of the Natura 2000 site?	YES
Alter the balance between key species of the Natura 2000 site?	YES
Reduce the biodiversity of the Natura 2000 site?	YES
Result in disturbance that could affect population size or density or the balance between key species within the Natura 2000 site?	YES
Result in fragmentation?	YES
Result in the loss or reduction of key features of Natura 2000 sites?	YES

2.8 Conclusions of screening

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According to the guidance published by the NPWS (DoEHLG, 2010a), Screening for Appropriate Assessment can either identify that a Natura Impact Statement (NIS) is not required where:

1. A project/proposal is directly related to the management of the site; or
2. There is no potential for significant impacts affecting the Natura 2000 network

Where the screening process identifies that significant impacts are certain, likely or uncertain the project must either proceed to Stage 2 Appropriate Assessment or be rejected.

The potential impacts that will arise from the proposed development have been examined in the context of a number of factors that could potentially impact upon the integrity of the Natura 2000 network. On the basis of the findings of this Screening for Appropriate Assessment, it is concluded that the development:

1. Is not directly connected with or necessary to the management of a Natura 2000 site; and
2. May have significant impacts on one or more Natura 2000 sites.

Following an examination, analysis and evaluation of the relevant information and the potential for significant effects on the conservation objectives of Natura 2000 sites, and applying the Precautionary Principle, it is not possible to exclude (on the basis of objective information and in the absence of specific prescribed precautionary/mitigation measures) that the proposed development, individually or in combination with other plans or projects, has the potential to have significant negative impacts on the following Natura 2000 site:

LOWER RIVER SUIR SAC

Screening having identified potential impacts of the proposed development upon this Natura 2000 site and in accordance with Article 6(3) of the Habitats Directive, a Stage 2 Appropriate Assessment is required, i.e., "*The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.*"

3 Natura Impact Statement (NIS)

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The potential for significant negative impacts of the proposed development on the ecological integrity of the following site, in light of the conservation objective of the site, is examined in this section, namely:

- LOWER RIVER SUIR SAC

3.1 Stage 2 Appropriate Assessment (NIS) background

Screening having identified potential impacts Stage 2 Appropriate Assessment (preparation of a Natura Impact Statement) is carried out to determine whether the project either alone or in combination with other plans and projects will have adverse effects on the integrity of the Natura 2000 site in question in light of its conversation objectives. For the purposes of Appropriate Assessment, a significant effect is any effect that is likely to affect the Conservation Objectives of the QIs/SCIs for which a site was designated but excluding inconsequential effects. If the effect is not relevant to the conservation objective, then it cannot be a significant effect for the purposes of Appropriate Assessment. A likely significant effect, for the purpose of Appropriate Assessment must be:

a. Significant;
b. Relevant to the conservation objective for that site; and
c. The possibility of effects cannot be reasonably excluded.

This stage of the Appropriate Assessment process includes:

1. Impact Prediction - the potential impact of the proposed development on the ecological integrity of Natura 2000 sites in terms of the conservation objectives of those sites is assessed; and
2. Mitigation Measures – mitigation/preventative measures are identified (either in place or to be implemented) in relation to any significant negative impacts associated with the proposed development on the Natura 2000 sites as described herein.

This stage of the Appropriate Assessment process involves the identification of potentially affected sites, the identification of the QIs/SCIs of those sites, and an assessment of the significance of impacts on the conservation objectives of those sites. Any negative impacts on the integrity of structure, function or conservation objectives of these sites will require the implementation of avoidance or mitigation measures to avoid progression to Stages 3 and 4 of the Appropriate Assessment process.

3.2 Summary of Natura 2000 sites relevant to the Stage 2 Appropriate Assessment

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It is the goal of NPWS to draw up conservation plans for all areas designated for nature conservation, and that these plans will, among other things, set clear objectives for the conservation of the features of interest within a site. Where a detailed Conservation Objectives Document is not available, NPWS have provided a site synopsis, generic Conservation Objectives and a Natura 2000 data form.

In this section, the Natura 2000 sites potentially impacted upon by the proposed development are described according to:

1. General description of the site;
2. Qualifying Interests (QI) of the site;
3. Threats, pressures and activities with negative impacts on the site;
4. Conservation Objectives of the site – see conservation objectives document; and
5. Baseline conservation status of the site.

A summary of the Natura 2000 sites potentially impacted upon by the proposed development including general description, qualifying interests, conservation objectives, vulnerability/threats and conservation status of habitats/species within individual sites and conservation status of qualifying interests on a national basis, is provided as follows.

3.2.1 Lower River Suir SAC (Site synopsis version date 19/07/23, Natura 2000 form update 09/18, Conservation Objectives version 1)

3.2.1.1 General Description

The Lower River Suir SAC consists of the freshwater stretches of the River Suir immediately south of Thurles, the tidal stretches as far as the confluence with the Barrow/Nore immediately east of Cheekpoint in Co. Waterford, and many tributaries including the Clodiagh in Co. Waterford, the Lingaun, Anner, Nier, Tar, Aherlow, Multeen and Clodiagh in Co. Tipperary. The Suir and its tributaries flow through the counties of Tipperary, Kilkenny and Waterford.

Good examples of this alluvial wet woodland in the site are found on the islands just below Carrick-on-Suir and at Fiddown Island. Species occurring here include Almond Willow (Salix triandra), White Willow (S. alba), Rusty Willow (S. cinerea subsp. oleifolia), Osier (S. viminalis), with Yellow Iris (Iris pseudacorus), Hemlock Water-dropwort (Oenanthe crocata), Wild Angelica (Angelica sylvestris), Pendulous Sedge (Carex pendula), Meadowsweet (Filipendula ulmaria) and Common Valerian

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(Valeriana officinalis). In the drier areas species such as Ash (Fraxinus excelsior), Hazel (Corylus avellana), Hawthorn (Crataegus monogyna) and Blackthorn (Prunus spinosa) occur. Eutrophic tall herb vegetation occurs in association with the various areas of alluvial forest and elsewhere where the floodplain of the river is intact.

Old oak woodlands are also of importance at the site. The best examples are seen in Portlaw Wood which lies on both sides of the Clodiagh River. On the south-facing side the stand is more open and the oaks (mainly Pedunculate Oak, Quercus robur) are well grown and spreading. Ivy (Hedera helix) and Bramble (Rubus fruticosus agg.) are common on the ground, indicating relatively high light conditions. Oak regeneration is dense, varying in age from 0-40 years and Holly (Ilex aquifolium) is fairly common but mostly quite young. Across the valley, by contrast, the trees are much more closely spaced and though taller, are poorly grown on average. There are no clearings; large oaks extend to the boundary wall. In the darker conditions, Ivy is much rarer and Holly much more frequent, forming a closed canopy in places. Oak regeneration is uncommon since there are as yet few natural clearings. The shallowness of the soil on the north-facing slope probably contributes to the poor tree growth there. The acid nature of the substrate has induced a 'mountain' type oakwood community to develop. The site is quite species-rich throughout, including an abundance of mosses, liverworts and lichens. The rare lichen Lobaria pulmonaria, an indicator of ancient woodlands, is found here. Two stands of Yew (Taxus baccata) woods, a rare habitat in Ireland and the E.U., occur within the site. These are on limestone ridges at Shanbally and Cahir Park. Both are in woods planted with non-native species, including conifers. However, the area at Cahir Park is fairly substantial in size and includes some relatively undisturbed patches of wood and some very old trees.

Floating river vegetation is evident in the freshwater stretches of the River Suir and along many of its tributaries. Typical species found include Canadian Pondweed (Elodea canadensis), water-milfoils (Myriophyllum spp.), Fennel Pondweed (Potamogeton pectinatus), Curled Pondweed (P. crispus), Perfoliate Pondweed (P. perfoliatus), Pond Water-crowfoot (Ranunculus peltatus), other crowfoots (Ranunculus spp.) and the moss Fontinalis antipyretica. At a couple of locations along the river Opposite-leaved Pondweed (Groenlandia densa) occurs. This species is protected under the Flora (Protection) Order, 2022.

Salt meadows occur below Waterford City in old meadows where the embankment is absent, or has been breached, and along the tidal stretches of some of the in flowing rivers below Little Island. There are very narrow, non-continuous bands of this habitat along both banks. More extensive areas are also seen along the south bank at Ballynakill, the east side of Little Island, and in three large salt meadows between Ballynakill and Cheekpoint. The Atlantic sub-type occurs, with an extensive species

list which includes Red Fescue (Festuca rubra), oraches (Atriplex spp.), Sea Aster (Aster tripolium), Sea Couch (Elymus pycnanthus), frequent Sea Milkwort (Glaux maritima), occasional Wild Celery (Apium graveolens), Parsley Water-dropwort (Oenanthe lachenalii), English Scurvygrass (Cochlearia anglica) and Sea Arrowgrass (Triglochin maritima). Common Cord-grass (Spartina anglica), is rather frequent along the main channel edge and up the internal channels. The legally protected (Flora (Protection) Order, 2022) Meadow Barley (Hordeum secalinum) grows at the landward transition of the saltmarsh.

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The site is of particular conservation interest for the presence of a number of Annex II animal species, including Freshwater Pearl Mussel (both Margaritifera margaritifera and M. margaritifera subsp. durrovensis occur), White-clawed Crayfish, Salmon, Twaite Shad (Alosa fallax fallax), three species of Lampreys - Sea Lamprey, Brook Lamprey and River Lamprey, and Otter. This is one of only three known spawning grounds in the country for Twaite Shad. Parts of the site have also been identified as of ornithological importance for a number of Annex I (E.U. Birds Directive) bird species, including Greenland White fronted Goose (10), Golden Plover (1,490), Whooper Swan (7) and Kingfisher.

3.2.1.2 Qualifying Interests

The qualifying interests of the site are:

- Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]
- Mediterranean salt meadows (Juncetalia maritimi) [1410]
- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]
- Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]
- Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]
- Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]
- Taxus baccata woods of the British Isles [91J0]
- Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]
- Austropotamobius pallipes (White-clawed Crayfish) [1092]
- Petromyzon marinus (Sea Lamprey) [1095]
- Lampetra planeri (Brook Lamprey) [1096]
- Lampetra fluviatilis (River Lamprey) [1099]
- Alosa fallax fallax (Twaite Shad) [1103]
- Salmo salar (Salmon) [1106]
- Lutra lutra (Otter) [1355]

3.2.1.3 Threats, pressures, and activities with negative impacts on the site

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Details as to the threats, pressures and activities with negative impacts on the site are identified from the Natura 2000 data form (NPWS, 2018a) for the site and are illustrated in Table 13 (I:inside, O:Outside, B:Both Inside and Outside, H: High, M:moderate, L:Low).

Table 13: Lower River Suir SAC threats, pressures and activities with impacts on the site.

CODE	DESCRIPTION	INSIDE/ OUTSIDE	RANK
A08	Agriculture - Fertilisation	O	H
E01	Urbanisation, residential and commercial development - Urbanised areas, human habitation	B	H
E03	Urbanisation, residential and commercial development - Discharges	B	H
H01	Pollution - Pollution to surface waters (limnic, terrestrial, marine & brackish)	B	H
J02.12.02	Natural System modifications - human induced changes in hydraulic conditions - Dykes, embankments, artificial beaches, general - dykes and flooding defence in inland water systems	I	H
J02.01	Natural System modifications - human induced changes in hydraulic conditions - Landfill, land reclamation and drying out, general	B	M
A01	Agriculture - Cultivation	I	L
B	Sylviculture, forestry	O	L
D03.01	Transportation and service corridors - shipping lanes, ports, marine constructions - port areas	B	L
I01	Invasive, other problematic species and genes - invasive non-native species	I	L
J02.01.02	Natural System modifications - human induced changes in hydraulic conditions - Landfill, land reclamation and drying out, general - reclamation of land from sea, estuary or marsh	I	L

3.2.1.4 Conservation Objectives of the site

A detailed Conservation Objectives Document has been prepared for this site and is available to download from:

https://www.npws.ie/sites/default/files/protected-sites/conservation_objectives/CO002137.pdf

This document is provided as an Appendix to this document.

3.2.1.5 Baseline Conservation Status of the site

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A synopsis of the conservation status of this site as detailed in NPWS (2018a) is provided in Table 14 and Table 15.

Table 14: Habitat types present on the site and assessment for them.

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A|B|C|D	A|B|C		
						Representativity	Relative Surface	Conservation	Global
1330			142	0	M	A	C	A	B
1410			71	0	M	A	C	A	B
3260			71	0	M	C	C	B	C
6430			71	0	M	B	C	B	B
91A0			71	0	M	A	C	B	B
91E0			497	0	M	A	B	A	B
9130			71	0	M	B	C	C	B

Table 15: Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them.

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Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A|B|C|D	A|B|C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A229	Alcedo atthis			p	5	5	p		G	C	B	C	B
F	1102	Alosa alosa			c	0	0		P	DD	D			
F	1103	Alosa fallax			p	0	0		P	DD	C	B	B	A
B	A052	Anas crecca			w	159	159	i	P	M	C	C	C	C
B	A050	Anas penelope			w	26	26	i		G	C	C	C	C
B	A053	Anas platyrhynchos			w	21	21	i		G	C	C	C	C
B	A051	Anas strepera			w	7	19	i	P	M	B	A	C	B
B	A395	Anser albifrons flavirostris			w	1	10	i		M	C	B	C	C
B	A043	Anser anser			w	615	615	i		G	A	B	C	B
I	1092	Austropotamobius pallipes			p	0	0		P	DD	C	A	C	A
B	A061	Aythya fuligula			w	60	60	i	P	M	C	C	C	C
B	A149	Calidris alpina			w	101	101	i	P	M	C	C	C	C
B	A038	Cygnus cygnus			w	7	7	i		G	C	C	C	C
B	A153	Gallinago gallinago			w	30	30	i	P	M	C	C	C	C
F	1099	Lampetra fluviatilis			p	0	0		P	DD	C	B	C	B
F	1096	Lampetra planeri			p	0	0		P	DD	C	B	C	B
B	A156	Limosa limosa			w	20	20	i	P	M	C	B	C	C
M	1355	Lutra lutra			p	0	0		P	DD	C	A	C	A
I	1029	Margaritifera margaritifera			p	0	0		P	DD	C	B	C	C
B	A160	Numenius arquata			w	195	195	i		G	C	C	C	C
F	1095	Petromyzon marinus			p	0	0		P	DD	C	B	C	B
B	A017	Phalacrocorax carbo			w	73	73	i	P	M	C	A	C	B
B	A140	Pluvialis apricaria			w	1490	1490	i		G	C	A	C	B
F	1106	Salmo salar			p	0	0		C	DD	C	A	C	A
B	A164	Tringa nebularia			w	4	4	i	P	M	C	A	C	B
B	A162	Tringa totanus			w	28	28	i	P	M	C	B	C	C
B	A142	Vanellus vanellus			w	2125	2125	i	P	M	C	A	C	B

3.3 Summary of Conservation Status of Natura 2000 sites potentially exposed to significant negative impacts

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The focus of the Appropriate Assessment process at the second stage must be on the integrity of European sites "in light of their conservation objectives."

A summary of the conservation status of the qualifying interests as indicated in NPWS (2019a) and NPWS (2019b) in Table 16. In addition, site specific conservation status as recorded in the individual Natura 2000 form as well as conditions underpinning site integrity are outlined.

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Table 16: Summary of conservation status of relevant Natura sites and conditions underpinning site integrity.

SITE NAME/CODE	QUALIFYING INTEREST HABITAT/SPECIES CODE	NATIONAL CONSERVATION STATUS (NPWS, 2019a & NPWS, 2019b)		SITE ASSESSMENT OF CONSERVATION STATUS (NATURA 2000 DATA FORM)		CONDITIONS UNDERPINNING SITE INTEGRITY
LOWER RIVER SUIR SAC						
	[1330]	RANGE	FAVOURABLE=	REPRESENTATIVITY	A	• SURFACE AND GROUND WATER QUALITY • APPROPRIATE LEVELS OF DISTURBANCE • WATER LEVELS • AIR QUALITY • TIDAL CURRENTS • EROSION/SEDIMENTATION REGIME
		AREA	INADEQUATE↓	RELATIVE SURFACE	C	
		STRUCTURES AND FUNCTIONS	INADEQUATE=	CONSERVATION	A	
		FUTURE PROSPECTS	UNFAVOURABLE - INADEQUATE	GLOBAL	C	
		OVERALL STATUS	INADEQUATE↓			
	[1410]	RANGE	FAVOURABLE	REPRESENTATIVITY	A	
		AREA	INADEQUATE↓	RELATIVE SURFACE	C	
		STRUCTURES AND FUNCTIONS	FAVOURABLE	CONSERVATION	A	
		FUTURE PROSPECTS	UNFAVOURABLE - INADEQUATE	GLOBAL	A	
		OVERALL STATUS	INADEQUATE↓			
	[3260]	RANGE	FAVOURABLE=	REPRESENTATIVITY	A	
		AREA	INADEQUATE↓	RELATIVE SURFACE	C	
		STRUCTURES AND FUNCTIONS	FAVOURABLE	CONSERVATION	B	
		FUTURE PROSPECTS	UNFAVOURABLE - INADEQUATE	GLOBAL	B	
		OVERALL STATUS	INADEQUATE↓			

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SITE NAME/CODE	QUALIFYING INTEREST HABITAT/SPECIES CODE	NATIONAL CONSERVATION STATUS (NPWS, 2019a & NPWS, 2019b)		SITE ASSESSMENT OF CONSERVATION STATUS (NATURA 2000 DATA FORM)		CONDITIONS UNDERPINNING SITE INTEGRITY
	[6430]	RANGE	INADEQUATE↓	REPRESENTATIVITY	B	
		AREA	INADEQUATE↓	RELATIVE SURFACE	C	
		STRUCTURES AND FUNCTIONS	BAD=	CONSERVATION	B	
		FUTURE PROSPECTS	UNFAVOURABLE/BAD	GLOBAL	B	
		OVERALL STATUS	UNFAVOURABLE/BAD↓			
	[91A0]	RANGE	FAVOURABLE=	REPRESENTATIVITY	A	
		AREA	BAD↓	RELATIVE SURFACE	B	
		STRUCTURES AND FUNCTIONS	BAD=	CONSERVATION	B	
		FUTURE PROSPECTS	BAD/UNFAVOURABLE	GLOBAL	B	
		OVERALL STATUS	BAD↓			
	91E0	RANGE	FAVOURABLE=	REPRESENTATIVITY	A	
		AREA	BAD↓	RELATIVE SURFACE	B	
		STRUCTURES AND FUNCTIONS	INADEQUATE↓	CONSERVATION	A	
		FUTURE PROSPECTS	BAD/UNFAVOURABLE	GLOBAL	A	
		OVERALL STATUS	BAD↓			
	91J0	RANGE	FAVOURABLE	REPRESENTATIVITY	B	
		AREA	BAD↓	RELATIVE SURFACE	C	
		STRUCTURES AND FUNCTIONS	BAD↓	CONSERVATION	C	
		FUTURE PROSPECTS	BAD↓	GLOBAL	B	
		OVERALL STATUS	UNFAVOURABLE/BAD=			

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SITE NAME/CODE	QUALIFYING INTEREST HABITAT/SPECIES CODE	NATIONAL CONSERVATION STATUS (NPWS, 2019a & NPWS, 2019b)		SITE ASSESSMENT OF CONSERVATION STATUS (NATURA 2000 DATA FORM)		CONDITIONS UNDERPINNING SITE INTEGRITY
	[1029]	RANGE	UNFAVOURABLE/INADEQUATE=	POPULATION	C	
		POPULATION	UNFAOURABLE/BAD↓	CONSERVATION	B	
		HABITAT FOR SPECIES	UNFAOURABLE/BAD↓	ISOLATION	C	
		FUTURE PROSPECTS	UNFAOURABLE/BAD	GLOBAL	B	
		OVERALL STATUS	UNFAOURABLE/BAD↓			
	[1092]	RANGE	INADEQUATE=	POPULATION	C	
		POPULATION	UNFAOURABLE/BAD↓	CONSERVATION	A	
		HABITAT FOR SPECIES	UNFAOURABLE/BAD↓	ISOLATION	C	
		FUTURE PROSPECTS	UNFAOURABLE/BAD	GLOBAL	A	
		OVERALL STATUS	UNFAOURABLE/BAD↓			
	[1095]	RANGE	UNFAOURABLE/BAD=	POPULATION	C	
		POPULATION	UNFAOURABLE/BAD=	CONSERVATION	B	
		HABITAT FOR SPECIES	UNFAVOURABLE/INADEQUATE=	ISOLATION	C	
		FUTURE PROSPECTS	UNFAOURABLE/BAD	GLOBAL	B	
		OVERALL STATUS	UNFAOURABLE/BAD=			
	[1096]	RANGE	FAVOURABLE=	POPULATION	C	
		POPULATION	FAVOURABLE=	CONSERVATION	B	

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SITE NAME/CODE	QUALIFYING INTEREST HABITAT/SPECIES CODE	NATIONAL CONSERVATION STATUS (NPWS, 2019a & NPWS, 2019b)		SITE ASSESSMENT OF CONSERVATION STATUS (NATURA 2000 DATA FORM)		CONDITIONS UNDERPINNING SITE INTEGRITY
		HABITAT FOR SPECIES	FAVOURABLE=	ISOLATION	C	
		FUTURE PROSPECTS	FAVOURABLE	GLOBAL	B	
		OVERALL STATUS	FAVOURABLE=			
	[1099]	RANGE	FAVOURABLE			
		POPULATION	UNKNOWN			
		HABITAT FOR SPECIES	FAVOURABLE			
		FUTURE PROSPECTS	UNKNOWN			
		OVERALL STATUS	UNKNOWN			
	[1103]	RANGE	UNFAOURABLE/BAD=	POPULATION	B	
		POPULATION	UNFAOURABLE/BAD=	CONSERVATION	B	
		HABITAT FOR SPECIES	UNFAVOURABLE/INADEQUATE=	ISOLATION	B	
		FUTURE PROSPECTS	UNFAOURABLE/BAD	GLOBAL	A	
		OVERALL STATUS	UNFAOURABLE/BAD=			
	[1106]	RANGE	FAVOURABLE=	POPULATION	C	
		POPULATION	UNFAVOURABLE/INADEQUATE ↓	CONSERVATION	B	
		HABITAT FOR SPECIES	FAVOURABLE=	ISOLATION	C	
		FUTURE PROSPECTS	UNFAVOURABLE/INADEQUATE	GLOBAL	B	

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SITE NAME/CODE	QUALIFYING INTEREST HABITAT/SPECIES CODE	NATIONAL CONSERVATION STATUS (NPWS, 2019a & NPWS, 2019b)		SITE ASSESSMENT OF CONSERVATION STATUS (NATURA 2000 DATA FORM)		CONDITIONS UNDERPINNING SITE INTEGRITY
		OVERALL STATUS	UNFAVOURABLE/INADEQUATE =			
	[1355]	RANGE	FAVOURABLE=	POPULATION	C	
		POPULATION	FAVOURABLE↑	CONSERVATION	A	
		HABITAT FOR SPECIES	FAVOURABLE=	ISOLATION	C	
		FUTURE PROSPECTS	FAVOURABLE	GLOBAL	A	
		OVERALL STATUS	FAVOURABLE↑			

3.4 Impact Prediction

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In this section the potential significant negative impacts of the proposed development on the ecological integrity of identified Natura 2000 sites in terms of their conservation objectives is assessed. Significant effects encompass impacts on the structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution) (CIEEM, 2018). Potential effect pathways and predicted impacts on identified at risk QIs/SCIs are discussed in the sections following.

3.4.1 Identified pathways

The Whelanbridge (River) (EPA Code: 16W01) forms an extensive boundary of the proposed development site to the west. The Whelanbridge (River) flows for approximately 1.6km along the boundary of the proposed development. The Whelanbridge Trib 1 (EPA Code: 16W29) flows along the north-eastern boundary of the proposed development site for approximately 820 metres, before joining the Whelanbridge (River). The Whelanbridge (River) joins the River Suir approximately 1.7km from the proposed development sites northernmost boundary.

There is a potential for works on site in such close proximity to these sensitive ecological receptors to result in negative impacts owing to, for example:

- Accidental contamination associated with leaks of hydraulic fluid/diesel/petrol, etc from works associated with the demolition of existing buildings on site or construction activities associated with various elements of the proposed development;
- Sediment release associated with onsite machinery operations;
- Introduction of propagules of Alien Invasive Plant Species, in particular any listed in Part (1) of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011 as amended by SI 355/2015 (Part (1) of First Schedule of European Union (Invasive Alien Species) Regulations of 2024) These species can impact on water quality, stream management, etc. – impacting indirectly on habitat quality.

Any impacts on hydrology/water quality would be likely to have indirect and/or secondary impacts and contribute to cumulative/in-combination impacts on QI's of the Lower River Suir SAC.

3.4.2 Potential Direct Impacts

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No habitat for which any relevant Natura 2000 sites is designated will be lost through land-take, etc. There is no likely significant potential for direct impacts associated with the proposed development on any Natura 2000 site.

3.4.3 Potential Indirect Impacts

There is a water course within and adjacent to the application site that discharges to the Lower River Suir SAC. The qualifying interests of this site are directly or indirectly dependent on water quality. There is potential for indirect impacts associated with construction and/or operation associated with the proposed development through an impact on water quality (including any changes as regards the hydrology, sedimentation, alien invasive species, etc.).

3.4.4 Potential Secondary/Residual/In-combination Impacts

There is potential for secondary/residual impacts on the Lower River Suir SAC in the event of impacts on water quality. For example, bioaccumulation of contaminants, impacts of sedimentation on Ammocoetes of Lamprey species, etc. There is a potential for secondary and/or residual impacts on the Conservation Objectives of Qualifying interests of the Natura 2000 site.

Given the nature of the proposed development, which includes for the construction and operation of a data centre, there is potential for the proposed development to impact through Climate Change.

3.4.5 Summary of Potential Impacts on QIs

A summary of potential impacts indicating: The QIs (habitat/species); Primary Sensitivities of QIs; Potential Impacts affecting QIs and Source of Impacts is provided in Table 17.

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Table 17: Summary of identified potential impacts on Qualifying Interests of relevant Natura 2000 sites in the absence of mitigation measures.

SITE NAME	QUALIFYING INTEREST	SENSITIVITIES ASSOCIATED WITH POTENTIAL DEVELOPMENTS	POTENTIAL IMPACT(S) FROM THE PROPOSED DEVELOPMENT IN ABSENCE OF ANY MITIGATION MEASURES
LOWER RIVER SUIR SAC	• Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	• Potential impacts associated with changes in water quality, potential secondary impacts. • Changes in deposition of silt in habitat resulting in poor substrate quality.	• Sediment/hydrocarbon input to watercourses proximate to the proposed development and consequently to hydrologically connected watercourses.
	• Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	• Potential impacts associated with invasive alien species.	• Potential impacts associated with the importation and spread of invasive alien species
	• Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	• Potential impacts associated with invasive alien species.	• Potential impacts associated with the importation and spread of invasive alien species
	• Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	• Change in chemical and/or nutrient status of water and/or silt. Direct impacts (mortality) & indirect impacts (increased growth of algae or macrophytes). • Changes in deposition of silt in habitat resulting in poor substrate quality.	• Sediment/hydrocarbon input to watercourses proximate to the proposed development and consequently to hydrologically connected watercourses.
	• Austropotamobius pallipes (White-clawed Crayfish) [1092]	• Potential impacts associated with changes in water quality, potential secondary impacts.	• Sediment/hydrocarbon input to watercourses proximate to the proposed development and consequently to hydrologically connected watercourses.

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SITE NAME	QUALIFYING INTEREST	SENSITIVITIES ASSOCIATED WITH POTENTIAL DEVELOPMENTS	POTENTIAL IMPACT(S) FROM THE PROPOSED DEVELOPMENT IN ABSENCE OF ANY MITIGATION MEASURES
	• Petromyzon marinus (Sea Lamprey) [1095]	• Change in chemical and/or nutrient status of water and/or silt. • Changes in deposition of silt in habitat. • Impacts on feeding ammocoetes through siltation and/or bioaccumulation.	• Sediment/hydrocarbon input to watercourses proximate to the proposed development and consequently to hydrologically connected watercourses.
	• Lampetra planeri (Brook Lamprey) [1096]	• Change in chemical and/or nutrient status of water and/or silt. • Changes in deposition of silt in habitat. • Impacts on feeding ammocoetes through siltation and/or bioaccumulation.	• Sediment/hydrocarbon input to watercourses proximate to the proposed development and consequently to hydrologically connected watercourses.
	• Lampetra fluviatilis (River Lamprey) [1099]	• Change in chemical and/or nutrient status of water and/or silt. • Changes in deposition of silt in habitat. • Impacts on feeding ammocoetes through siltation and/or bioaccumulation.	• Sediment/hydrocarbon input to watercourses proximate to the proposed development and consequently to hydrologically connected watercourses.
	• Alosa fallax fallax (Twaite Shad) [1103]	• Change in chemical and/or nutrient status of water. • Bioaccumulation of contaminants. • Changes in deposition of silt in habitat.	• Sediment/hydrocarbon input to watercourses proximate to the proposed development and consequently to hydrologically connected watercourses.

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SITE NAME	QUALIFYING INTEREST	SENSITIVITIES ASSOCIATED WITH POTENTIAL DEVELOPMENTS	POTENTIAL IMPACT(S) FROM THE PROPOSED DEVELOPMENT IN ABSENCE OF ANY MITIGATION MEASURES
	• Salmo salar (Salmon) [1106]	• Change in chemical and/or nutrient status of water. • Changes in deposition of silt in habitat.	• Sediment/hydrocarbon input to watercourses proximate to the proposed development and consequently to hydrologically connected watercourses.
	• Lutra lutra (Otter) [1355]	• Change in chemical/nutrient status could impact on prey species. • Bioaccumulation of contaminants. • Disturbance.	• Potential indirect and secondary impacts associated with changes in water quality

3.5 Mitigation Measures – avoiding potential impacts

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The mitigation measures outlined relate primarily to the prevention of impacts associated with water quality (including impacts on water quality associated with invasive alien plants). The current habitats and conditions present do not support populations of Qualifying Interests of any Natura 2000 site described herein:

3.5.1 Impacts on water quality

The primary source of potential negative impacts on the conservation objectives of the QIs of the Natura 2000 network described herein regards the potential for impacts on surface/ground water quality as a result of the proposed development, including secondary impacts. The potential impacts of the proposed development on water quality during the demolition , construction and operation phases are clearly outlined in Section 6.5 of the Hydrology and Hydrogeology Chapter of the EIAR.

The Whelanbridge (River) (EPA Code: 16W01) forms an extensive boundary of the proposed development site to the west. The Whelanbridge (River) flows for approximately 1.6km along the boundary of the proposed development. The Whelanbridge Trib 1 (EPA Code: 16W29) flows along the north-eastern boundary of the proposed development site for approximately 820 metres, before joining the Whelanbridge (River). The Whelanbridge (River) joins the River Suir approximately 1.7km from the proposed development sites northernmost boundary. The measures to mitigate against any adverse impact on water quality are outlined in length in Section 6.6 of the Hydrology and Hydrogeology Chapter of the EIAR. Mitigation measures will include :

Demolition Phase

"…The development contains existing buildings to be demolished. …Overall, no mitigation measures are required during the demolition phase in relation to hydrogeology and hydrology due to the surface level nature of the works. The surface-level demolition works will have a negligible impact on hydrogeology and hydrology, preserving their integrity and minimizing any potential environmental consequences.

Construction Phase

Construction & Environmental Management Plan

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"…A Construction & Environmental Management Plan (CEMP) has been prepared in respect of the proposed development. The CEMP outlines and explains the construction techniques and methodologies which will be implemented during construction of the proposed development.

Construction works and the proposed mitigation measures are informed by best practice guidance on the prevention of pollution during development projects including but not limited to:

Construction Industry Research and Information Association (CIRIA), Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors (C532);

Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016);

Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (4th edition), (C741);

Enterprise Ireland Best Practice Guide, Oil Storage Guidelines (BPGCS005).

Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);

Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;

CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors;

CIRIA C648 Control of Water Pollution from Constructional Sites;

Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA 2008); and

Inland Fisheries Ireland (IFI) – A Guideline on Planning for Watercourses in the Urban Environment.

The CEMP will set out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

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During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as:

Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events.

Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process.

All mitigation measures outlined here, and within the CEMP will be implemented during the construction phase, as well as any additional measures required pursuant to planning conditions which may be imposed.

Suspended solids

As there is potential for run-off to indirectly discharge to a watercourse (Whelanbridge River and Whelanbridge Trib 1 and eventually to the Lower River Suir SAC), in order to manage the potential impact associated with sediment and sediment runoff the following mitigation measures will be implemented during the construction phase.

During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts.

Silt reduction measures on site will include a combination of silt fencing and settlement measures.

A riparian zone will be maintained along the Whelanbridge River

It is proposed to install a french drain where required surrounding the solar farm area on Blackknock Hill and other water quality control measures i.e. silt traps, 20m buffer zones surrounding the 2 no. ponds on site will be installed during construction. Refer to Figure 6.4 below.

Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.

A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate,

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The temporary storage of soil will be carefully managed. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.

Aggregate materials such as sands and gravels will be stored in clearly marked receptacles within a secure compound area to prevent contamination.

Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.

Excavations will remain open for as little time as possible before the placement of fill. This will help to minimise the potential for water ingress into excavations.

Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.

Any surface water run-off collecting in excavations will likely contain a high sediment load. This will not be allowed to directly discharge to any stormwater sewer, drainage ditch or watercourse.

Figure 3-1 20m Buffer Zone Artificial Ponds and Drainage On Site (Source: Hyphen)



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Cement/concrete works

Where feasible all ready-mixed concrete will be brought to site by truck. A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline wastewaters or contaminated storm water to the underlying subsoil.

No wash-down or wash-out of ready-mix concrete vehicles during the construction works will be carried out at the site within 10 meters of an existing surface water drainage point. Wash-outs will only be allowed to take place in designated areas with an impervious surface where all wash water is contained and removed from site by road tanker or discharged to foul sewer subject to agreement with Uisce Éireann (Irish Water) / WCC.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. Relevant personnel working on the site will be suitably trained in the implementation of the procedures.

Hydrocarbons and other construction chemicals

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages to ground of fuels and other construction chemicals and prevent any resulting to surface water (and groundwater) systems:

Designation of bunded refuelling areas on the site;

Provision of spill kit facilities across the site;

Where mobile fuel bowsers are used, the following measures will be taken:

Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;

The pump or valve will be fitted with a lock and will be secured when not in use;

All bowsers to carry a spill kit and relevant operatives must have spill response training;

Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

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Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;

Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;

All drums to be quality approved and manufactured to a recognised standard;

If drums are to be moved around the Site, they will be secured and on spill pallets; and

Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.

In addition to the measures above, all excavated materials will be visually assessed by suitably qualified persons for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in designated bunded refuelling areas, which will be away from surface water gulleys or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

The construction contractor will be required to implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the Site will be suitably trained in the implementation of the procedures.

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Wastewater Management

Foul wastewater arising from the site will be managed and controlled for the duration of the construction works.

Foul water from the offices and welfare facilities on the site will be collected in portable sanitary facilities and disposed of appropriately by licenced contractor.

The construction contractor will implement emergency response procedures, and these will be in line with industry guidance. All personnel working on the site will be suitably trained in the implementation of the procedures.

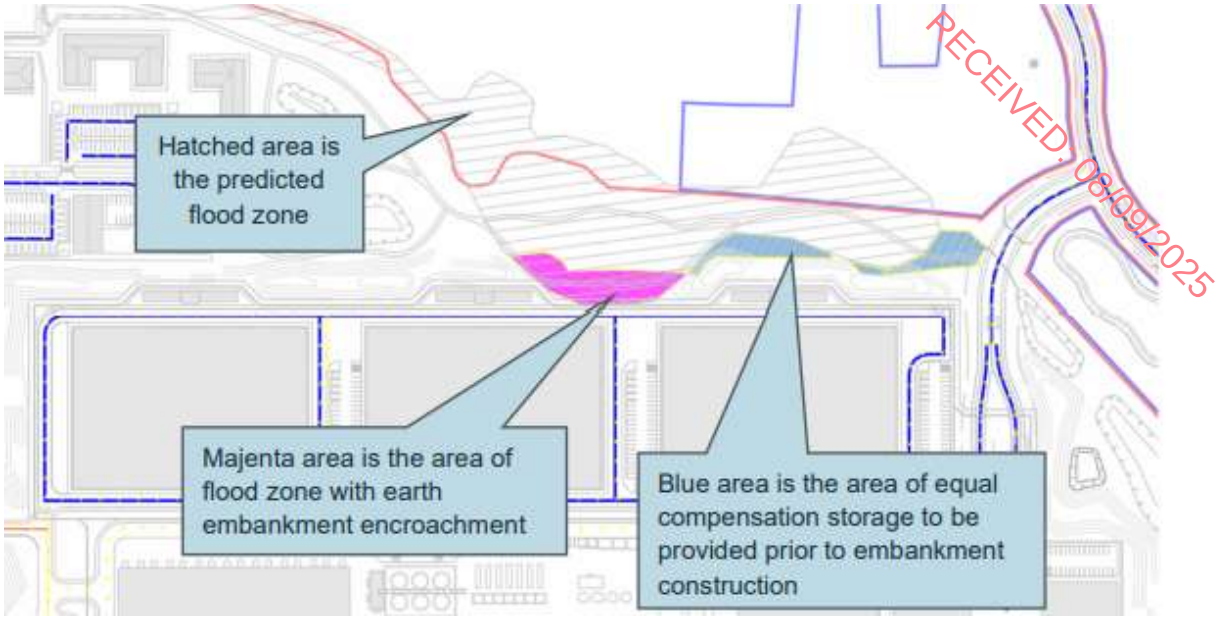
Surface Water and Groundwater Flow and Quality

Surface water discharge from the site will be managed and controlled for the duration of the construction works until the surface water drainage system of the proposed development is complete.

No instream works are required for the construction of the proposed bridge crossing on the Whelanbridge Trib 1. The bridge has been designed for 100yr flood event with a minimum of 300mm freeboard. A specific method statement will be prepared for approval of the OPW and Local authority prior to commencement of construction works to insure protection of water quality during construction works. The method statement will include best practice measures as outlined in the "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) and "Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016)".

For the construction of the data centres, it will be required to raise the levels to a suitable height. Part of the area of construction of the earth embankments will be within the identified flood zone on site. To mitigate this, it is proposed to lower the levels of lands adjacent to provide equal compensation storage. This should be provided prior to the construction of the earth embankment such that the current flood storage volume is never decreased below the current volume i.e compensation storage as outlined in Figure 3-2 below.

Figure 3-2 Compensation storage (Engineering Report, Atkins, 2025)



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Human Health and Populations

… there are no recorded Recreational Waters, Bathing Waterbodies or Surface Water Drinking RPA located downstream in the Whelanbridge River, Whelanbridge Trib 1 or the Lower River Suir SAC. In addition, there are no recorded Public Supply Source Protection Area or Group Scheme Preliminary Source Protection Areas defined by the GSI within which development is limited in order to protect drinking water supplies from potential pollution located in the vicinity of the proposed development site.

As there is no source pathway linkage, no mitigation is required.

Potential Impacts on Water Framework Directive Status

…there is a potential of accidental discharges during the construction phase. However, these are temporary short-lived events that will not impact on the status of the Whelanbridge River, Whelanbridge Trib 1, The Lower River Suir SAC (Site Code: 002137) or the underlying Waterford groundwater body (GWB) in the long-term. As such the proposed development will not cause any significant deterioration or change in water quality status or prevent attainment, or potential to achieve the WFD objectives or to meet the requirements and/or objectives in the third cycle river basin management plan (2022-2027) i.e. Water Action Plan 2024 - A River Basin Management Plan for Ireland.

On a precautionary basis, the mitigation measures set out in Section 6.6.1 will be implemented during the construction works for the protection of surface water and groundwater quality.

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Operational Phase

Surface Water and Groundwater Quality

The design has taken account of the potential impacts of the development on surface water quality; measures have been incorporated in the design to mitigate these potential impacts. The surface water design approach taken will comply with the key design criteria set out in the Greater Dublin Regional Code of Practice for Drainage Works.

The proposed surface water management design establishes a hydrological connection to the Whelanbridge Trib 1, located along the eastern boundary of the site, during the operational phase. This design includes two (2) no. discharge locations for the village centre and one (1) no. for the technology park.

To mitigate potential contamination from surface water runoff, which may originate from roads, car parks, and hardstanding areas, a sustainable drainage system (SuDS) will be implemented. This system is designed to minimize the risk of contaminants, such as hydrocarbons, entering the stormwater drainage network and subsequently impacting surface water bodies like the Whelanbridge River, Whelanbridge Trib 1, the Upper Suir Estuary transitional waterbody and the Lower River Suir SAC; as well as groundwater bodies, including the Waterford GWB underlying the site.

The surface water drainage strategy integrates various measures, including porous asphalt in car parks, filter drains and swale drains in open spaces, permeable paving (Grasscrete) around the buildings, attenuation ponds, infiltration tanks, and a rainwater harvesting system. These features will effectively manage surface water flows, directing them to the attenuation ponds and infiltration tanks to maximize their storage potential. The flow control devices will be installed downstream of the ponds outlet pipes to ensure the surface water runoff is stored maximising storage potential, prior to entering the network downstream i.e. the Whelanbridge Trib 1 located along the sites eastern boundary.

The proposed surface water design was designed to provide the following, including a 20% climate change;

No surcharging in the 1 in 5-year storm event. Pipes immediately upstream of flow control devices may encounter small amount of surcharging due to the flow being throttled accordingly.

No Flooding in the 1 in 30-year storm event.

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No flooding against a 1 in 100-year storm event or controlled flooding allowing the volume to be contained on site and not impact the surrounding infrastructure.

The total maximum attenuated volume of water stored in all the attenuation ponds for the 100-year event was calculated to be 7905.1m^3 for the Technology Park and 2025.5m^3 for the Village Centre.

The system shall also incorporate an overflow on the most downstream hydro-brake manhole. The overflow shall consist of a high-level overflow pipe provided to allow water escape should the hydro-brake block or malfunction, or to cater for high water levels created by a storm greater than the design storm (100-year).

Furthermore, the use of hydrotreated vegetable oil (HVO) instead of bulk diesel for back up generators, will further mitigate potential impacts on local hydrology and hydrogeology in the event of a spill/leak (refer to Section 6.5.2). Storm drainage from the generator yards is drained through an oil interceptor to treat any accidental leaks.

Refer to the Engineering Report, prepared by AtkinsRéalis Ireland Limited in December 2024 submitted as part of the planning application for further information on the proposed storm water management and design.

Surface Water and Groundwater Flow and Quantity

The proposed incorporation of hardstand area and the use of SUDs design measures will have a minor effect on local recharge to ground and has the potential to result in increased run-off from the site if not adequately mitigated.

The proposed incorporation of hardstand areas and the implementation of Sustainable Urban Drainage Systems (SuDS) design measures will have a minor effect on local groundwater recharge and may lead to increased runoff from the site if not properly managed. However, the overall impact on the groundwater regime is expected to be insignificant, given the site's area relative to the total aquifer area. Additionally, the natural recharge capacity of the underlying "Regionally Important Aquifer – Fissured Bedrock" (Rf) supports the maintenance of groundwater levels.

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An increase in surface water runoff could adversely affect the hydrological regime of downstream environments, potentially causing flooding and inundation of downstream properties. It is important to note that majority of the proposed development is located in flood zone c while small portion of the development (earthwork embankments) is constructed in flood zones A & B . It is proposed to keep all construction out of the areas identified as having localised flooding, completely mitigating any flood risk.

To mitigate these risks, the design of the development and its drainage infrastructure will ensure that runoff rates are restricted to those of greenfield conditions. The development will incorporate SuDS and an attenuation system, with a design that includes a 20% allowance for climate change. The proposed surface water management strategy aims to prevent surcharging during a 1 in 5-year storm event, eliminate flooding during a 1 in 30-year storm event, and either prevent flooding or control flooding during a 1 in 100-year storm event, thereby containing runoff on-site and protecting surrounding infrastructure.

The ground under the panels shall be maintained as grassland which will serve to reduce the risk of erosion and limit surface water flows across the site. The operation and maintenance of the solar farm shall include monitoring and maintenance of the grassland beneath the panels. Where compaction of soil is observed, the ground will be cultivated and re-seeded.

Furthermore, there are no proposed surface water or groundwater abstractions, eliminating potential impacts on the quantity of surface water or groundwater resources.

Human Health and Populations

… there are no recorded Recreational Waters, Bathing Waterbodies or Surface Water Drinking RPA located downstream in the Whelanbridge River, Whelanbridge Trib 1 or the Lower River Suir SAC. In addition, there are no recorded Public Supply Source Protection Area or Group Scheme Preliminary Source Protection Areas defined by the GSI within which development is limited in order to protect drinking water supplies from potential pollution located in the vicinity of the proposed development site.

As there is no source pathway linkage, no mitigation is required.

Water Framework Directive Status

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There is a potential risk of accidental discharges during the operational phase from car parking areas, roads and HVO during delivery (as detailed in Section 6.5.2). However, these events are temporary and short-lived, with no long-term impact on the status of the Whelanbridge River, Whelanbridge Trib 1, the Lower River Suir SAC (Site Code: 002137), or the underlying Waterford groundwater body (GWB).

Consequently, the proposed development will not lead to any significant deterioration or changes in water quality status, nor will it hinder the achievement of the Water Framework Directive (WFD) objectives or the goals outlined in the third cycle river basin management plan (2022-2027), specifically the Water Action Plan 2024 for Ireland.

Limited surface water discharges during the operational phase will occur to the Whelanbridge Trib 1, located along the site's eastern boundary (refer to Section 6.4.2). However, these discharges will be effectively managed through Sustainable Urban Drainage Systems (SuDS) measures, including porous asphalt for the proposed car parks, filter drains/swale drains along the drainage route in open spaces, permeable paving (Grasscrete) outside the proposed building, as well as attenuation ponds, an infiltration tank, and rainwater harvesting. All surface water flows from the proposed development will be directed efficiently to the attenuation ponds and infiltration tank, maximizing their potential. Flow control devices will be installed downstream of the ponds outlet pipes to ensure that surface water runoff is stored effectively, optimizing storage capacity before entering the downstream network.

According to Uiscé Éireann's (Irish Water) Wastewater Treatment Capacity Register (June 2023), there is capacity available at Ballyduff Lower-Kilmeaden WWTP. Therefore, the proposed peak effluent discharge calculated for the proposed development is not likely to have an impact on the capacity at Ballyduff Lower-Kilmeaden WWTP or the overall water quality within the Whelanbridge River, the Lower River Suir SAC or the Waterford GWB and therefore would likely not have any impact on the current Water Body Status (as defined within the Water Framework Directive). In addition, the proposed development will not contribute any additional stormwater drainage to Ballyduff Lower-Kilmeaden WWTP.

No further mitigation is required.

3.5.2 Impacts associated with the introduction and spread of invasive alien species/non-native species

Populations of several species of invasive plant, including New Zealand Pygmyweed (*Crassula helmsii*), Water Fern (*Azolla filiculoides*) and Japanese Knotweed (*Fallopia japonica*) - species listed on Part (1)

of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations of 2011/Part (1) of the First Schedule of the European Union (Invasive Alien Species) Regulations 2024are present on site. There is potential for impact associated with the spread of these species both within and off site.

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Given the nature of the proposed development, there is potential for importation to/export from and spread of alien invasive plant species throughout the proposed development site through:

- Propagules of invasive alien species imported to/exported from the site on the tyres, buckets, bodies, etc. of machinery and plant involved in the proposed development works.
- Propagules of invasive alien species imported in fill material used in the construction of proposed development.

A detailed Alien Invasive Plant Species Management and Control Plan, to be prepared pre-construction will be adhered to in order to eradicate such species on site and prevent spread off site.

Contractor's plant, equipment etc. must arrive at the site free from propagules of any invasive alien species as listed on the third schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 as amended. (and Part (1) of the First Schedule of the European Union (Invasive Alien Species) Regulations 2024). Any imported fill material onto site should be sourced from stock that has been screened for the presence of invasive alien species and must be accompanied by a written guarantee of such. In order to ensure traceability, all incoming loads must be accompanied by paperwork outlining the nature of the material, the origin of the material, and certification that all material is free of propagules of any invasive plant species listed on the Third Schedule and the EU (Invasive Species) Regulations 2024.

3.5.3 Impacts associated with Climate Change

Chapter 9 of the EIAR has prescribed mitigation measures as outlined below

"…Construction Phase
The objective of the mitigation measures outlined below is to ensure that GHG emissions are minimized wherever possible during the construction phase. The measures will include:

- *Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.*
- *Where possible site traffic will avoid peak traffic periods to avoid congestion on local roads.*
- *Ensure all plant and machinery are well maintained and inspected regularly.*
- *Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.*
- *Waste materials will be re-used on site where possible and where re-use is not possible on-site they will be sent off-site for recycling, re-use or recovery.*
- *Sourcing materials locally where possible to reduce transport related CO_2 emissions.*

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Operational Phase

The data centre will be powered by electricity from the national grid. A brief summary of some of the measures included in the Proposed Development which will help to reduce the impact to climate are:

- *Artificial lighting will consist of energy efficient LED luminaires with the use of natural daylight as much as possible through the building design.*
- *DHW water source heat pump will be used for all spaces.*
- *The proposed cooling system design accommodates the installation of heat recovery plate heat exchangers to recover waste heat for reuse. The plant proposes to use motorised ventilation with heat recovery efficiency of 66%.*
- *The cooling solution for the data centre is a hybrid approach that combines fan wall CRAH (Computer Room Air Handler) units with free cooling chillers and direct-to-chip liquid cooling.*
- *Significant carbon emission reductions could be realised by the implementation of a low temperature heat network utilizing waste heat from the proposed ICT facilities*
- *Bicycle parking will be provided to promote more sustainable modes of travel.*
- *Electric vehicle charging will be provided which promotes more sustainable modes of travel.*
- *A proposed Battery Energy Storage System (BESS) will provide 114 MWe with an autonomy of 3.5 hours.*
- *A OCGT power generation facility will be designed to provide 203 MWe (at 10°C) output capacity to match the proposed ICT buildings power demand and operate as a demand and grid supporting asset, providing support to the electricity grid.*
- *PV solar panels will be installed onsite with over 29MW of input.*
- *The applicant is aligned with the goals and objectives of the EU Climate Neutral Data Centre Pact and is committed to leading and exceeding the target performance criteria as outlined in the EU Climate Neutral Data Centre Pact.*
- *The PUE will be annualised to be below 1.287 which is an improvement on the EU Climate Neutral Data Centre Pact.*
- *The WUE will be annualised to be below 0.000106 which is an improvement on the EU*
- *Climate Neutral Data Centre Pact target by 99%.*

These above identified measures will aid in reducing the impact to climate during the operational phase of the Proposed Development in line with the goals of the Climate Action Plan…"

3.6 Significance of impacts following implementation of mitigation measures

The significance of impacts on the conservation objectives of the QIs of the Lower River Suir SAC (please note for completeness all QIs are included, regardless of prescription of mitigation measures for that QI) are indicated in Table 18.

Table 18: Summary of significance of likely significant impacts of the proposed development on all Qualifying Interests of the Lower River Suir SAC assuming full implementation of all mitigation measures identified in EIAR and NIS.

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SITE NAME	QUALIFYING INTEREST	SIGNIFICANCE OF IMPACT FOLLOWING IMPLEMENTATION OF MITIGATION MEASURES
LOWER RIVER SUIR SAC	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [3260]	Not significant
	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430]	Not significant
	Atlantic salt meadows (Glauco-Puccinellietalia maritimae) [1330]	Not significant
	Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae) [91E0]	Not significant
	Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0]	Not significant
	Taxus baccata woods of the British Isles [91J0]	Not significant
	Margaritifera margaritifera (Freshwater Pearl Mussel) [1029]	Not significant
	Austropotamobius pallipes (White-clawed Crayfish) [1092]	Not significant
	Petromyzon marinus (Sea Lamprey) [1095]	Not significant
	Lampetra planeri (Brook Lamprey) [1096]	Not significant
	Lampetra fluviatilis (River Lamprey) [1099]	Not significant
	Alosa fallax fallax (Twaite Shad) [1103]	Not significant
	Salmo salar (Salmon) [1106]	Not significant
	Lutra lutra (Otter) [1355]	Not significant

4 Conclusions

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Based on an examination, analysis, and evaluation of the best scientific information (and applying the precautionary principle), and assuming the implementation in full of all mitigation measures as outlined in the EIAR and this NIS, it is the professional opinion of the authors of this report that there is not likely to be an adverse impact on the integrity of any relevant Natura 2000 sites in view of their conservation objectives as outlined herein either alone or in combination with other plans or projects. Consequently, there will be no risk of adverse effects on Qualifying Interest habitats or species, nor on the attainment of specific conservation objectives, either alone or in-combination with other plans or projects, for the relevant Natura 2000 sites. The ecological integrity of the Natura 2000 sites concerned (connected with qualifying interests for which the sites have been designated) will not be adversely impacted.

5 References not referred to in footnotes

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APPENDIX 8.1

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Description of the AERMOD Model

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The AERMOD dispersion model has been developed in part by the U.S. Environmental Protection Agency[1, 2]. The model is a steady-state Gaussian model used to assess pollutant concentrations associated with industrial sources. The model is an enhancement on the Industrial Source Complex-Short Term 3 (ISCST3) model which has been widely used for emissions from industrial sources.

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Improvements over the ISCST3 model include the treatment of the vertical distribution of concentration within the plume. ISCST3 assumes a Gaussian distribution in both the horizontal and vertical direction under all weather conditions. AERMOD with PRIME, however, treats the vertical distribution as non-Gaussian under convective (unstable) conditions while maintaining a Gaussian distribution in both the horizontal and vertical direction during stable conditions. This treatment reflects the fact that the plume is skewed upwards under convective conditions due to the greater intensity of turbulence above the plume than below. The result is a more accurate portrayal of actual conditions using the AERMOD model. AERMOD also enhances the turbulence of night-time urban boundary layers thus simulating the influence of the urban heat island.

In contrast to ISCST3, AERMOD is widely applicable in all types of terrain. Differentiation of the simple versus complex terrain is unnecessary with AERMOD. In complex terrain, AERMOD employs the dividing-streamline concept in a simplified simulation of the effects of plume-terrain interactions. In the dividing-streamline concept, flow below this height remains horizontal, and flow above this height tends to rise up and over terrain. Extensive validation studies have found that AERMOD (precursor to AERMOD with PRIME) performs better than ISCST3 for many applications and as well or better than CTDMPLUS for several complex terrain data sets[3].

Due to the proximity to surrounding buildings, the PRIME (Plume Rise Model Enhancements) building downwash algorithm has been incorporated into the model to determine the influence (wake effects) of these buildings on dispersion in each direction considered. The PRIME algorithm takes into account the position of the stack relative to the building in calculating building downwash. In the absence of the building, the plume from the stack will rise due to momentum and/or buoyancy forces. Wind streamlines act on the plume leads to the bending over of the plume as it disperses. However, due to the presence of the building, wind streamlines are disrupted leading to a lowering of the plume centreline.

When there are multiple buildings, the building tier leading to the largest cavity height is used to determine building downwash. The cavity height calculation is an empirical formula based on building height, the length scale (which is a factor of building height & width) and the cavity length (which is based on building width, length and height). As the direction of the wind will lead to the identification of differing dominant tiers, calculations are carried out in intervals of 10 degrees.

In PRIME, the nature of the wind streamline disruption as it passes over the dominant building tier is a function of the exact dimensions of the building and the angle at which the wind approaches the building. Once the streamline encounters the zone of influence of the building, two forces act on the plume. Firstly, the disruption caused by the building leads to increased turbulence and enhances horizontal and vertical dispersion. Secondly, the streamline descends in the lee of the building due to the reduced pressure and drags the plume (or part of) nearer to the ground, leading to higher ground level concentrations. The model calculates the descent of the plume as a function of the building shape and, using a numerical plume rise model, calculates the change in the plume centreline location with distance downwind.

The immediate zone in the lee of the building is termed the cavity or near wake and is characterised by high intensity turbulence and an area of uniform low pressure. Plume mass captured by the cavity region is re-emitted to the far wake as a ground-level volume source. The volume source is located at the base of the lee wall of the building, but is only evaluated near the end of the near

wake and beyond. In this region, the disruption caused by the building downwash gradually fades with distance to ambient values downwind of the building.

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AERMOD has made substantial improvements in the area of plume growth rates in comparison to ISCST3[1, 4]. ISCST3 approximates turbulence using six Pasquill-Gifford-Turner Stability Classes and bases the resulting dispersion curves upon surface release experiments. This treatment, however, cannot explicitly account for turbulence in the formulation. AERMOD is based on the more realistic modern planetary boundary layer (PBL) theory which allows turbulence to vary with height. This use of turbulence-based plume growth with height leads to a substantial advancement over the ISCST3 treatment.

Improvements have also been made in relation to mixing height[1, 4]. The treatment of mixing height by ISCST3 is based on a single morning upper air sounding each day. AERMOD, however, calculates mixing height on an hourly basis based on the morning upper air sounding and the surface energy balance, accounting for the solar radiation, cloud cover, reflectivity of the ground and the latent heat due to evaporation from the ground cover. This more advanced formulation provides a more realistic sequence of the diurnal mixing height changes.

AERMOD also has the capability of modelling both unstable (convective) conditions and stable (inversion) conditions. The stability of the atmosphere is defined by the sign of the sensible heat flux. Where the sensible heat flux is positive, the atmosphere is unstable whereas when the sensible heat flux is negative the atmosphere is defined as stable. The sensible heat flux is dependent on the net radiation and the available surface moisture (Bowen Ratio). Under stable (inversion) conditions, AERMOD has specific algorithms to account for plume rise under stable conditions, mechanical mixing heights under stable conditions and vertical and lateral dispersion in the stable boundary layer.

AERMOD also contains improved algorithms for dealing with low wind speed (near calm) conditions. As a result, AERMOD can produce model estimates for conditions when the wind speed may be less than 1 m/s, but still greater than the instrument threshold.

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APPENDIX 8.2

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Meteorological Data - AERMET

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AERMOD incorporates a meteorological pre-processor AERMET (version 24142)[1]. AERMET allows AERMOD to account for changes in the plume behaviour with height. AERMET calculates hourly boundary layer parameters for use by AERMOD, including friction velocity, Monin-Obukhov length, convective velocity scale, convective (CBL) and stable boundary layer (SBL) height and surface heat flux. AERMOD uses this information to calculate concentrations in a manner that accounts for changes in dispersion rate with height, allows for a non-Gaussian plume in convective conditions, and accounts for a dispersion rate that is a continuous function of meteorology.

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The AERMET meteorological preprocessor requires the input of surface characteristics, including surface roughness (z0), Bowen Ratio and albedo by sector and season, as well as hourly observations of wind speed, wind direction, cloud cover, and temperature. A morning sounding from a representative upper air station, latitude, longitude, time zone, and wind speed threshold are also required.

Two files are produced by AERMET for input to the AERMOD dispersion model. The surface file contains observed and calculated surface variables, one record per hour. The profile file contains the observations made at each level of a meteorological tower, if available, or the one-level observations taken from other representative data, one record level per hour.

From the surface characteristics (i.e. surface roughness, albedo and amount of moisture available (Bowen Ratio)) AERMET calculates several boundary layer parameters that are important in the evolution of the boundary layer, which, in turn, influences the dispersion of pollutants. These parameters include the surface friction velocity, which is a measure of the vertical transport of horizontal momentum; the sensible heat flux, which is the vertical transport of heat to/from the surface; the Monin-Obukhov length which is a stability parameter relating the surface friction velocity to the sensible heat flux; the daytime mixed layer height; the nocturnal surface layer height and the convective velocity scale which combines the daytime mixed layer height and the sensible heat flux. These parameters all depend on the underlying surface.

The values of albedo, Bowen Ratio and surface roughness depend on land-use type (e.g., urban, cultivated land etc) and vary with seasons and wind direction. The assessment of appropriate land-use types was carried out in line with USEPA recommendations[2] and using the detailed methodology outlined by the Alaska Department of Environmental Conservation[3]. AERMET has also been updated to allow for an adjustment of the surface friction velocity (u*) for low wind speed stable conditions based on the work of Qian and Venkatram. Previously, the model had a tendency to over-predict concentrations produced by near-ground sources in stable conditions..

Surface Roughness

Surface roughness length is the height above the ground at which the wind speed goes to zero. Surface roughness length is defined by the individual elements on the landscape such as trees and buildings. In order to determine surface roughness length, the USEPA recommends that a representative length be defined for each sector, based on geometric mean of the inverse distance area-weighted land use within the sector, by using the eight land use categories outlined by the USEPA. The area-weighted surface roughness length derived from the land use classification within a radius of 1km from Johnstown Castle is shown in Table 1.

Table 1. Surface Roughness based on an inverse distance area-weighted average of the land use within a 1km radius of Johnstown Castle

Sector	Inverse Distance Weighted Land Use Classification	Spring	Summer	Autumn	Winter[a]
0-360	100% Grassland	0.050	0.100	0.010	0.010

a. Winter defined as periods when surfaces covered permanently by snow whereas autumn is defined as periods when freezing conditions are common, deciduous trees are leafless and no snow is present (Iqbal (1983)). Thus for the current location autumn more accurately defines "winter" conditions at the proposed facility.

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Albedo

Noon-time Albedo is the fraction of the incoming solar radiation that is reflected from the ground when the sun is directly overhead. Albedo is used in calculating the hourly net heat balance at the surface for calculating hourly values of Monin-Obuklov length. The area-weighted arithmetic mean albedo derived from the land use classification over a 10km x 10km area centred on Johnstown Castle is shown in Table 2.

Table 2. Albedo based on an area-weighted arithmetic mean of the land use over a 10km x 10km area centred on Johnstown Castle

Simple Average Land Use Classification	Spring	Summer	Autumn	Winter [a]
10% Water	0.012	0.010	0.014	0.014
5% Urban	0.007	0.008	0.009	0.009
75% Grassland	0.135	0.135	0.150	0.150
10% Cultivated Land	0.014	0.020	0.018	0.018

a. For the current location autumn more accurately defines "winter" conditions at the proposed facility.

Bowen Ratio

The Bowen ratio is a measure of the amount of moisture at the surface of the earth. The presence of moisture affects the heat balance resulting from evaporative cooling which, in turn, affects the Monin-Obukhov length which is used in the formulation of the boundary layer. The area-weighted geometric mean Bowen ratio derived from the land use classification over a 10km x 10km area centered on Johnstown Castle is shown in Table 3.

Table 3. Bowen Ratio based on an area-weighted geometric mean of the land use over a 10km x 10km area centred on Johnstown Castle

Geometric Mean Land Use Classification	Spring	Summer	Autumn	Winter [a]
10% Water	0.1	0.1	0.1	0.1
5% Urban	1.0	2.0	2.0	2.0
75% Grassland	0.4	0.8	1.0	1.0
10% Cultivated Land	0.3	0.5	0.7	0.7

a. For the current location autumn more accurately defines "winter" conditions at the proposed facility.

References

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APPENDIX 10.1

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Glossary of Acoustic Terminology

AWN, 2025

ambient noise	The totally encompassing sound in a given situation at a given time, usually composed of sound from many sources, near and far.
background noise	The steady existing noise level present without contribution from any intermittent sources. The A-weighted sound pressure level of the residual noise at the assessment position that is exceeded for 90 per cent of a given time interval, T ($L_{AF90,T}$).
broadband	Sounds that contain energy distributed across a wide range of frequencies.
dB	Decibel - The scale in which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the RMS pressure of the sound field and the reference pressure of 20 micro-pascals (20 µPa).
dB L_{pA}	An 'A-weighted decibel' - a measure of the overall noise level of sound across the audible frequency range (20 Hz – 20 kHz) with A-frequency weighting (i.e. 'A'–weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
Hertz (Hz)	The unit of sound frequency in cycles per second.
impulsive noise	A noise that is of short duration (typically less than one second), the sound pressure level of which is significantly higher than the background.
$L_{Aeq,T}$	This is the equivalent continuous sound level. It is a type of average and is used to describe a fluctuating noise in terms of a single noise level over the sample period (T). The closer the L_{Aeq} value is to either the L_{AF10} or L_{AF90} value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources such as traffic on the background.
L_{AFN}	The A-weighted noise level exceeded for N% of the sampling interval. Measured using the "Fast" time weighting.
L_{AFmax}	is the instantaneous slow time weighted maximum sound level measured during the sample period (usually referred to in relation to construction noise levels).
$L_{Ar,T}$	The Rated Noise Level, equal to the L_{Aeq} during a specified time interval (T), plus specified adjustments for tonal character and impulsiveness of the sound.
L_{AF90}	Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval; it is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to estimate a background level. Measured using the "Fast" time weighting.
L_{AT}(DW)	equivalent continuous downwind sound pressure level.

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L_{fT}(DW) equivalent continuous downwind octave-band sound pressure level.

L_{day} L_{day} is the average noise level during the day-time period of 07:00hrs to 19:00hrs

L_{night} L_{night} is the average noise level during the night-time period of 23:00hrs to 07:00hrs.

low frequency noise LFN - noise which is dominated by frequency components towards the lower end of the frequency spectrum.

noise Any sound, that has the potential to cause disturbance, discomfort or psychological stress to a person exposed to it, or any sound that could cause actual physiological harm to a person exposed to it, or physical damage to any structure exposed to it, is known as noise.

noise sensitive location NSL – Any dwelling house, hotel or hostel, health building, educational establishment, place of worship or entertainment, or any other facility or other area of high amenity which for its proper enjoyment requires the absence of noise at nuisance levels.

octave band A frequency interval, the upper limit of which is twice that of the lower limit. For example, the 1,000Hz octave band contains acoustical energy between 707Hz and 1,414Hz. The centre frequencies used for the designation of octave bands are defined in ISO and ANSI standards.

rating level See $L_{Ar,T}$.

sound power level The logarithmic measure of sound power in comparison to a referenced sound intensity level of one picowatt (1pW) per m^2 where:

$$Lw = 10Log\frac{P}{P_0} \text{ dB}$$

Where: p is the rms value of sound power in pascals; and

P_0 is 1 pW.

sound pressure level The sound pressure level at a point is defined as:

$$Lp = 20Log\frac{P}{P_0} \text{ dB}$$

specific noise level A component of the ambient noise which can be specifically identified by acoustical means and may be associated with a specific source. In BS 4142, there is a more precise definition as follows: 'the equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source over a given reference time interval ($L_{Aeq, T}$)'.

tonal Sounds which cover a range of only a few Hz which contains a clearly audible tone i.e. distinguishable, discrete or continuous

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	noise (whine, hiss, screech, or hum etc.) are referred to as being 'tonal'.
$^1/_3$ octave analysis	Frequency analysis of sound such that the frequency spectrum is subdivided into bands of one–third of an octave each.

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Noise Model Parameters

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Prediction calculations for noise emissions have been conducted in accordance with *ISO 9613: Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation, 2024*. The following are the main aspects that have been considered in terms of the noise predictions presented in this instance.

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Directivity Factor: The directivity factor (D) allows for an adjustment to be made where the sound radiated in the direction of interest is higher than that for which the sound power level is specified. In this case the sound power level is measures in a down wind direction, corresponding to the worst case propagation conditions and needs no further adjustment.

Ground Effect: Ground effect is the result of sound reflected by the ground interfering with the sound propagating directly from source to receiver. The prediction of ground effects is inherently complex and depend on source height receiver height propagation height between the source and receiver and the ground conditions. The ground conditions are described according to a variable defined as G, which varies between 0.0 for hard ground (including paving, ice concrete) and 1.0 for soft ground (includes ground covered by grass trees or other vegetation) Our predictions have been carried out using various source height specific to each plant item, a receiver heights of 1.6m for single storey properties and 4m for double. An assumed ground factor of G = 0.5 has been applied off site. Noise contours presented in the assessment have been predicted to a height of 4m in all instances. For construction noise predictions have been made at a level of 1.6m as these activities will not occur at night.

Geometrical Divergence: This term relates to the spherical spreading in the free-field from a point sound source resulting in attenuation depending on distance according to the following equation:

$$A_{geo} = 20 \times \log(\text{distance from source in meters}) + 11$$

Atmospheric Absorption: Sound propagation through the atmosphere is attenuated by the conversion of the sound energy into heat. This attenuation is dependent on the temperature and relative humidity of the air through which the sound is travelling and is frequency dependent with increasing attenuation towards higher frequencies. In these predictions a temperature of 10^{o}C and a relative humidity of 70% have been used, which give relativity low levels of atmosphere attenuation and corresponding worst case noise predictions.

Table 1 Atmospheric Attenuation Assumed for Noise Calculations (dB per km)

Temp (°C)	% Humidity	Octave Band Centre Frequencies (Hz)							
		63	125	250	500	1k	2k	4k	8k
10	70	0.12	0.41	1.04	1.92	3.66	9.70	33.06	118.4

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Barrier Attenuation: The effect of any barrier between the noise source and the receiver position is that noise will be reduced according to the relative heights of the source, receiver and barrier and the frequency spectrum of the noise.

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Noise Model Details and Assumptions

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Noise Model

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A 3D computer-based prediction model has been prepared in order to quantify the noise level associated with the proposed building. This section discusses the methodology behind the noise modelling process.

DGMR iNoise

Proprietary noise calculation software has been used for the purposes of this modelling exercise. The selected software, DGMR iNoise 2024.1, calculates noise levels in accordance with *ISO 9613: Acoustics – Attenuation of sound during propagation outdoors, Part 2: General method of calculation, 2024*.

DGMR iNoise is a proprietary noise calculation package for computing noise levels in the vicinity of noise sources. iNoise calculates noise levels in different ways depending on the selected prediction standard. In general, however, the resultant noise level is calculated taking into account a range of factors affecting the propagation of sound, including:

- the magnitude of the noise source in terms of A weighted sound power levels (LWA);
- the distance between the source and receiver;
- the presence of obstacles such as screens or barriers in the propagation path;
- the presence of reflecting surfaces;
- the hardness of the ground between the source and receiver;
- Attenuation due to atmospheric absorption; and
- Meteorological effects such as wind gradient, temperature gradient and humidity (these have significant impact at distances greater than approximately 400m).

Brief Description of ISO9613-2: 2024

ISO9613-2:1996 calculates the noise level based on each of the factors discussed previously. However, the effect of meteorological conditions is significantly simplified by calculating the average downwind sound pressure level, $L_{AT}(DW)$, for the following conditions:

- wind direction at an angle of ±45° to the direction connecting the centre of the dominant sound source and the centre of the specified receiver region with the wind blowing from source to receiver, and;
- wind speed between approximately 1ms-1 and 5ms-1, measured at a height of 3m to 11m above the ground.

The equations and calculations also hold for average propagation under a well-developed moderate ground based temperature inversion, such as commonly occurs on clear calm nights.

The basic formula for calculating $L_{AT}(DW)$ from any point source at any receiver location is given by:

$$L_{fT}(DW) = LW + Dc - A \qquad \textbf{Eqn. A}$$

Where:

$L_{fT}(DW)$ is an octave band centre frequency component of $L_{AT}(DW)$ in dB relative to $2x10^{-5}$Pa;
L_W is the octave band sound power of the point source;
D_c is the directivity correction for the point source;
A is the octave band attenuation that occurs during propagation, namely attenuation due to geometric divergence, atmospheric absorption, ground effect, barriers and miscellaneous other effects.

The estimated accuracy associated with this methodology is shown in Table 1 below:

Table 1 Estimated Accuracy for Broadband Noise of LAT(DW)

Height, h*	Distance, d†	
	0 < d < 100m	100m < d < 1,000m
0<h<5m	±3dB	±3dB
5m<h<30m	±1dB	±3dB

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* h is the mean height of the source and receiver. † d is the mean distance between the source and receiver.
N.B. These estimates have been made from situations where there are no effects due to reflections or attenuation due to screening.

Input Data and Assumptions

The noise model has been constructed using data from various source as follows:

Site Layout The general site layout has been obtained from the drawings forwarded by the project architects.

Local Area The location of noise sensitive locations has been obtained from a combination of site drawings provided by the project architects and others obtained from Ordinance Survey Ireland (OSI).

Heights The heights of buildings on site have been obtained from site drawings forwarded by Hyphen Architects. Off-site buildings have been assumed to be 4m high.

Contours Site ground contours/heights have been obtained from site drawings forwarded by Hyphen Architects where available.

The final critical aspect of the noise model development is the inclusion of the various plant noise sources. Details are presented in the following section.

Source Sound Power Data

The noise modelling competed indicates the following limits in relation to various items of plant associated with the overall site development. Plant items will be selected in order to achieve the stated noise levels and or appropriate attenuation will be incorporated into the design of the plant/building in order that the plant noise emission levels are achieved on site (including any system regenerated noise).

Energy Centre – Open Cycle Gas Turbine Building

Table 2 Open Cycle Gas Turbine Building Dimensions

Façade Element	Length (m)	Height (m)	Area (m^2)
Wall A	120	13.5	1620
Wall B	30	13.5	405
Wall C	120	13.5	1620
Wall D	30	13.5	405
Roof	120	30.0	3600

Table 3 Sound Power Emissions from the Building Elements

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Source	L_w - Octave Band Centre Frequency									dB (A)
	31	63	125	250	500	1k	2k	4k	8k	
Wall A	103	100	92	78	71	69	64	65	61	80
Wall B	102	89	88	73	71	69	64	65	61	76
Wall C	108	94	94	78	77	75	70	71	67	82
Wall D	102	89	88	73	71	69	64	65	61	76
Roof	108	94	94	78	77	75	70	71	67	82

Energy Centre – Other Plants

Table 4 Sound power emissions from other plants in the Energy Centre

Source	L_w - Octave Band Centre Frequency									dB (A)
	31	63	125	250	500	1k	2k	4k	8k	
GT Oil Cooler Outlet	98	94	87	74	67	65	60	61	57	75
GT Ventilation Air Outlet	101	97	90	75	68	66	61	62	58	77
OCGT Exhaust Stack	91	90	88	82	75	72	71	69	62	80
OCGT Stack Body	96	92	90	83	73	70	62	60	53	79
Transformer Walls	59	56	56	53	51	53	50	50	51	61
Transformer Open Sides	63	60	60	62	60	62	59	59	60	67
Diesel Generator (Emergency)	114	112	105	94	84	80	75	76	72	93

Data Centre Plants

Table 5 Sound power emissions from other plants in the Energy Centre

Source	L_w - Octave Band Centre Frequency									dB (A)
	31	63	125	250	500	1k	2k	4k	8k	
Chillers (Daikin EWFHH12TZXSD2)	--	96	93	93	93	92	83	77	70	95
Emergency Generator (K175-K175M)	102	114	109	105	97	91	88	86	87	101

The chillers are assumed to be fitted with acoustic enclosure with the following performance:

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Table 6 Chiller acoustic enclosure performance

Enclosure Model	Insertion Loss dB – Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
AA303SXENH (uprated performance)	5	9	16	24	26	22	18	14

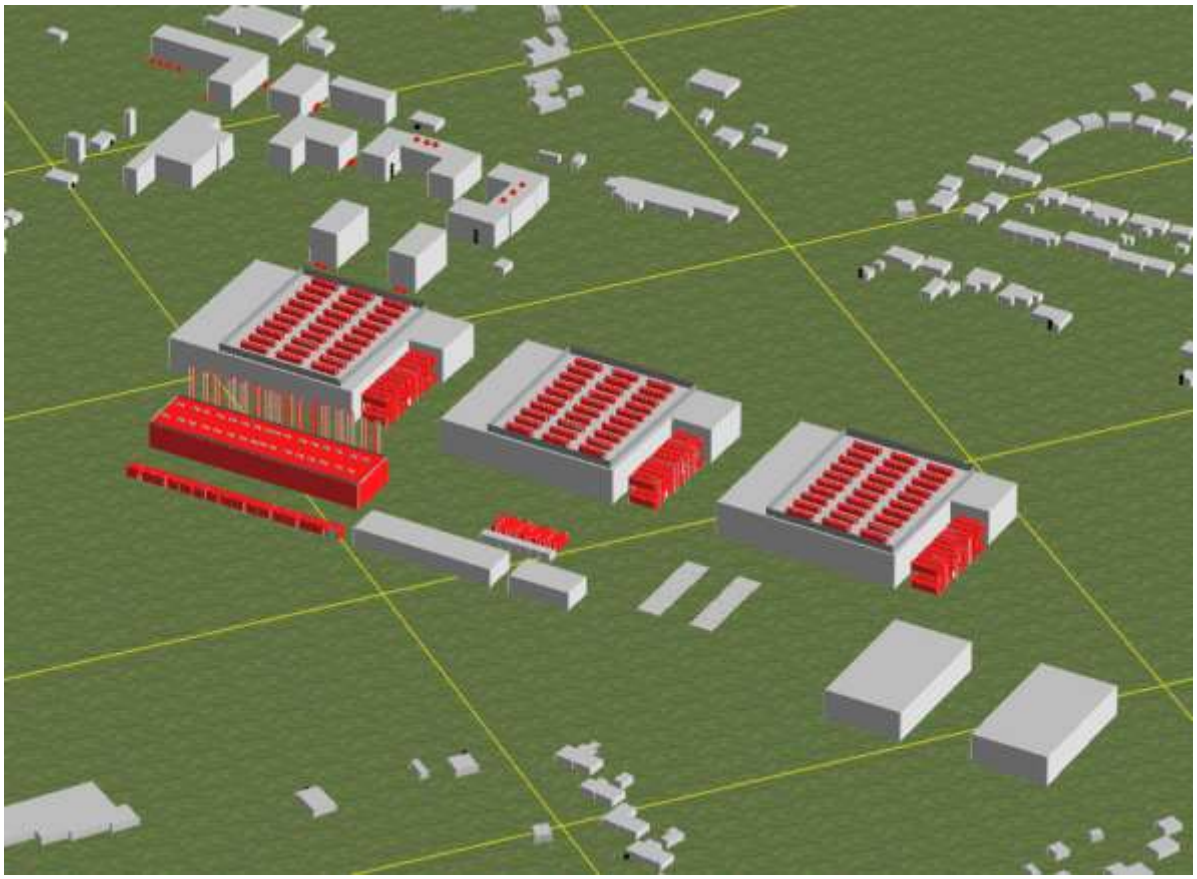
Village Centre Plants

Heat pumps are proposed for the Village Centre located at various locations. Heat pumps being considered for noise modelling is Palladium 4P ultra-low noise air-to-water heat pumps with scroll compressors. Since only overall sound power levels are available from manufacturer, noise spectrums are estimated with reference similar equipment where noise spectrums are available.

Table 7 Sound power emissions from heat pumps at Village Centre

Heat Pump Model	L_w - Octave Band Centre Frequency								dB (A)
	63	125	250	500	1k	2k	4k	8k	
50.2	71	67.8	67.8	67.8	66.9	57.8	51.6	44.3	70
75.2, 85.2, 100.4, 120.4	74	70.8	70.8	70.8	69.9	60.8	54.6	47.3	73

Figure 2 Image of developed model



APPENDIX 11.1

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Kilmeaden Masterplan Verified Photomontages

Digital Dimensions, 2025

(High resolution version available under separate planning upload)

digital dimensions
architectural visualisation
RECEIVED: 08/09/2025

Kilmeaden Masterplan

Verified Photomontages



NOTES AND METHODOLOGY

Kilmeaden Masterplan

Prepared by Digital Dimensions

Issue Date	10/04/25	22/04/25	25/04/25	02/05/25	06/05/25	
Revision	-	A	B	C	D	

PROFILE

Digital Dimensions are specialists in computer generated visualisations for all forms of planning applications. The company was established in 2000 by John Healy and Jim Manning in Dublin, Ireland. Digital Dimensions is one of Ireland's leading architectural visualisation companies with 20+ years of experience covering a wide range of solutions in the areas of architectural visualisation, environmental design and digital media.

RECEIVED: 08/09/2025

Method Statement - Photomontage production using guidance in
The Landscape Institute TGN-06-19 Visual Representation of Development Proposals.

1. Photographs are taken from locations as advised by the planning consultant with a full frame SLR digital camera and prime lens. Photographs are taken using the most appropriate combination of lens focal lengths to ensure that the field of view covers the proposed scheme environment or landscape context. The photographs are taken horizontally with a survey level attached to the camera. The photographic positions are marked (for later surveying), the height of the camera and the focal length of the image recorded.

2. In each photograph, a minimum of 3no. visible fixed points are marked for surveying. These are control points for model alignment within the photograph. All surveying is carried out by a qualified topographical surveyor using Total Station / GPS devices.

3. The photographic positions and the control points are geographically surveyed and this survey is tied in to the site topographical survey supplied by the Architect / client.

4. The buildings are accurately modelled in 3D cad software from cad drawings or BIM model supplied by the Architect. Material finishes are applied to the 3D model and scene element are place like trees and planting to represent the proposed landscaping.

5. Virtual 3D cameras are positioned according to the survey co-ordinates and the focal length is set to match the photograph. Pitch and rotation are adjusted using the survey control points to align the virtual camera to the photograph. Lighting is set to match the time of day the photograph is taken.

6. The proposed development is output from the 3D software using this camera and the image is then blended with the original photograph to give an accurate image of what the proposed development will look like in its proposed setting.

7. In the event of the permitted development not being visible, the massing of the proposed will be outlined in red. Where there are other developments in the proximity of the proposed development with permission and the cumulative effect needs to be considered, then an additional view will be included with the massing of the adjacent permitted developments shown. Where the adjacent developments are within the field of view but not visible, they will be outlined with a different colour and a legend provided with a reference for each development..

8. The document contains:

a. Site location map with view locations plotted.
b. Photomontage sheets with existing or proposed conditions.
c. Reference information including field of view/focal length, range to site / development, date of photograph.
d. The existing view with the date the photograph was taken.
e. The proposed photomontage (or scheme outline as appropriate)

digital dimensions
architectural visualisation

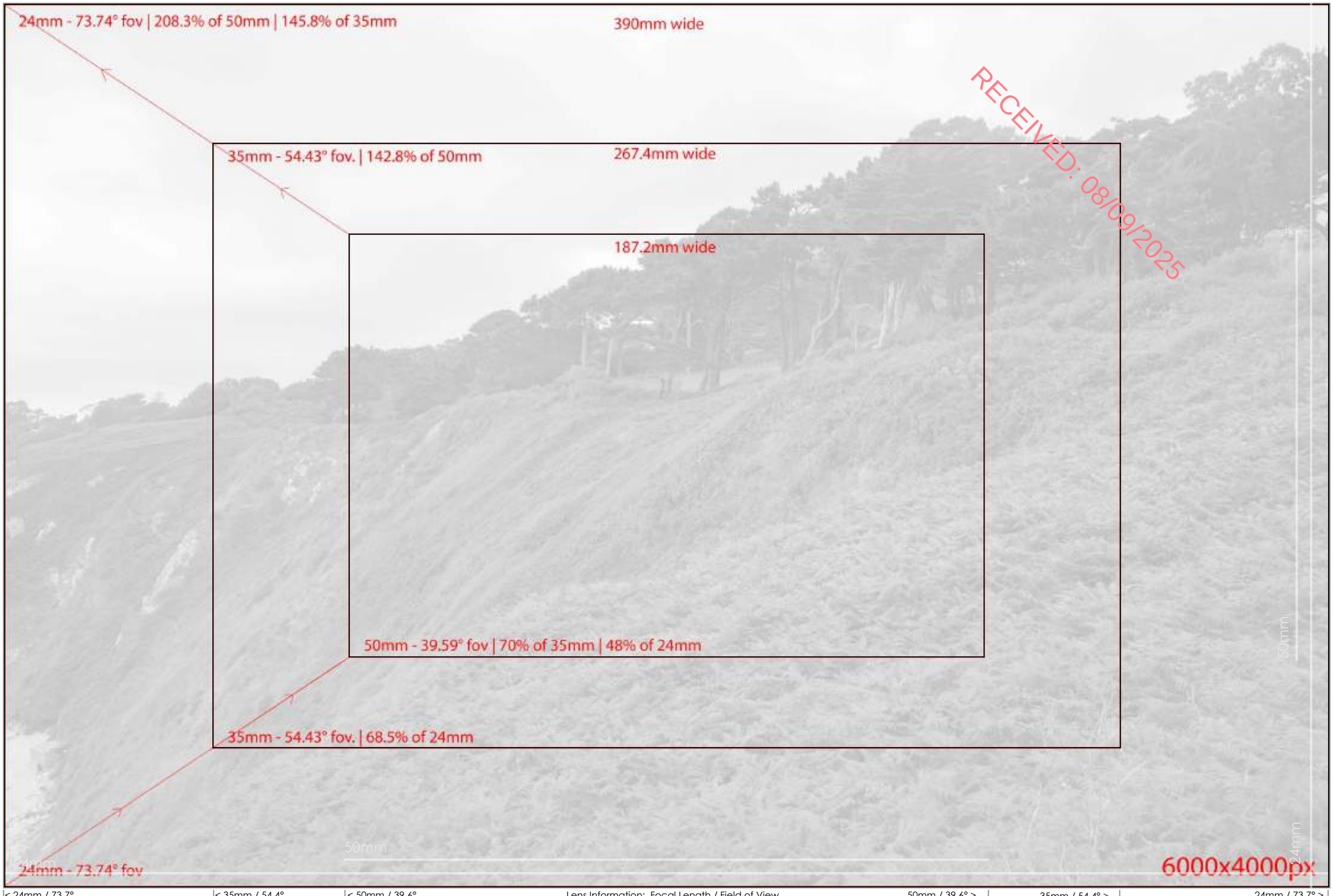


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View Location Map

This map is for view location purposes only. Please refer to Architects drawings for site layout and redline boundary.

digital dimensions
architectural visualisation



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< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location	Description	Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
						Canon EOS 5DS	

digital dimensions
architectural visualisation

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< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 1 Existing		15/01/25	73.7°	24mm	648m	Canon EOS 5DS	0869

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 1 Proposed		15/01/25	73.7°	24mm	648m	Canon EOS 5DS	0869

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 2 Existing		15/01/25	73.7°	24mm	232m	Canon EOS 5DS	0879

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



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Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 2 Proposed		15/01/25	73.7°	24mm	232m	Canon EOS 5DS	0879

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 3 Existing		15/01/25	73.7°	24mm	240m	Canon EOS 5DS	0885

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 3 Proposed		15/01/25	73.7°	24mm	240m	Canon EOS 5DS	0885

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 4 Existing		15/01/25	73.7°	24mm	65.8m	Canon EOS 5DS	0899

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



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Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 4 Proposed		15/01/25	73.7°	24mm	65.8m	Canon EOS 5DS	0899

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025

< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 5 Existing		15/01/25	73.7°	24mm	53m	Canon EOS 5DS	0910

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025

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Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 5 Proposed		15/01/25	73.7°	24mm	53m	Canon EOS 5DS	0910

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025

< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 6 Existing		15/01/25	73.7°	24mm	12.6m	Canon EOS 5DS	0936

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



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Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 6 Proposed		15/01/25	73.7°	24mm	12.6m	Canon EOS 5DS	0936

digital dimensions
architectural visualisation



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 7 Existing		15/01/25	73.7°	24mm	61.3m	Canon EOS 5DS	0942

digital dimensions
architectural visualisation



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 7 Proposed		15/01/25	73.7°	24mm	61.3m	Canon EOS 5DS	0942

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025

< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 8 Existing		15/01/25	73.7°	24mm	17.5m	Canon EOS 5DS	0959

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 8 Proposed		15/01/25	73.7°	24mm	17.5m	Canon EOS 5DS	0959

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025

< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 9 Existing		01/02/25	73.7°	24mm	18.6m	Canon EOS 5DS	1848

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025

< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 9 Proposed		01/02/25	73.7°	24mm	18.6m	Canon EOS 5DS	1848

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 10 Existing		15/01/25	73.7°	24mm	77m	Canon EOS 5DS	0986

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 10 Proposed		15/01/25	73.7°	24mm	77m	Canon EOS 5DS	0986

digital dimensions
architectural visualisation


RECEIVED: 08/09/2025

< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 11 Existing		15/01/25	73.7°	24mm	165m	Canon EOS 5DS	1008

digital dimensions
architectural visualisation


RECEIVED: 08/09/2025

< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 11 Proposed		15/01/25	73.7°	24mm	165m	Canon EOS 5DS	1008

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 12 Existing		15/01/25	73.7°	24mm	83m	Canon EOS 5DS	0993

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 12 Proposed		15/01/25	73.7°	24mm	83m	Canon EOS 5DS	0993

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 13 Existing		15/01/25	73.7°	24mm	1081.7m	Canon EOS 5DS	1025

digital dimensions
architectural visualisation

RECEIVED: 08/09/2025



< 24mm / 73.7° | < 35mm / 54.4° | < 50mm / 39.6° | Lens Information: Focal Length / Field of View | 50mm / 39.6° > | 35mm / 54.4° > | 24mm / 73.7° >

Location		Photography Date	Field of view	35mm equivalent	Distance to site boundary	Camera model	Reference
View 13 Proposed		15/01/25	73.7°	24mm	1081.7m	Canon EOS 5DS	1025

digital dimensions
architectural visualisation

APPENDIX 12.1

RECEIVED: 08/09/2025

Recorded Archaeological Monuments

CRDS, 2025

Recorded Archaeological Monuments located within c. 500m of the proposed development route are listed below (source Record of Monuments and Places, https://archaeology.ie; https://heritagemaps.ie)

RECEIVED: 08/09/2025

SMR No	**WA016-011----**
County	WATERFORD
Townland	KNOCKANAGH (Middlethird By., Kilmeadan Par.),ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM	E. 652265m, N. 609664m
Class	Designed landscape - tree-ring
Description	Marked as a subcircular wooded enclosure (dims. c. 60m N-S; c. 50m E-W) on the 1840 ed. of the OS 6-inch map, the perimeter of which formed the townland boundary with Adamstown S-NW. It is marked as a larger subrectangular wood (dims. c. 200m NE-SW; c. 60m NW-SE) on the 1926 ed. It is situated towards the top of a NW-facing slope and consists of a mature deciduous wood. Archaeological testing (03E0412) failed to produce any evidence of an antiquity. (Clarke 2006)
Compiled by	Michael Moore
Date of revision	20th December, 2010.

SMR No	**WA016-033----**
County	WATERFORD
Townland	BLACKKNOCK
ITM	E. 651414m, N. 608543m
Class	Ringfort - unclassified
Description	Marked as a circular embanked enclosure (ext. diam. c. 40m) on the 1840 ed. of the OS 6-inch map. Situated in pasture at the crest of a N-facing slope, it is not visible at ground level, but traces of an enclosure are visible on aerial photographs (ASIAP (383) 31-36) taken in 2003. The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Compiled by	Michael Moore.
Date of revision	20th December, 2010.

SMR No	**WA016-034----**
County	WATERFORD
Townland	BLACKKNOCK
ITM	E. 651556m, N. 608585m
Class	Ringfort - unclassified
Description	Marked as a circular embanked enclosure (ext. diam. c. 40m) on the 1840 ed. of the OS 6-inch map. Situated in pasture on an E-facing slope, it is not visible at ground level in pasture. The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision	23 December 2008

SMR No	**WA016-035----**
County	WATERFORD
Townland	ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM	E. 652101m, N. 608744m
Class	Ritual site - holy well

Description Situated towards the bottom of a W-facing slope. This is a holy well which traditionally had a cure for headaches. A carved stone was incorporated into its surrounding stonework (Power 1952, 388), but it can no longer be found. The well is not visible at ground level. Church (WA016-037----) is c. 270m to the ENE.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision 23 December 2008

RECEIVED: 09/09/2025

SMR No **WA016-036----**
County WATERFORD
Townland ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM E. 652261m, N. 608660m
Class Castle - unclassified
Description Situated towards the bottom of a W-facing, grass-covered slope. A thatched stone house is recorded on the terrier of the Down Survey map of Kilmeaden parish (1655-6) at Adamstown, and the land at Adamstown was owned by Maurice Power in 1640 (Simington 1942, 138). This field was known as the 'castle field' in the 19th century according to J. O'Donovan (O'Flanagan 1929, 25), but there is no visible evidence of a castle at ground level.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Compiled by Michael Moore
Date of revision 7th June, 2011.

SMR No **WA016-037----**
County WATERFORD
Townland ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM E. 652361m, N. 608652m
Class Church
Description Marked only on the 1926 ed. of the OS 6-inch map and recorded by Power (1907, 388) as the site of an early church. Situated in pasture on a W-facing slope, it is not visible at ground level. The site of St Martin's Well (WA016-035----) is c. 270m to the WNW.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision 23 December 2008

SMR No **WA016-038----**
County WATERFORD
Townland POWERSKNOCK
ITM E. 652146m, N. 608449m
Class Standing stone
Description Situated towards the bottom of a slope at the S end of a small S-N valley. This is an upright stone with a rectangular cross-section (dims. 1.6m x 0.4m; H 2.1m) and a crest sloping down to the W. The stone is oriented ENE-WSW.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Compiled by Michael Moore.
Date of revision 20th December 2010.

RECEIVED: 09/09/2025

SMR No **WA016-039----**
County WATERFORD
Townland POWERSKNOCK
ITM E. 652215m, N. 608053m
Class Ringfort - rath
Description Marked as a circular embanked enclosure (ext. diam. c. 50m) on the 1840 ed. of the OS 6-inch map and as a semicircular bank (C c. 45m) E-W on the 1926 ed. Situated towards the top of the NW-facing slope of a hill. The bank is incorporated into a field bank E-W (int. dim. 36m E-W) with a slight, grass-covered scarp defining the perimeter W-N (int. dim. 29m N-S).
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Compiled by Michael Moore.
Date of revision 29th July, 2010.

SMR No **WA016-040----**
County WATERFORD
Townland POWERSKNOCK
ITM E. 652424m, N. 607916m
Class Ringfort - unclassified
Description Marked as a small circular embanked enclosure (ext. diam. c. 30-35m) on the 1840 ed. of the OS 6-inch map. Situated in pasture at the crest of an E-facing slope, it is not visible at ground level.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Compiled by Michael Moore.
Date of revision 20th August 2009

SMR No **WA016-041----**
County WATERFORD
Townland RAHEENS
ITM E. 651817m, N. 607553m
Class Enclosure
Description Marked as a small circular embanked enclosure (ext. diam. c. 35m) on the 1840 ed. of the OS 6-inch map, and situated on an E-facing slope. The outline of a grass-covered enclosure can be traced as a curve in a field fence N-SE (C c. 22m) and a slight scarp S-N (dim. 21m E-W).
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Compiled by Michael Moore.
Date of revision 29th July, 2010.

SMR No **WA016-075----**
County WATERFORD
Townland BLACKKNOCK
ITM E. 651287m, N. 608537m
Class Redundant record
Description Situated on the W side of Blacknock Hill. A piece of rock outcrop has a number of lines of solution holes running over its surface. These are thought to represent the hoof-

prints of a Cow and Calf and this name is applied to the rock, but the holes are natural. (Power, 1907, 168-9)
Compiled by Michael Moore.
Date of revision 21st December 2010.

RECEIVED: 08/09/2025

SMR No **WA016-108----**
County WATERFORD
Townland POWERSKNOCK
ITM E. 651907m, N. 608010m
Class Burnt mound
Description Situated at the bottom of a narrow S-N valley with the S-N stream immediately to the W. An area of burnt and broken stone is visible in the section of a drain (L 5.4m; T 0.5m) with a stone-filled pit (L 1.5m; T 0.4m) beneath it.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Compiled by Michael Moore.
Date of revision 21st December 2010.

SMR No **WA016-109----**
County WATERFORD
Townland CARRICKADUSTARA
ITM E. 651578m, N. 607761m
Class Souterrain
Description Situated on the crest of an E-facing slope. There are local reports of the discovery of an underground passage c. 1945.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision 23 December 2008

SMR No **WA016-110----**
County WATERFORD
Townland LOUGHDEHEEN
ITM E. 652030m, N. 607656m
Class Burnt mound
Description Situated on the flat bottom of a S-N valley with the S-N stream immediately to the W. An area of burnt and broken stones (L 9m) is visible during land reclamation. It is also visible in the section of a stream at a depth of 0.4- 0.9m.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision 22nd December 2008

SMR No **WA016-111----**
County WATERFORD
Townland LOUGHDEHEEN
ITM E. 652037m, N. 607533m
Class Burnt mound
Description Situated in a broad river basin with the S-N stream curving around it to the W. An area of burnt and broken stone (dims. 14m x 10.5m) is visible during land reclamation.

The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.

Date of revision 22nd December 2008

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SMR No **WA016-112----**
County WATERFORD
Townland RAHEENS
ITM E. 651205m, N. 607185m
Class Standing stone
Description Situated towards the top of an E-facing slope at the head of a small NW-SE valley. A local stone with a rectangular cross-section and a pointed top (dims. 0.35m x 0.3m; H 2.4m) is oriented NNW-SSE. Standing stone (WA016-113----) is c. 100m to the S.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision 22nd December 2010.

SMR No **WA016-113----**
County WATERFORD
Townland RAHEENS
ITM E. 651196m, N. 607085m
Class Standing stone
Description Situated towards the top of an E-facing slope at the head of a small NW-SE valley. A local stone with a rectangular cross-section (dims. 1m x 0.45-0.6m; present H 1.2m) is oriented N-S. The top has broken off and now lies beside the stone. If complete the total height would be 2.45m. Standing stone (WA016-112----) is c. 100m to the N.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision 22nd December 2010.

SMR No **WA016-114----**
County WATERFORD
Townland RAHEENS
ITM E. 651600m, N. 607333m
Class Souterrain
Description Situated at the crest of the E and S-facing slope of a shelf overlooking a S-N valley. According to local information an underground chamber was discovered and subsequently closed without investigation c. 1984. It is described as a circular stone chamber with a passage leading E and then S from it.
The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision 22nd December 2010.

SMR No **WA016-122----**
County WATERFORD
Townland ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM E. 652308m, N. 608738m
Class Boundary stone

Description	Located at the N side of the NW-SE road known as the Sweep, on a W-facing slope. A shale stone (dims. 1.2m x 0.8m x 0.5m) which is not earthfast is lying in a slight hollow. The folk history is now forgotten. The above description is derived from the published 'Archaeological Inventory of County Waterford' (Dublin: Stationery Office, 1999). In certain instances the entries have been revised and updated in the light of recent research.
Date of revision	23 December 2008

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SMR No	**WA016-126----**
County	WATERFORD
Townland	BALLYDUFF EAST
ITM	E. 651690m, N. 610143m
Class	Excavation - miscellaneous
Description	Located on the S-facing slope of a hillock. Archaeological testing (03E0304) as part of the N25 Waterford city by-pass at a site known as Newtown 1 revealed two small pits and a hearth (Russell 2006).
Compiled by	Michael Moore.
Date of upload	23rd December, 2010.

SMR No	**WA016-130001-**
County	WATERFORD
Townland	BALLYDUFF EAST
ITM	E. 651404m, N. 610014m
Class	Fulacht fia
Description	Situated in a low-lying landscape. Archaeological excavation (04E0225) on a site known as Ballyduff East 43 as part of the N25 Waterford bypass produced a large kidney-shaped burnt mound spread (dims. c. 30m N-S; c. 15m E-W) which was truncated by drains yet contained six troughs. Three troughs were circular (diam. 1.7-1.8m; D 0.5m: diam. 0.85m; D 0.6: 1.3m; D 0.3m), one was oval (dims. 1.47m x 1.24m; D 0.43m), and two were rectangular (dims. 1m x 0.8m; D 0.25m: 2m x 1m; D 0.6m). None of these troughs were lined, and there were a number of pits associated with this early stage. A later useage of the site resulted in a large rectangular trough (dims. 1.6m x 1.43m; D 0.5m), which also was unlined. Fulacht fia (WA017-130002-) is c. 10m to the S. (Hegarty et al. 2011)
Compiled by	Michael Moore.
Date of upload	23rd December, 2010.

SMR No	**WA016-130002-**
County	WATERFORD
Townland	BALLYDUFF EAST
ITM	E. 651399m, N. 609999m
Class	Fulacht fia
Description	Situated in a low-lying landscape. Archaeological excavation (04E0225) as part of the N25 Waterford bypass produced a burnt mound spread (diam. 9m; T 0.2m) which covered an oval trough (dims. 1.85m x 1.3m; D 0.5m) filled with burnt muond material. Fulacht fia (WA017-130001-) is c. 10m to the N. (Hegarty et al. 2011)
Compiled by	Michael Moore.
Date of upload	23rd December, 2010.

SMR No	**WA017-123001-**
County	WATERFORD
Townland	ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM	E. 652861m, N. 609503m

Class	Hut site
Description	Situated towards the top of a S-facing slope. First identified in archaeological testing (02E0275) in advance of the N25 Waterford City by-pass (Russell (2006f), and fully excavated ((03E1217) as structures 1 and 3, which are part of Adamstown 3 (Russell 2006g). This is a complex but confined area (diam. c. 10m) with numerous post-holes, segments of a slot trench S-W (C c. 4m) and two hearths representing two huts at this location. It may have had a porch entrance at SE. One post-hole was packed with a fragment of a saddle-quern, and the fill of another post-hole produced a C14 date of cal BC 1700-1430 (Russell 2003). Hut-site (WA017-123002-) is c. 5m to the NE and hut-site (WA017-123003-) is c. 12m to the NW. (Russell and Ginn 2009a, 8-12; 2011b)
References	Russell, I. (2006f) Site 3, Adamstown/Knockanagh. Testing. in I. Bennett (Ed.) Excavations 2003: summary accounts of excavations in Ireland, 489-90, No. 1851. Wordwell. Bray. Russell, I. (2006g) Site 3, Adamstown. Prehistoric houses. in I. Bennett (Ed.) Excavations 2003: summary accounts of excavations in Ireland, 491, No. 1854. Wordwell. Bray. Russell, I. and Ginn (2009a) N25 Waterford By-pass. Contract 1. Final report on the archaeological excavation of Adamstown 3. Unpublished report. DOEHG. Archaeological Consultancy Services. Russell, I. and V. Ginn (2011b) Adamstonwn 3, Co. Waterford. in J. Eogan and E. Shee-Twohig (2011) Cois tSiúire – nine thousand years of human activity in the lower Suir valley. Archaeological excavations on the N25 Waterford city bypass, vol. 1, 30-7. NRA road scheme: Monograph 8, Dublin
Compiled by	Michael Moore
Date of upload	13 May 2011

SMR No	**WA017-123002-**
County	WATERFORD
Townland	ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM	E. 652873m, N. 609508m
Class	Hut site
Description	Situated towards the top of a S-facing slope. First identified in archaeological testing (02E0275) in advance of the N25 Waterford City by-pass (Russell (2006f), and fully excavated ((03E1217) as structure 2, which is part of Adamstown 3 (Russell 2006g). This is a circular area (diam. c. 8m) defined by a slot trench which produced a C14 date of cal BC 1490-1310, and at least six internal post-holes. The entrance (Wth c. 1m) defined by a total of four post-holes is at SE, but there was no hearth. Hut-site (WA017-123001-) is c. 5m to the SW and hut-site (WA017-123003-) is c. 12m to the NW. (Russell and Ginn 2009a, 12-4 2011b)
References	Russell, I. (2006f) Site 3, Adamstown/Knockanagh. Testing. in I. Bennett (Ed.) Excavations 2003: summary accounts of excavations in Ireland, 489-90, No. 1851. Wordwell. Bray. Russell, I. (2006g) Site 3, Adamstown. Prehistoric houses. in I. Bennett (Ed.) Excavations 2003: summary accounts of excavations in Ireland, 491, No. 1854. Wordwell. Bray. Russell, I. and Ginn (2009a) N25 Waterford By-pass. Contract 1. Final report on the archaeological excavation of Adamstown 3. Unpublished report. DOEHG. Archaeological Consultancy Services. Russell, I. and V. Ginn (2011b) Adamstonwn 3, Co. Waterford. in J. Eogan and E. Shee-Twohig (2011) Cois tSiúire – nine thousand years of human activity in the lower Suir valley. Archaeological excavations on the N25 Waterford city bypass, vol. 1, 30-7. NRA road scheme: Monograph 8, Dublin

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Compiled by	Michael Moore
Date of upload	13 May 2011

SMR No	**WA017-123003-**
County	WATERFORD
Townland	ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM	E. 652854m, N. 609521m
Class	Hut site
Description	Situated towards the top of a S-facing slope. First identified in archaeological testing (02E0275) in advance of the N25 Waterford City by-pass (Russell (2006f), and fully excavated ((03E1217) as structure 4, which is part of Adamstown 3 (Russell 2006g). This is a concentrated area (dims. c. 8m x c. 6m) of post-holes and pits with a hearth but no form can be discerned. The fill of a pit produced a C14 date of cal BC 1410-1000. Hut-sites (WA017-123001-) and (WA017-123002-) are c. 12m to the SE. (Russell and Ginn 2009a, 14-20; 2011b)
References	Russell, I. (2006f) Site 3, Adamstown/Knockanagh. Testing. in I. Bennett (Ed.) Excavations 2003: summary accounts of excavations in Ireland, 489-90, No. 1851. Wordwell. Bray. Russell, I. (2006g) Site 3, Adamstown. Prehistoric houses. in I. Bennett (Ed.) Excavations 2003: summary accounts of excavations in Ireland, 491, No. 1854. Wordwell. Bray. Russell, I. and Ginn (2009a) N25 Waterford By-pass. Contract 1. Final report on the archaeological excavation of Adamstown 3. Unpublished report. DEHLG. Archaeological Consultancy Services. Russell, I. and V. Ginn (2011b) Adamstonwn 3, Co. Waterford. in J. Eogan and E. Shee-Twohig (2011) Cois tSiúire – nine thousand years of human activity in the lower Suir valley. Archaeological excavations on the N25 Waterford city bypass, vol. 1, 30-7. NRA road scheme: Monograph 8, Dublin
Compiled by	Michael Moore
Date of upload	13 May 2011

SMR No	**WA017-123008-**
County	WATERFORD
Townland	ADAMSTOWN (Middlethird By., Kilmeadan Par.)
ITM	E. 652779m, N. 609406m
Class	Excavation - miscellaneous
Description	Situated towards the top of a SE-facing slope. First identified in archaeological monitoring (03E1064) of the re-alignment of a gas-pipeline (Dempsey 2006) and later fully excavated (03E1325) as Adamstown 4 (Russell 2006j). A pit (dims. 1.5m x 1m; D 0.12) was lined with fire-redenned stones, from which a stone anvil or hammer-stone was recovered. A C14 date of cal. 1380-920 was obtained from this fill. A smaller pit (dims. 0.7m a 0.65m; D 0.5m) and a cluster of stakeholes is nearby. (Russell and Ginn 2009b, 8-9; 2011e)
References	Dempsey, J. (2006) Adamstown and Ballyduff East. Pits, kilns and furrows. in I. Bennett (Ed.) Excavations 2003: summary accounts of excavations in Ireland, 492, No. 1853. Wordwell. Bray. Russell, I. (2006j) Adamstown 4. Pits. in I. Bennett (Ed.) Excavations 2003: summary accounts of excavations in Ireland, 492, No. 1856. Wordwell. Bray. Russell, I. and Ginn (2009b) N25 Waterford By-pass. Contract 1. Final report on the archaeological excavation of Adamstown 1. Unpublished report. DOHLG. Archaeological Consultancy Services. Russell, I. and V. Ginn (2011e) Adamstown 4, Co. Waterford. in J. Eogan and E. Shee-Twohig (2011) Cois tSiúire – nine thousand years of human activity in the lower Suir

valley. Archaeological excavations on the N25 Waterford city bypass, vol. 2, 9-10. NRA road scheme: Monograph 8, Dublin

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Date of upload 13 May 2011

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APPENDIX 12.2

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Excavations

CRDS, 2025

The excavation bulletin website (https://excavations.ie; https://heritagemaps.ie) was consulted to identify previous excavations that have been carried out within the study area. This database contains summary accounts of excavations carried out in Ireland from 1970 to 2024.

RECEIVED: 08/09/2025

Excavation No.:	**2002:1797**
County:	Waterford
Site Name:	KNOCKANAGH (N25 Waterford Bypass, Contract 1, Site 3)
SMR No.:	N/A
Licence No.:	02E0275
Author:	Deirdre Murphy, ACS Ltd., Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth
Site type:	Excavation - miscellaneous
Period/Dating:	Undetermined
ITM:	E 652195m, N 609812m
Lat, Long.:	52.237569, -7.235795
Description:	Site 3 was identified following the environmental impact statement as an area of high archaeological potential after an examination of the topographical nature of the scheme. The area was in the townland of Knockanagh, on a prominent ridge of high ground, and extended from Chainage 2400 to 3500 along the proposed road corridor. A licence was issued to carry out an assessment of the site. However, access was denied, and the site remains unassessed. A geophysical survey was permitted, and this was conducted over the entire site. It identified a potential circular enclosure/barrow, a rectangular enclosure and evidence of former field boundaries. These features should be assessed by excavation to define their full extents and to establish their function, date and significance.

Excavation No.:	**2003:1854**
County:	Waterford
Site Name:	ADAMSTOWN 3
SMR No.:	N/A
Licence No.:	03E1217
Author:	Ian Russell, Archaeological Consultancy Services Ltd., Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth and John Purcell 17 Balmoral Terrace, Dillon's Cross, Cork
Site type:	House - prehistoric
Period/Dating:	Prehistoric (12700 BC-AD 400)
ITM:	E 652901m, N 609496m
Lat, Long.:	52.234663, -7.225511
Description:	The remains of a large oval/circular house were exposed at this site during testing. The house was constructed from a number of post-holes with associated pits and hearths. The excavation revealed the presence of at least four structures. The first was circular or oval in shape and was constructed from a large number of post-holes and stake-holes, with two internal hearths. The entrance was exposed to the south-east and appeared to have had a porch-like structure around it. A broken saddle quern was recovered from within one of the post-holes, with a second broken piece recovered from the topsoil nearby. A third house was provisionally identified below, or pre-dating, this structure. It appeared to have been constructed from a curved or circular slot-trench, which was partially exposed to the north-west, and had been cut by a number of the later post-holes and linear features. A number of body sherds of coarse pottery have been recovered.

The second house was exposed nearby, to the east. It was also oval/circular in shape and measured c. 8m in diameter. It has been constructed from a number of stake-holes within a slot-trench and contained a number of internal post-holes and divisions.

The fourth house was exposed to the north-west of House 1. It was constructed from a number of post- and stake-holes and contained a hearth and a large pit filled with charcoal and burnt-bone fragments. It is likely that the houses date to the Late Neolithic-Bronze Age period.

A number of linear features, pre-dating the houses, have also been exposed. They are roughly parallel to each other, are north-west/south-east in orientation and are c. 4.5m apart. It is possible that they may represent prehistoric field systems or traces of agricultural activity. In addition, a number of pits and small features have been exposed to the north-west, north, south and east of the house sites and these represent outlying domestic or industrial activity.

Excavation of this site has been completed and no further work is proposed.

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Excavation No.:	**2003:1899**
County:	Waterford
Site Name:	KNOCKANAGH (1)
SMR No.:	N/A
Licence No.:	03E0412
Author:	Linda Clarke, Archaeological Consultancy Services Ltd., Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth
Site type:	No archaeology found
Period/Dating:	N/A
ITM:	E 652239m, N 609650m
Lat, Long.:	52.236110, -7.235176
Description:	An assessment was carried out between 27 and 31 April 2003 at Knockanagh 1, Knockanagh, Co. Waterford, on behalf of Waterford City Council in advance of the construction of the new N25 Waterford Bypass. The project was funded by the Irish government and part funded by the European Union under the National Development Plan 2000–2006 and was administered through Waterford City Council. This site incorporated two areas: Area 1 consisted of a possible enclosure (possibly a tree ring and formerly designated Site A) that was initially listed as an enclosure site in the SMR for County Waterford (16:11), and Area 2, an area that was geophysically surveyed south of Area 1 and was formerly identified as part of Site 3. A field survey carried out by Michael Moore on 27 April 1989 as part of the Archaeological Survey of Ireland failed to identify any trace of an antiquity on this site. As a result, the site was not entered into the RMP nor was it included in the Archaeological Inventory of County Waterford. The site is clearly visible as a wooded circular enclosure on the 1840–1 OS map but is not obvious on the 1926 map, as it forms part of a larger wooded area. As the site lies within the Mount Congreve Demesne, it is likely that this was a tree ring or similar landscape feature. The nearby Area 2, identified as part of Site 3, was identified as a result of a geophysical survey carried out by Heather Gimson under licence number 02R037. A possible enclosure was identified within this area. In Area 1, formerly identified as a possible enclosure (Site A), three trenches were excavated. Topsoil was removed directly onto the stony natural subsoil. No features were exposed and no finds recovered. A further five trenches were excavated within the area where a possible enclosure was identified as a result

of the geophysical survey. No features of archaeological significance were exposed or finds recovered. Bands of shale were visible throughout each trench and it would appear that it was these that were picked up as a result of the geophysical survey.
The remainder of this field was also subjected to intensive testing as part of the general testing that was carried out throughout the remainder of Site 3 by Ian Russell (No. 1851, Excavations 2003, 02E0275). No features of archaeological significance were recovered.

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Excavation No.:	2003:1917
County:	Waterford
Site name:	NEWTOWN (1)
SMR No.:	N/A
Licence number:	03E0304
Author:	Ian Russell, Archaeological Consultancy Services Ltd. Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth
Site type:	Pit and Hearth
Period/Dating:	Post Medieval (AD 1600-AD 1750)
ITM:	E 651408m, N 610233m
Lat, Long.:	52.241427, -7.247265
Description:	This site was located on the slope of a hill in the townland of Newtown, a short distance outside Kilmeaden on the Portlaw road. A number of field boundaries and field ditches were exposed, which were post-medieval in date. The only archaeological features identified consisted of two small pits and one hearth. Both pits were roughly circular in shape and measured 0.4m in diameter. The hearth was oval and measured 0.8m in length, 0.7m in width and extended to a depth of 0.3m. It had been filled with a dark-brown clay containing moderate amounts of charcoal and oxidised clay. No finds were recovered.

Excavation No.:	**2004:1656**
County:	Waterford
Site Name:	ADAMSTOWN (3)
SMR No.:	WA017-123001–3
Licence No.:	03E1217
Author:	Ian Russell, Archaeological Consultancy Services Ltd., Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth
Site type:	Hut site
Period/Dating:	Prehistoric (12700 BC-AD 400)
ITM:	E 652861m, N 609503m
Lat, Long.:	52.234725, -7.226108
Description:	A total of four houses were exposed here. The first house was oval or circular in shape and was constructed from a large number of oval-shaped posts and post-holes. A porched entrance was identified to the south or south-east of the house. A number of hearths were exposed within the house and a large fragment of a saddle quern was recovered from one of the post-holes at the entrance. The second house was also oval or circular in shape and was located c. 4m to the north-east of House 1. An oval-shaped slot-trench was exposed, which had been filled with a black-coloured clay and charcoal. Internally the roof was supported by four post-holes. The third house pre-dated House 1. It was also oval or circular in shape and consisted of faint traces of a slot-trench. It was located to the north-west of House 1 and had been partially cut by it.

The fourth house was located c. 3m to the north-west and consisted of a large number of post-holes and hearths.
Four linear features, pre-dating the houses, have also been exposed. They are roughly parallel to each other, north-west/south-east in orientation, and are c. 4.5m apart. It is possible that they may represent prehistoric field systems or traces of agricultural activity.

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Excavation No.:	**2004:1661**
County:	Waterford
Site Name:	BALLYDUFF EAST (SITE 43) AND ADAMSTOWN
SMR No.:	N/A
Licence No.:	04E0225
Author:	Linda Hegarty, Headland Archaeology Ltd., Unit 4b, Europa Business Park, Midleton, Co. Cork
Site type:	Fulacht fia
Period/Dating:	Prehistoric (12700 BC-AD 400)
ITM:	E 652300m, N 609175m
Lat, Long.:	52.231835, -7.234357
Description:	Waterford City Council proposed to construct an 18km bypass around Waterford city with associated link roads. The route forms part of the N25 and runs from Kilmeaden in Co. Waterford to Slieverue in Co. Kilkenny. As part of Contract 3, pre-development testing of the archaeological potential of Areas A and P, a series of trenches, were excavated within the proposed land-take of the road. A number of potential features were identified, concentrated in two areas. The first area was located to the south-east of the site, where a spread of heat-shattered stone and charcoal was identified. The second area was north-west of the site, where a circular pit filled with burnt material, a curvilinear feature, some patches of burning, a deposit of heat-shattered stone and charcoal and a small rectangular feature were recorded. The work outlined here was undertaken at Site 43 (Area P) in the townland of Ballyduff East, Co. Waterford. A full excavation was carried out in July/August 2004 under an extension to the licence. The National Roads Authority through Waterford City Council administered the total archaeological cost. In Area 1, on removal of topsoil, one circular pit, three irregular features, a linear feature and a small shallow deposit of heat-shattered stones were identified. The circular pit measured 1.2m in diameter and 0.29m in depth. Its fill was heat-shattered stone with a large amount of charcoal. The shallow deposit of heat-shattered stones and charcoal is likely to have been associated with the pit. The three irregular features contained silty material with occasional flecks of charcoal near the surface. A linear feature immediately west of the circular pit was c. 6m long, 0.65m wide and 0.32m deep. Its fill was sterile grey sandy clay. In Area 2, on removal of topsoil, two fulachta fiadh were identified. The southernmost of the burnt mounds measured 9m in diameter. It was a shallow spread of heat-shattered stone and charcoal overlying an oval-shaped trough. The trough measured 1.85m by 1.3m and was 0.5m deep. The second fulacht fiadh, situated further north, was irregular in plan and measured c. 30m north-south and 15m wide. Modern drains truncated the mound. The fulacht fiadh comprised seven troughs, four pits, five irregular features, a hearth and stake-holes, as well as their associated mound deposits. One of the troughs was almost square in plan and measured 1.6m north-south by 1.43m wide and 0.5m deep. The flat base had six wide planks lining it. The

sides may also have been lined, as five fragments of timber were overlying the base planks. A thin layer of sand lay between the side and base timbers, suggesting that the side timbers had slumped in. Plank holes were also identified. A saddle quern and rubbing stone were found in a fill overlying the timbers. On preliminary identification, both the saddle quern and the rubbing stone appear to be made from quartzite. The saddle quern is 0.64m long, 0.35m wide and 0.11–0.08m thick. The loaf-shaped rubbing stone is 0.37m long and 0.12m wide. Located centrally on the rubbing stone is a small incised depression (93mm long and 18mm wide). An oval-shaped pit was identified below the clay supporting the timbers. This pit measured 0.5m southwest/north-east by 0.38m wide and was 0.75m deep. It contained eight distinct fills, comprising layers of sand, redeposited natural and stone. It appeared to be deliberately backfilled.

A large rectangular trough, with associated hearth and stake-holes, was situated immediately west of the timber-lined trough and most probably post-dates it. This trough measured 2.7m north-south by 1.8m wide and 0.85m deep.

The remaining troughs were less substantial. The pits identified were irregular in plan and some contained sterile fills. A number of large piped drains and stone drains truncated the site. These were backfilled with the fulacht fiadh material. As well as the saddle quern and rubbing stone, two flints (a possible scraper and flake), three unidentified stone objects, corroded metal and fragments of a clay pipe were found on this site.

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Excavation No.:	**2007:1827**
County:	Waterford
Site Name:	KNOCKANAGH (1)
SMR No.:	N/A
Licence No.:	A037; 03E0412
Author:	Linda Clarke, Archaeological Consultancy Services Ltd., Unit 21, Boyne Business Park, Greenhills, Drogheda, Co. Louth
Site type:	Designed landscape - tree-ring
Period/Dating:	Modern (AD 1750-AD 2000)
ITM:	E 652239m, N 609650m
Lat, Long.:	52.236110, -7.235176
Description:	This site was excavated as part of the pre-construction archaeological mitigation of the N25 Waterford bypass, alternative route. A possible enclosure (WA016–011) is clearly visible as a wooded circular enclosure on the 1840–41 OS map but is not obvious on the 1926 edition, as it forms part of a larger wooded area. It may represent a tree ring. No other features of archaeological significance were discovered.

Excavation No.:	**2009:800**
County:	Waterford
Site Name:	BALLYDUFF EAST
SMR No.:	WA016–116
Licence No.:	05E0836 ext.
Author:	Dave Bayley, Irish Archaeological Consultancy Ltd., 120b Greenpark Road, Bray, Co. Wicklow
Site type:	No archaeology found
Period/Dating:	N/A
ITM:	E 651941m, N 609866m
Lat, Long.:	52.238079, -7.239519

Description:	Testing at two locations in Ballyduff East was carried out during February 2009. The assessed areas will form part of the Waterford group villages sewerage scheme at Kilmeaden. Area 1 consists of the site of a proposed wastewater-treatment works. Seven trenches were excavated across the site of the proposed development, totalling 270 linear metres. Nothing of archaeological significance was identified within the site of the proposed works. Area 2 consists of the route of the proposed pipeline as it passes through the constraint for a church site (WA016–116). Here three trenches were excavated along the route of the proposed pipeline, totalling 130 linear metres. These trenches were located within an existing road network. Testing in Test Area 2 revealed the disturbed remains of a possible wall or yard foundation. This has been interpreted as possibly representing the boundary of an earlier property located here prior to the construction of the modern school building. No other features of archaeological significance were identified.

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Excavation No.:	**2011:592**
County:	Waterford
Site Name:	ADAMSTOWN
SMR No.:	N/A
Licence No.:	10E505
Author:	Maurice F. Hurley, 6 Clarence Court, St Luke's, Cork
Site type:	Testing
Period/Dating:	—
ITM:	E 652705m, N 609096m
Lat, Long.:	52.231090, -7.228450
Description:	Testing was undertaken as part of a request for further information prior to an extension to Fan Glas housing estate at Adamstown, Kilmeaden. There is no Recorded Monument within the site or in its immediate environs, nor did site inspection reveal any sites or areas of significant archaeological potential. The area of the proposed development had been largely cleared of topsoil to a depth of c. 0.4m in 2006 and covered with hardcore to depths varying from 0.1m to 0.2m to create a site compound for the first phase of the housing development, for which no archaeological condition had been included as part of the grant of planning permission. It had been proposed to excavate eight test trenches, but owing to the extreme impacts of previous works on the site and restrictions arising from services six trenches were considered sufficient to provide a comprehensive coverage of the site. In general the topsoil was absent from the site and the subsoil was excavated to the underlying rock. Where topsoil did survive there was no indication that the site contained any archaeological features. No anomalies were observed in the subsoil.

Excavation No.:	**2012:591**
County:	Waterford
Site Name:	Ballyduff/Kilmeadan
SMR No.:	WA016-116 (01, 02)
Licence No.:	12E0106
Author:	Patricia Long, Rubicon Heritage Services Ltd, Unit 2, Europa Enterprise Park, Midleton, Co. Cork
Site type:	No archaeological significance
Period/Dating:	—
ITM:	E 651666m, N 609428m
Lat, Long.:	52.234167, -7.243611

Description:

A programme of monitoring for the Waterford Grouped Towns and Villages Sewerage Scheme, Contract Nr. 2 Ballyduff/Kilmeaden was carried out at the west side of the scheme through greenfield areas at old Ballyduff village in the townland of Ballyduff between 26–29 March 2012. A second phase of work was carried out on the east side of the scheme at a stream crossing at Kilmeaden on the 9 May 2012.

Monitoring revealed that the area of the development had cover (0.3m average depth) of mid-reddish brown silty clay topsoil. The underlying subsoil was light yellow brown silty clay. Located c. 100m south-west of the proposed Ballyduff pump station, adjacent to a small stream, an area was identified as a substantial peat deposit (14m by 3.5m) orientated north-east/south-west. The deposit was investigated by hand and deemed non-archaeological.

On the 9 May 2012 the banks of the stream at Kilmeaden were also stripped of topsoil. The crossing point was adjacent to a carpark immediately south of the bridge on the main street through Kilmeaden. The south side of the stream had been embanked with material form the clinic carpark up to 1m deep while the north side was topsoil 0.4m deep. No archaeological features were identified in the exposed natural subsoil.

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APPENDIX 12.3

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Architectural Heritage

CRDS, 2025

The recorded architectural heritage sites within c. 500m of the proposed development route are listed below, all noted in the National Inventory of Architectural Heritage (NIAH) (https://archaeology.ie; https://buildingsofireland.ie). Where included in the Record of Protected Structures

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NIAH No.	**22901615**
RPS No.	**WA750844**
Image Link	https://www.buildingsofireland.ie/building-images-iiif/niah/images/survey_specific/original/22901615_1.jpg
Original Use	post box
In Use As	post box
County	WATERFORD
Townland	ADAMSTOWN (MID. BY.) KILMEADAN PAR.
ITM	652485, 608679
Date	1900 - 1910
Rating	Regional
Cat. Spec. Int.	ARTISTIC, HISTORICAL, SOCIAL
Description	Wall-mounted cast-iron post box, c.1905, with raised "ER VII" royal cipher. Set in painted rendered, ruled and lined wall.
Appraisal	This post box, which remains in use, is an important surviving artefact of early mass-produced cast-iron work. The raised detailing throughout serves to enhance the design quality of the composition, while the royal cipher in particular is of significance as a tangible reminder of Ireland as part of the British Empire.

NIAH No.	**22901712**
RPS No.	**-**
Image Link	https://www.buildingsofireland.ie/building-images-iiif/niah/images/survey_specific/original/22901712_1.jpg
Original Use	gate lodge
In Use As	gate lodge
County	WATERFORD
Townland	DOONEEN (MID. BY.) KILMEADAN PAR.
ITM	652959, 608939
Date	1840 - 1850
Rating	Regional
Cat. Spec. Int.	ARCHITECTURAL
Description	Detached two-bay single-storey gate lodge, c.1845, retaining original fenestration with single-bay single-storey advanced bay to left (south), round-headed open internal porch to right (north), and two-bay single-storey side elevations. Reroofed, c.1945. Extended, c.1970, comprising single-bay single-storey lean-to return to west. Hipped roofs with replacement artificial slate, c.1945, clay ridge tiles, rendered chimney stack, and cast-iron rainwater goods on slightly overhanging rendered eaves. Shallow lean-to corrugated-iron roof to return with cast-iron rainwater goods on timber eaves. Painted rendered, ruled and lined walls with rendered band to eaves. Round-headed window openings (paired to front (east) elevation) with cut-stone sills, and moulded rendered archivolts. 1/1 timber sash windows. Round-headed opening to open internal porch with four cut-stone steps, moulded archivolt, and decorative clay tile to threshold. Square-headed door opening with timber panelled door, and overlight having margins. Square-headed window openings to return with concrete sills, and timber casement windows. Set back from road in grounds shared with Whitfield House.
Appraisal	A well-composed small-scale gate lodge that incorporates a number of features that link the composition stylistically with the main house (22901711/WD-17-11), and which

enhance the architectural quality of the site. Well maintained, the gate lodge retains most of its original form and early fabric, and, together with the attendant gateway (22901722/WD-17-22), forms an attractive feature in the locality.

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NIAH No.	**22901722**
RPS No.	**-**
Image Link	https://www.buildingsofireland.ie/building-images-iiif/niah/images/survey_specific/original/22901722_1.jpg
Original Use	gates/railings/walls
In Use As	gates/railings/walls
County	WATERFORD
Townland	DOONEEN (MID. BY.) KILMEADAN PAR.
ITM	652967, 608952
Date	1840 - 1850
Rating	Regional
Cat. Spec. Int.	ARCHITECTURAL, ARTISTIC
Description	Gateway, c.1845, comprising pair of granite ashlar squat piers with cornices having panelled stages and coping over, decorative cast-iron double gates, decorative cast-iron flanking pedestrian gates, granite ashlar outer piers having moulded capping, and sections of coursed squared granite flanking boundary walls to perimeter of site with cut-stone coping. Sited at entrance to grounds of Whitfield House.
Appraisal	An elegant gateway incorporating fine stonework to the piers, together with early surviving decorative cast-iron gates that enhance the design quality of the composition. The gateway, together with the attendant gate lodge (22901712/WD-17-12), forms a pleasing group in the locality.

NIAH No.	**22901607**
RPS No.	**WA750128**
Image Link	
Original Use	cottage
In Use As	the Sweep pub
County	WATERFORD
Townland	ADAMSTOWN (MID. BY.) KILMEADAN PAR.
ITM	652490, 608690
Date	1860 - 1880
Rating	Local
Cat. Spec. Int.	-
Description	Detached six-bay single-storey thatched cottage, c.1840. Extensively renovated, c.1990, with single-bay single-storey projecting porch added to accommodate commercial use. Hipped roof (including to porch) with replacement reed thatch, c.1990
Appraisal	Although this cottage remains an important element of the vernacular heritage of County Waterford, over-zealous renovation works in the late twentieth century have eroded much of the original form and character of the composition

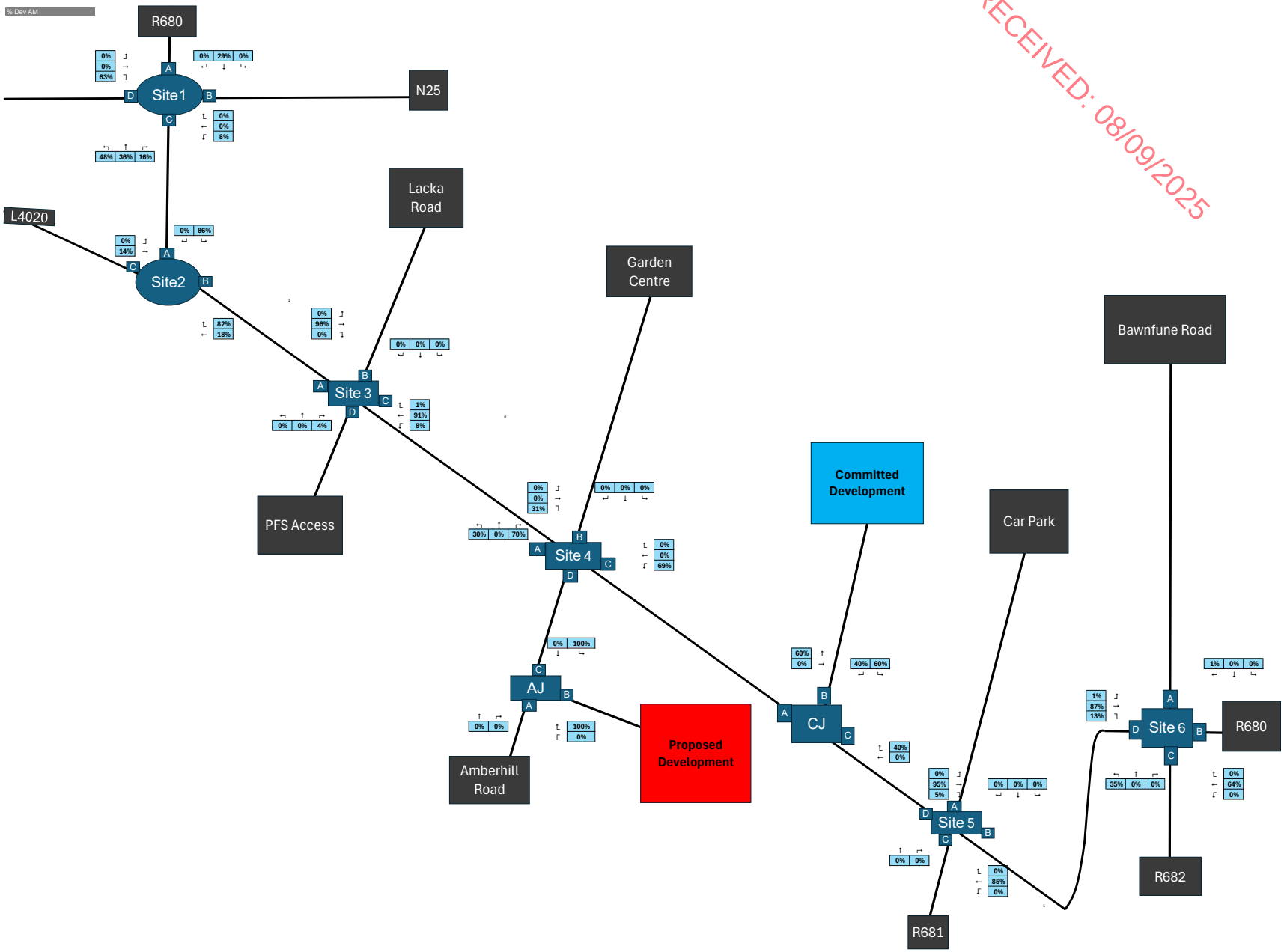
APPENDIX 13.1

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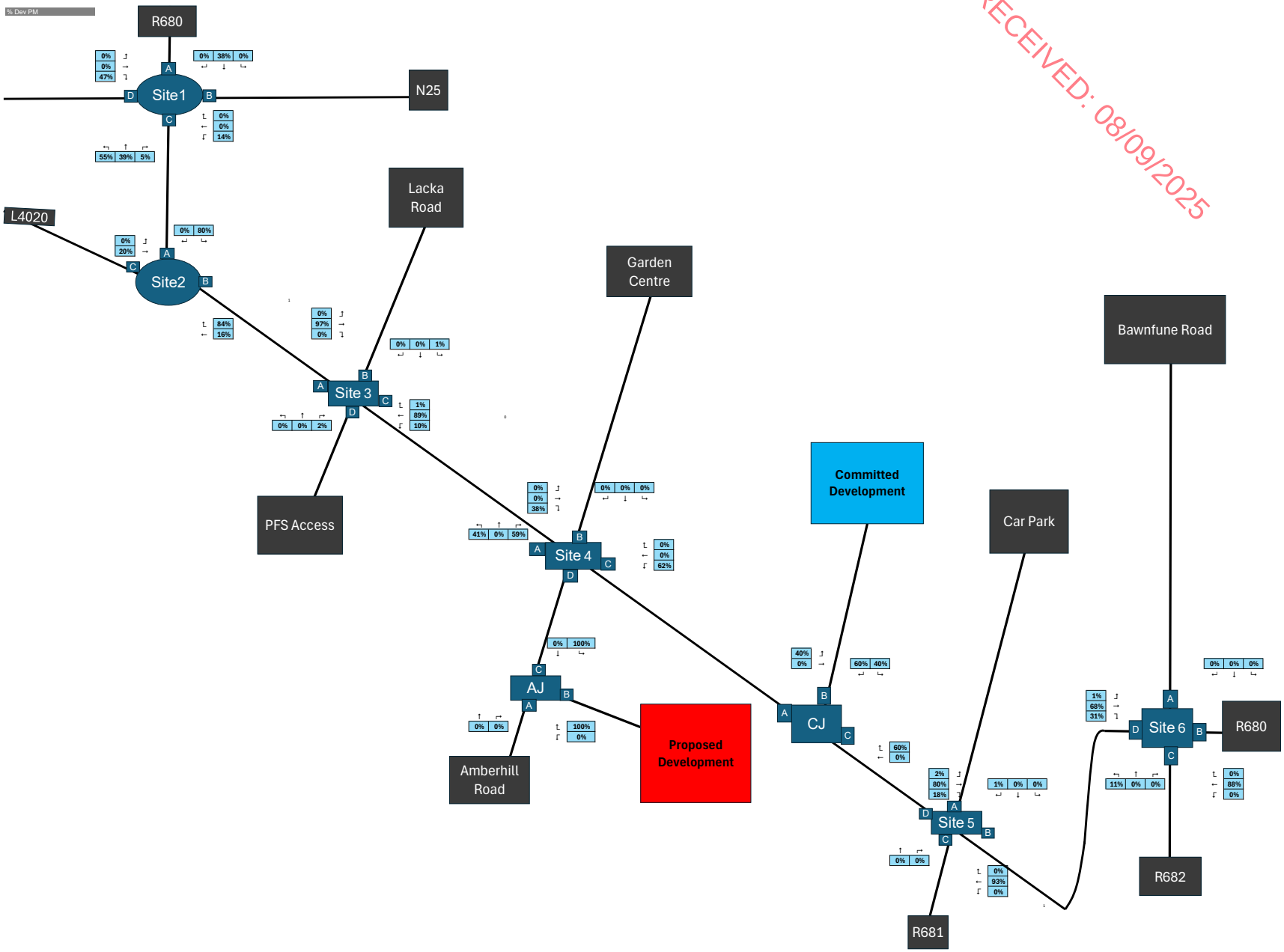
Traffic Distribution Diagrams

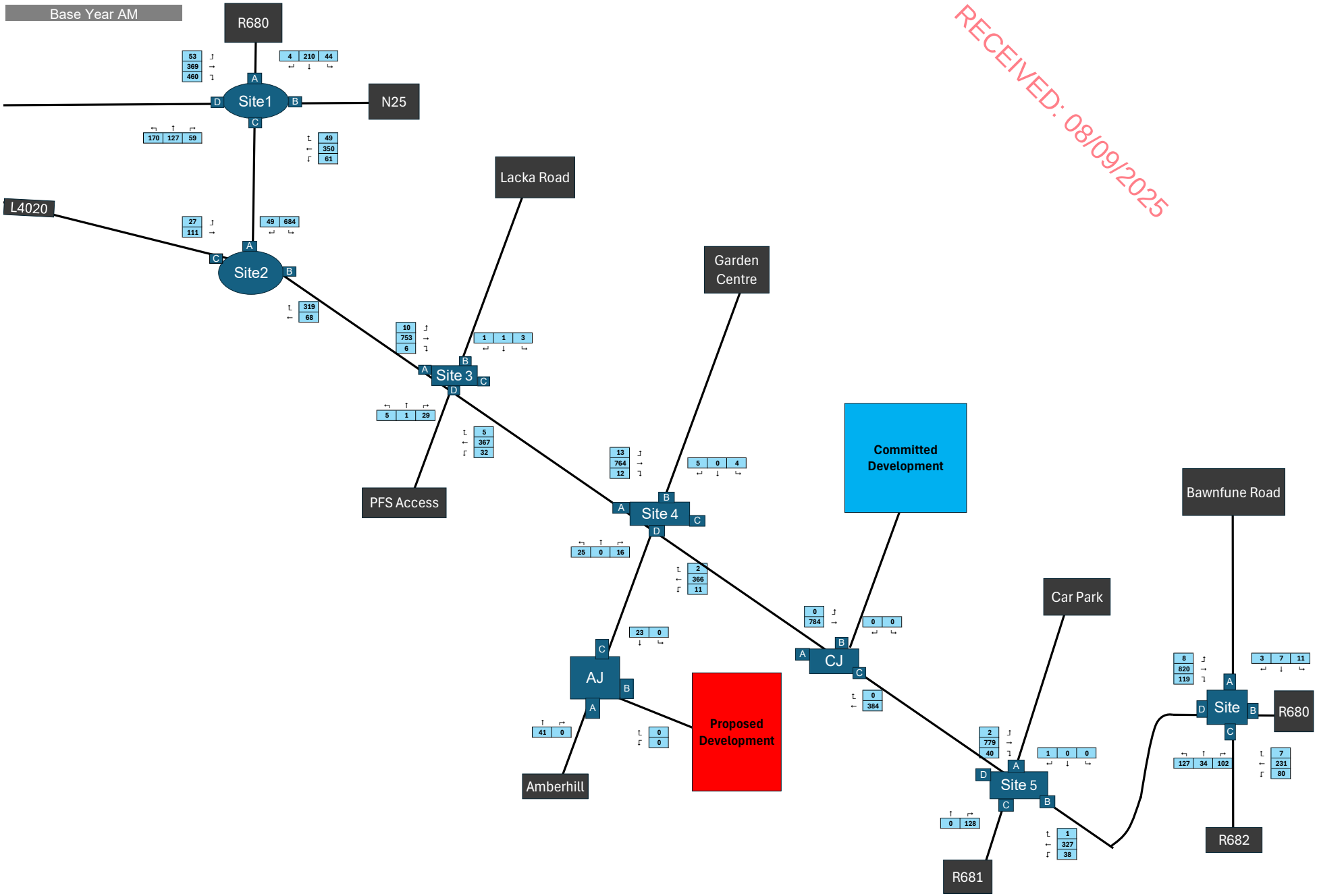
Atkins Réalis, 2025

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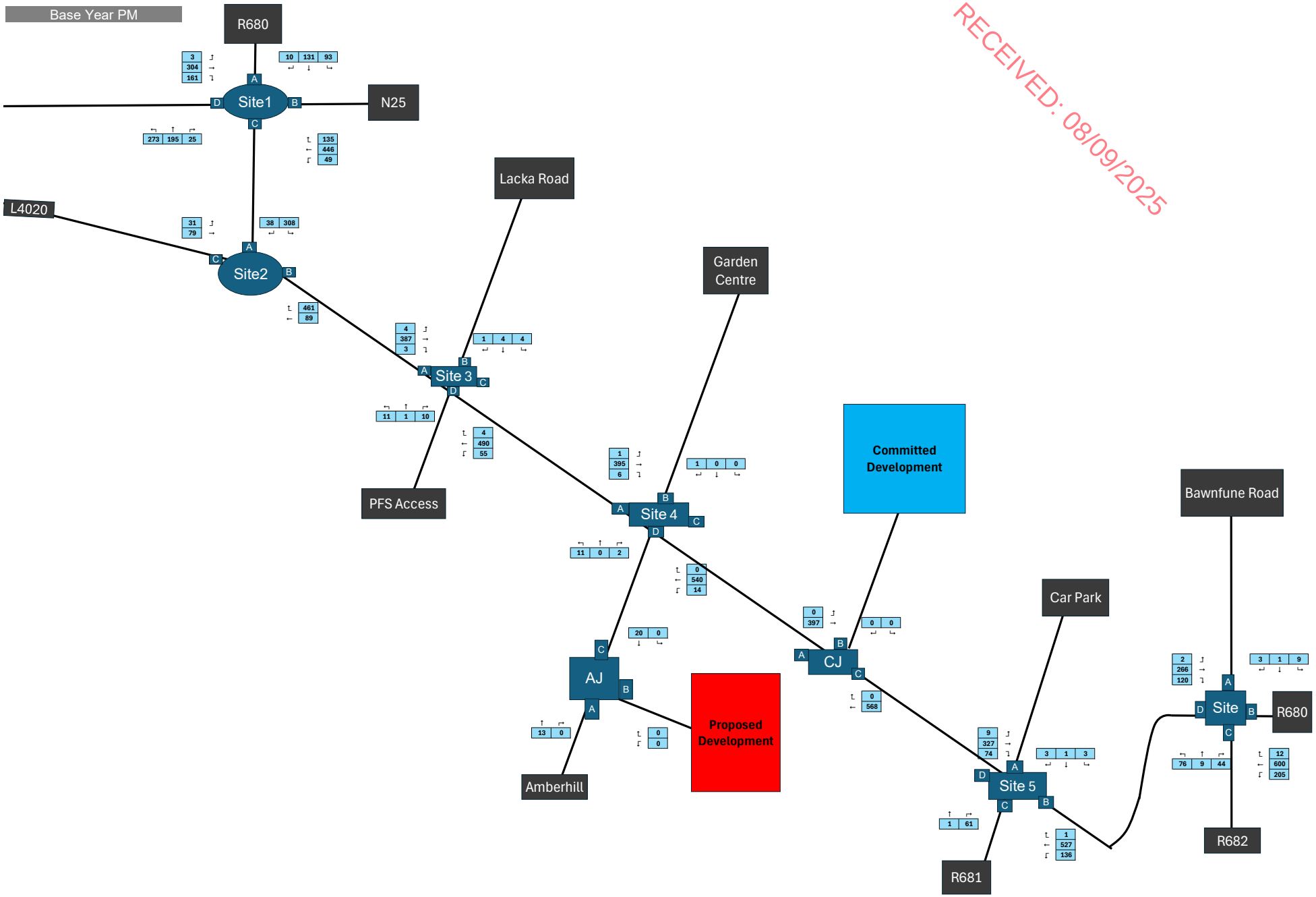


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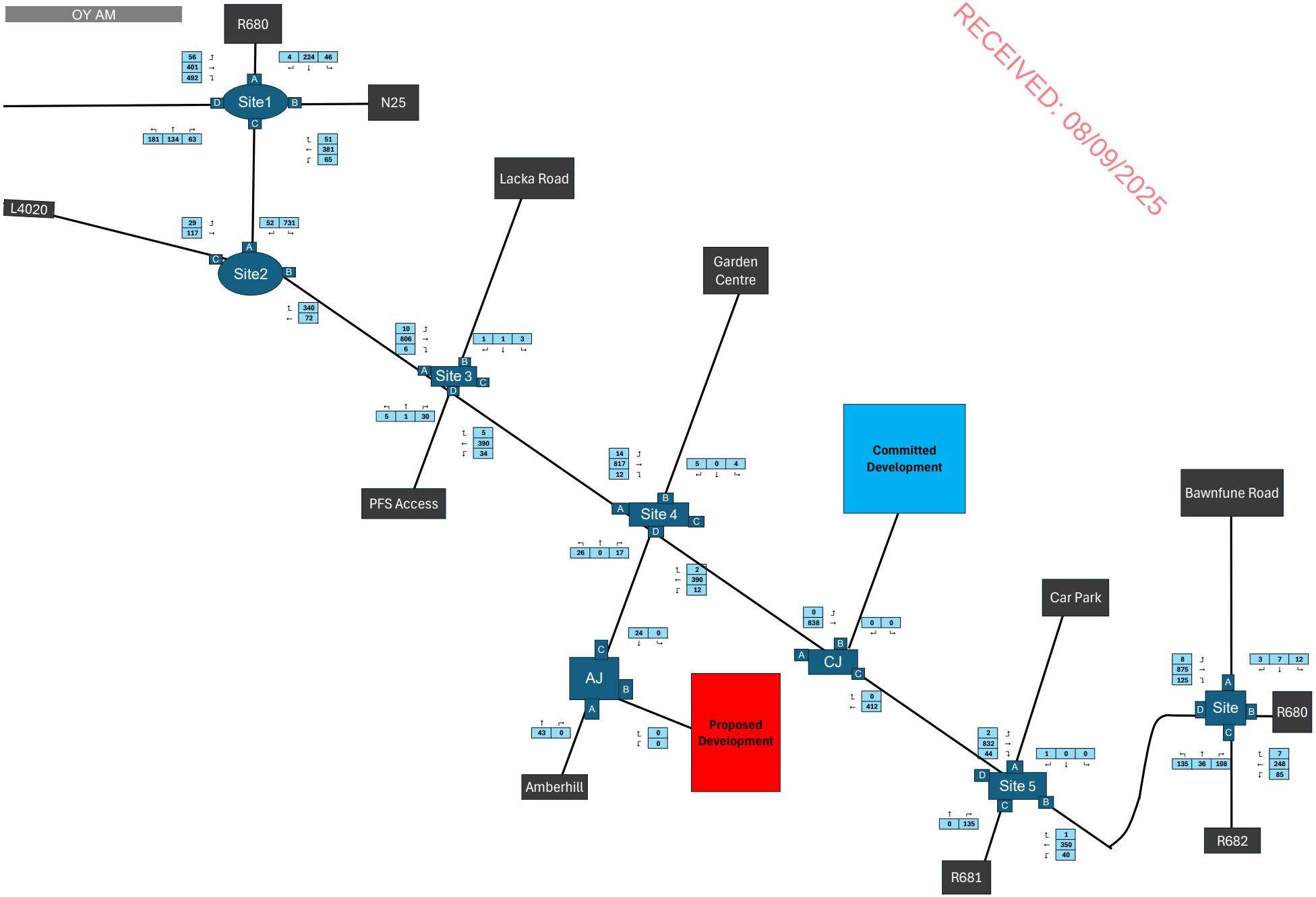


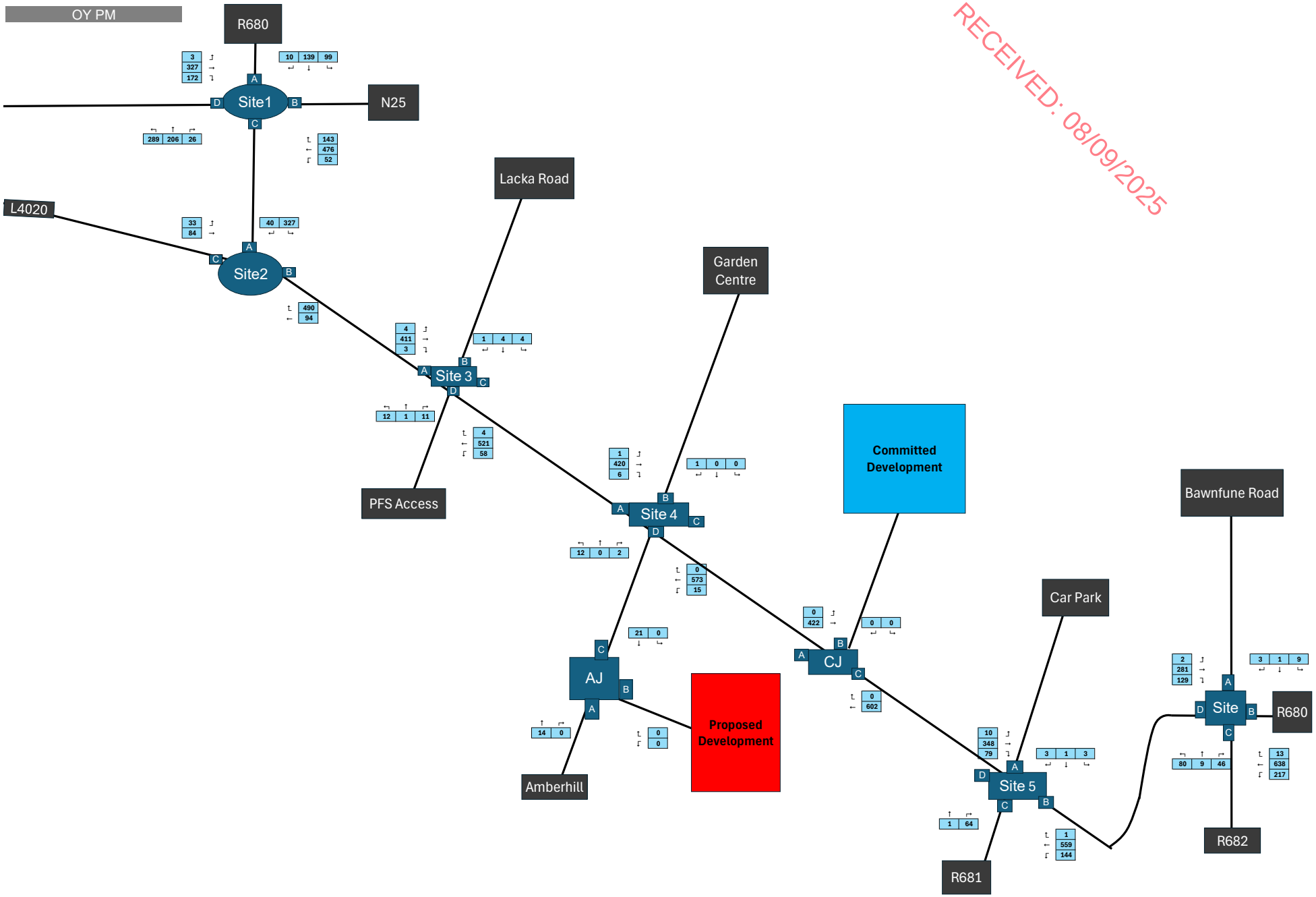


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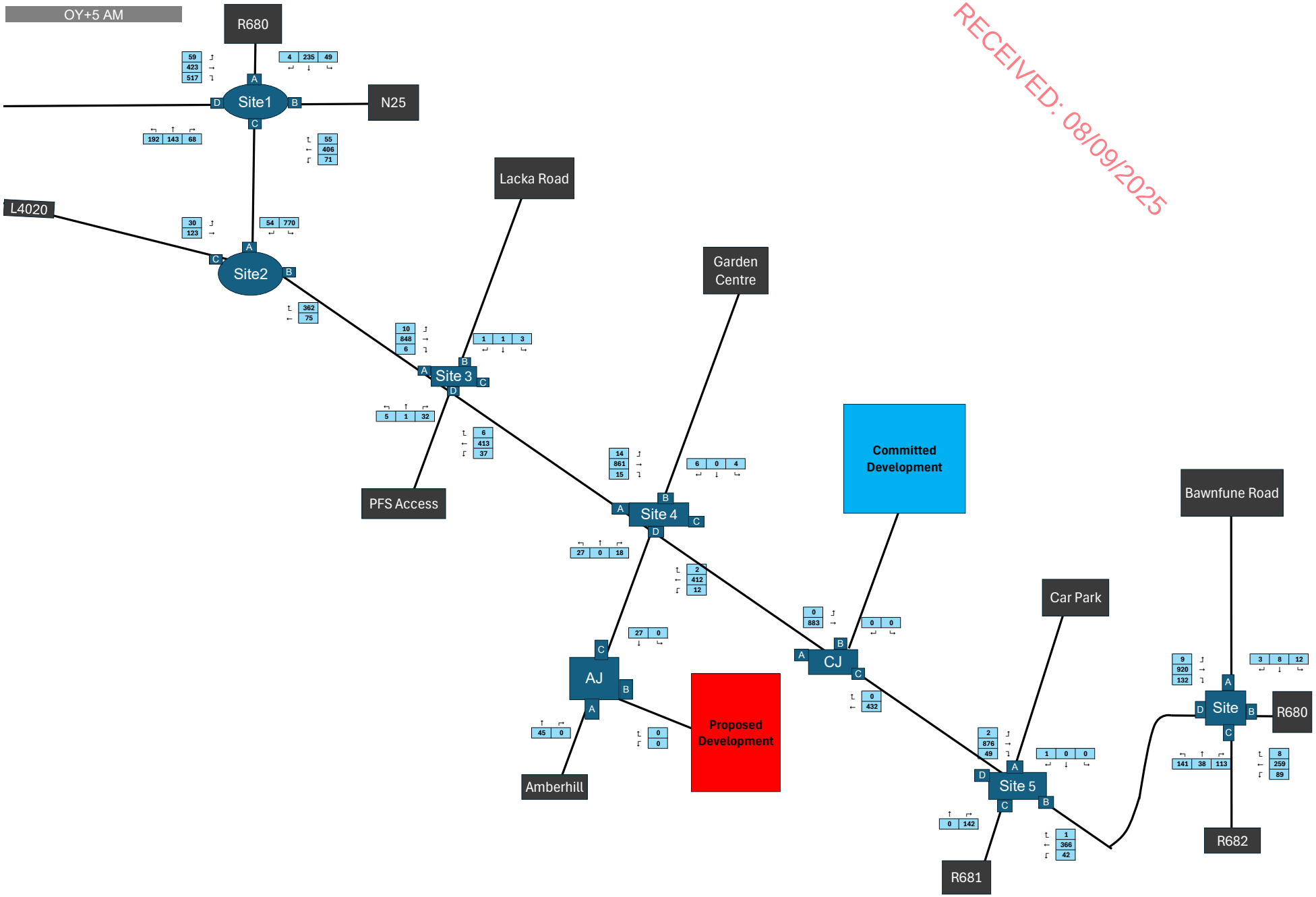


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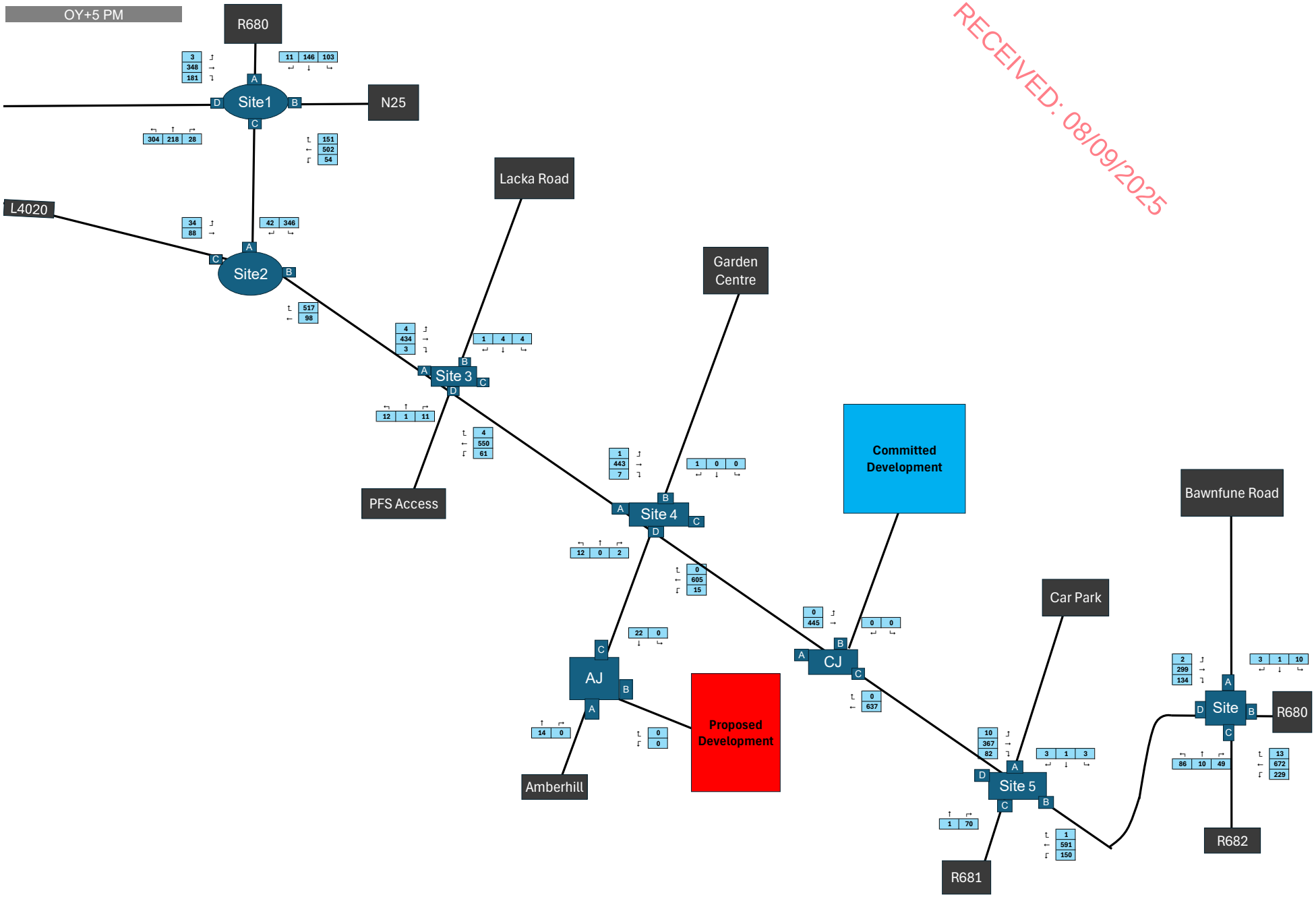

OY AM
R680
N25
L4020
Site1
Site2
Site 3
Site 4
Site 5
CJ
AJ
Site
Lacka Road
Garden Centre
PFS Access
Committed Development
Proposed Development
Car Park
Bawnfune Road
Amberhill
R681
R682
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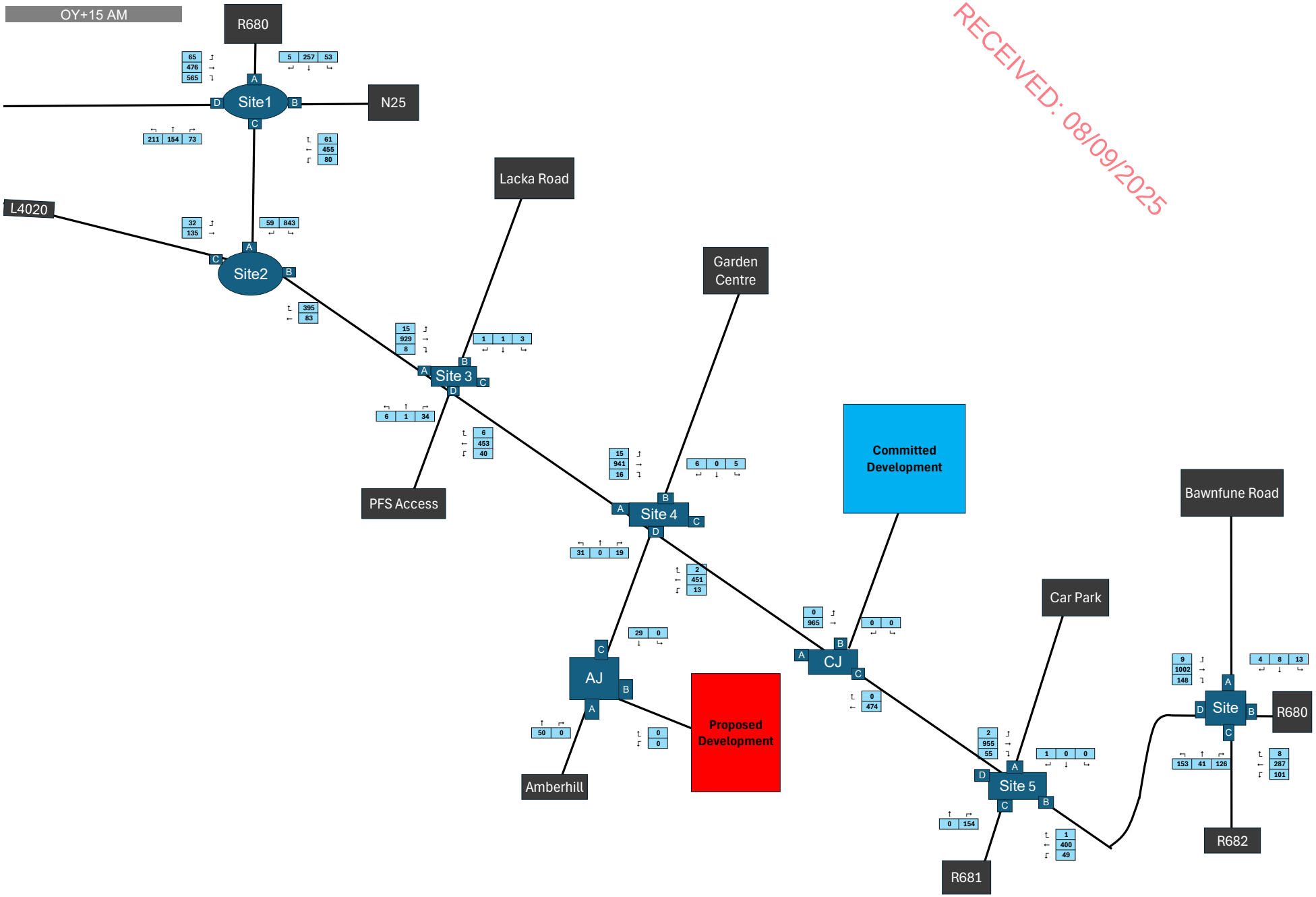


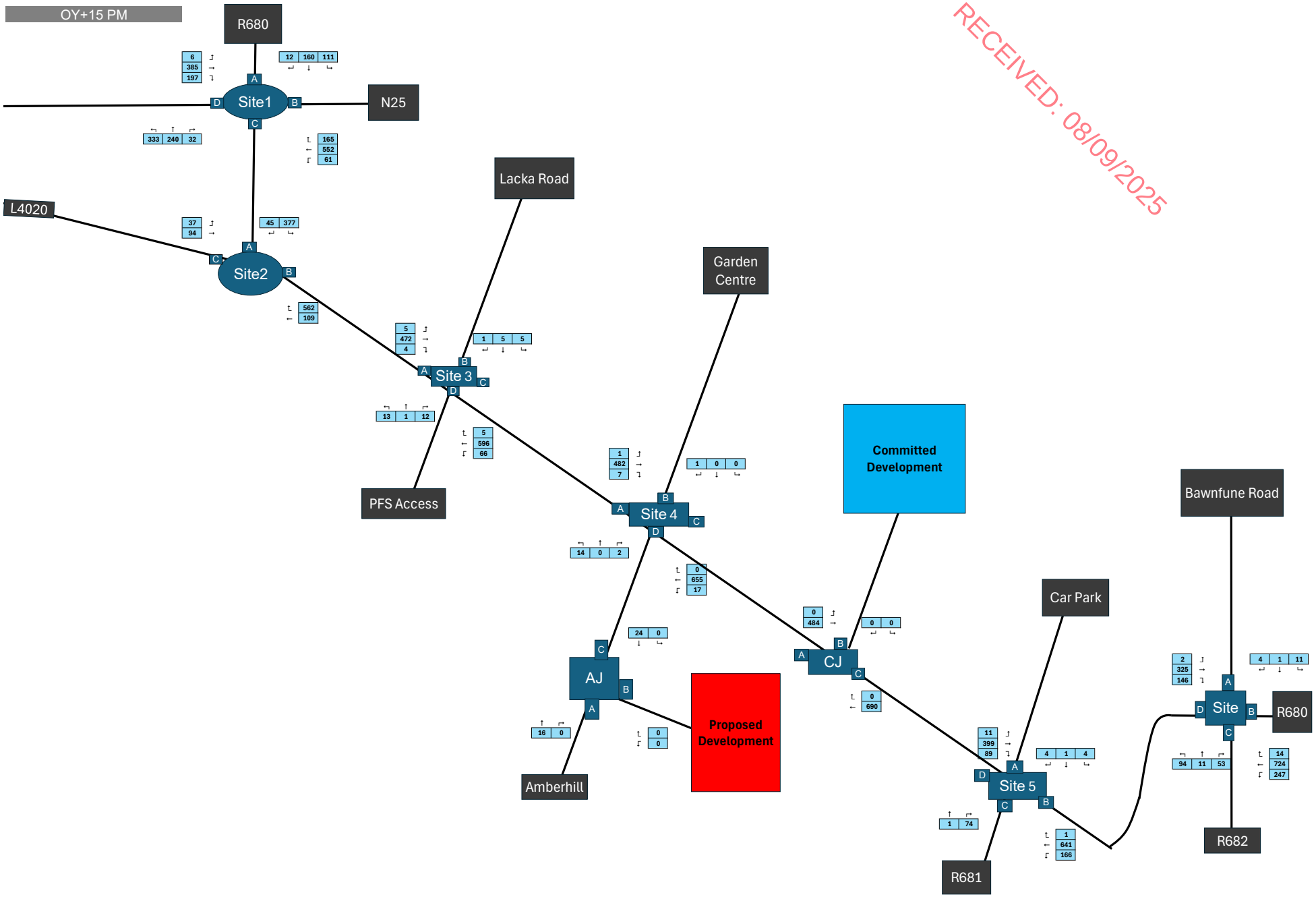
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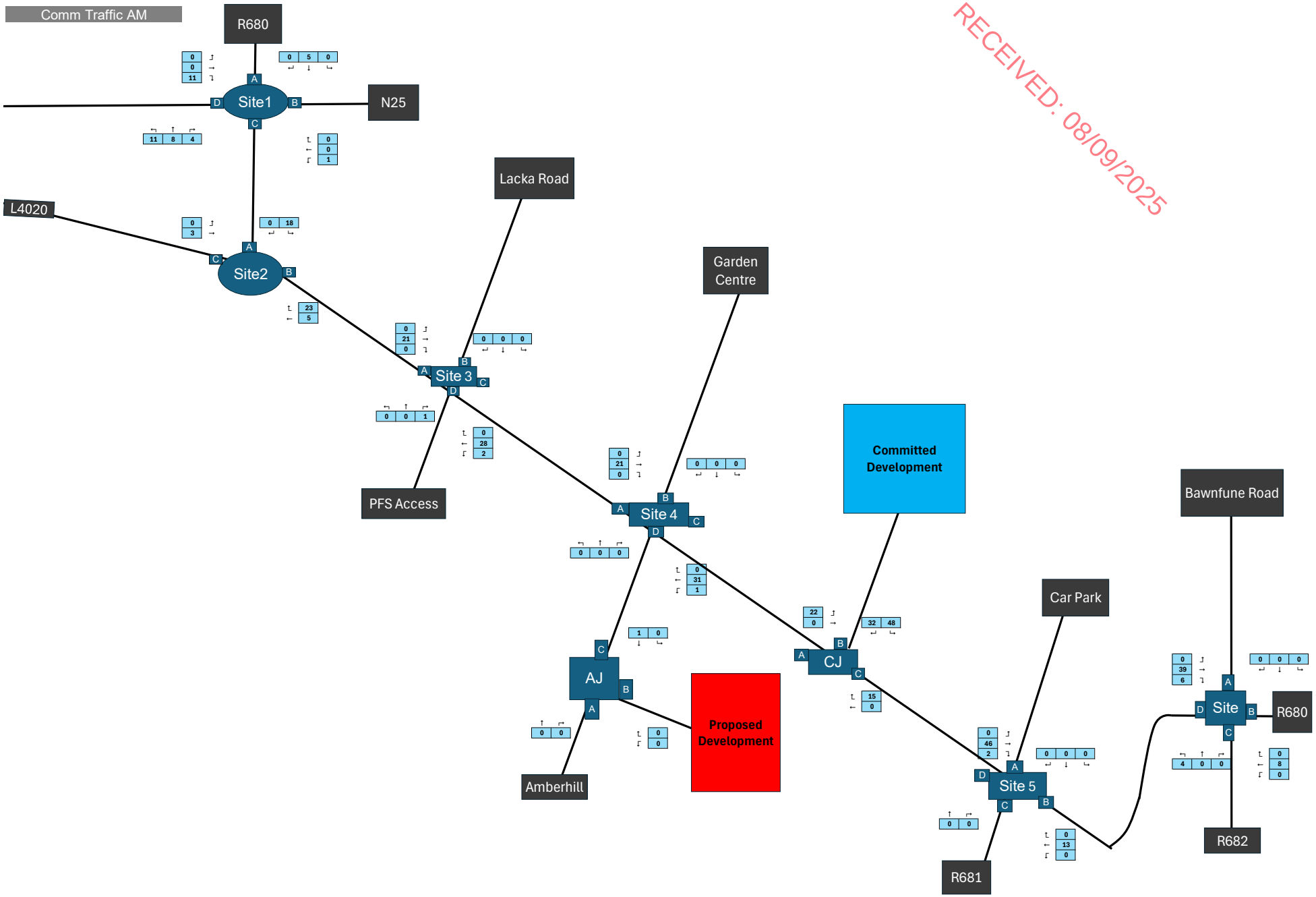
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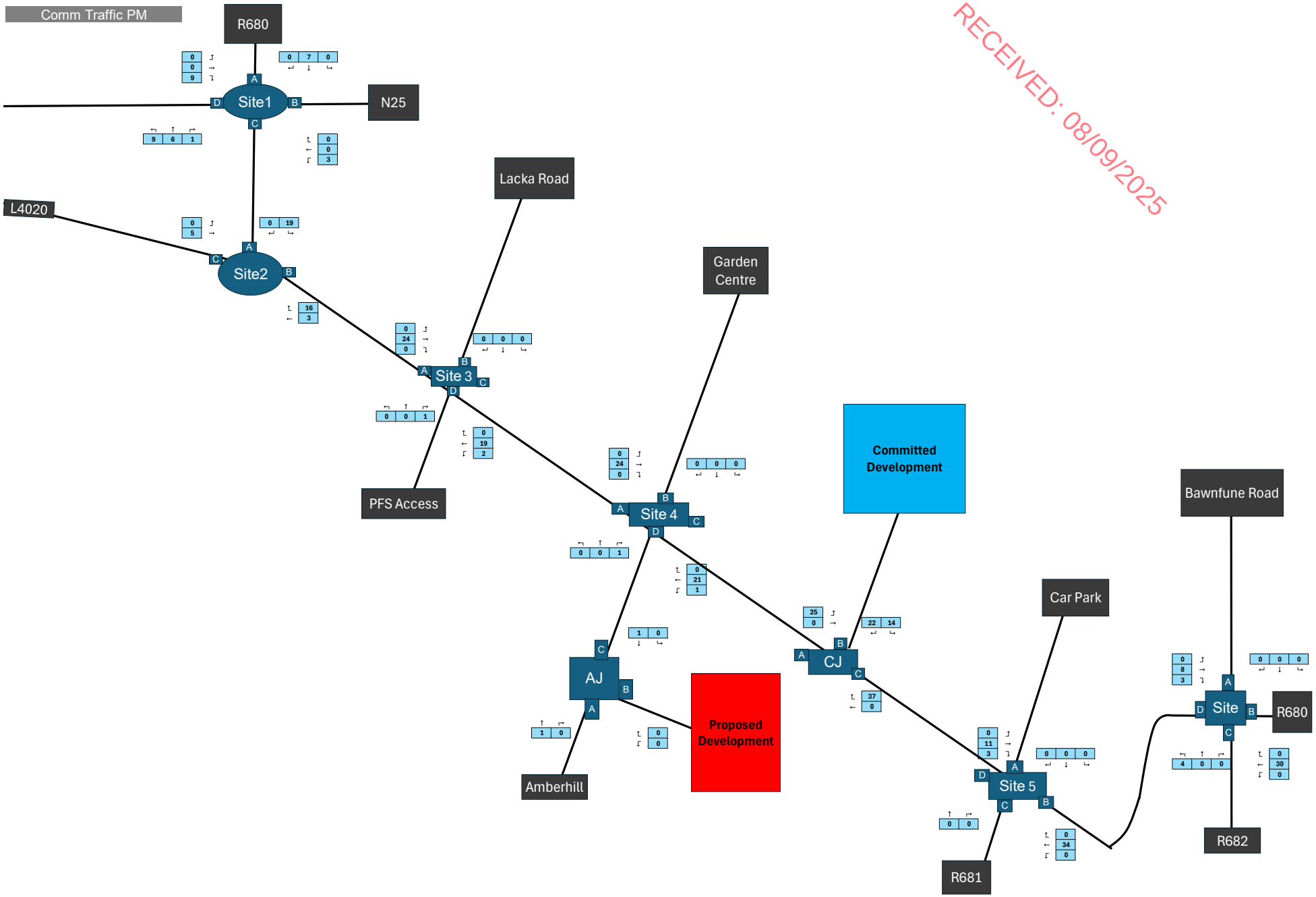




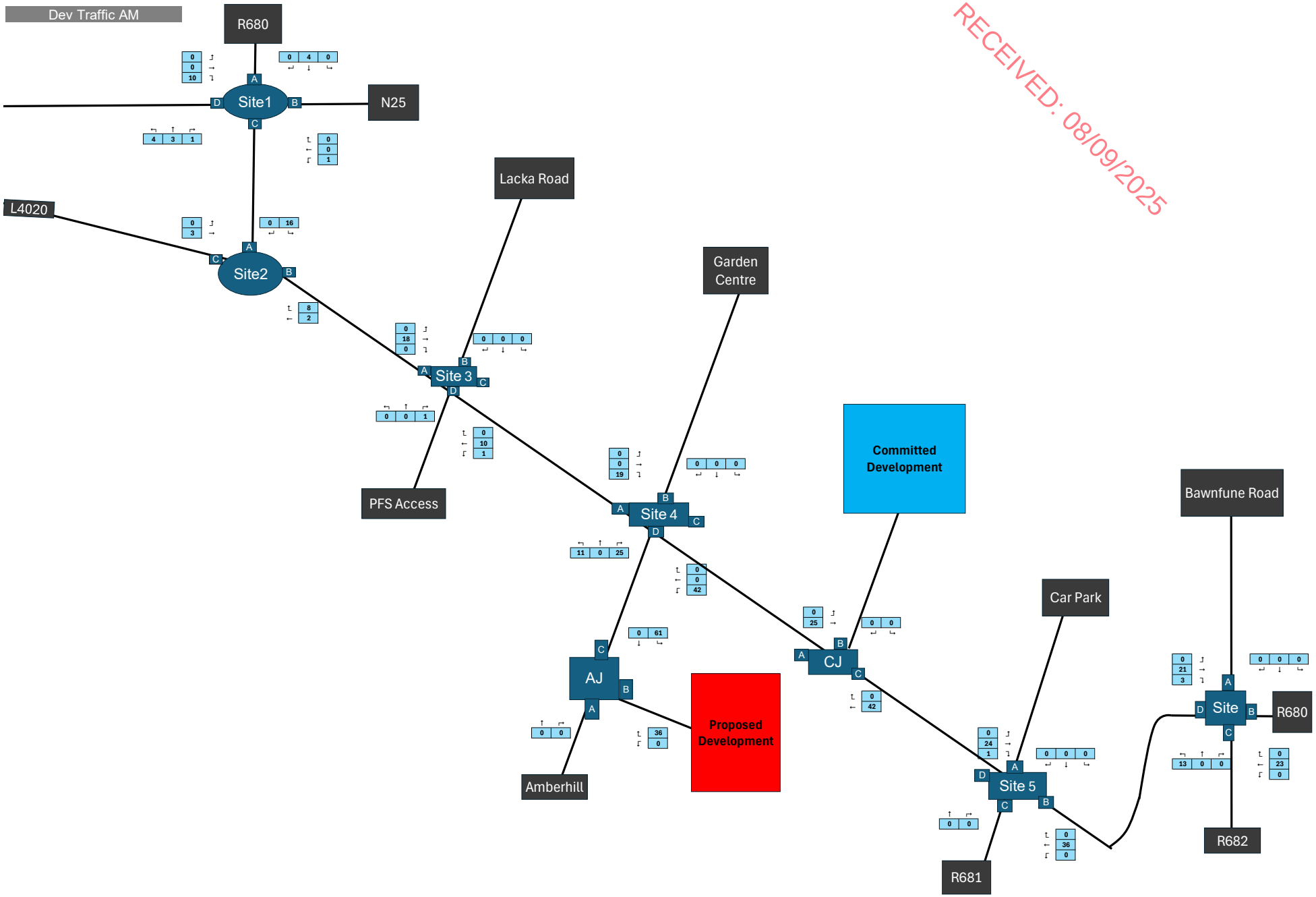
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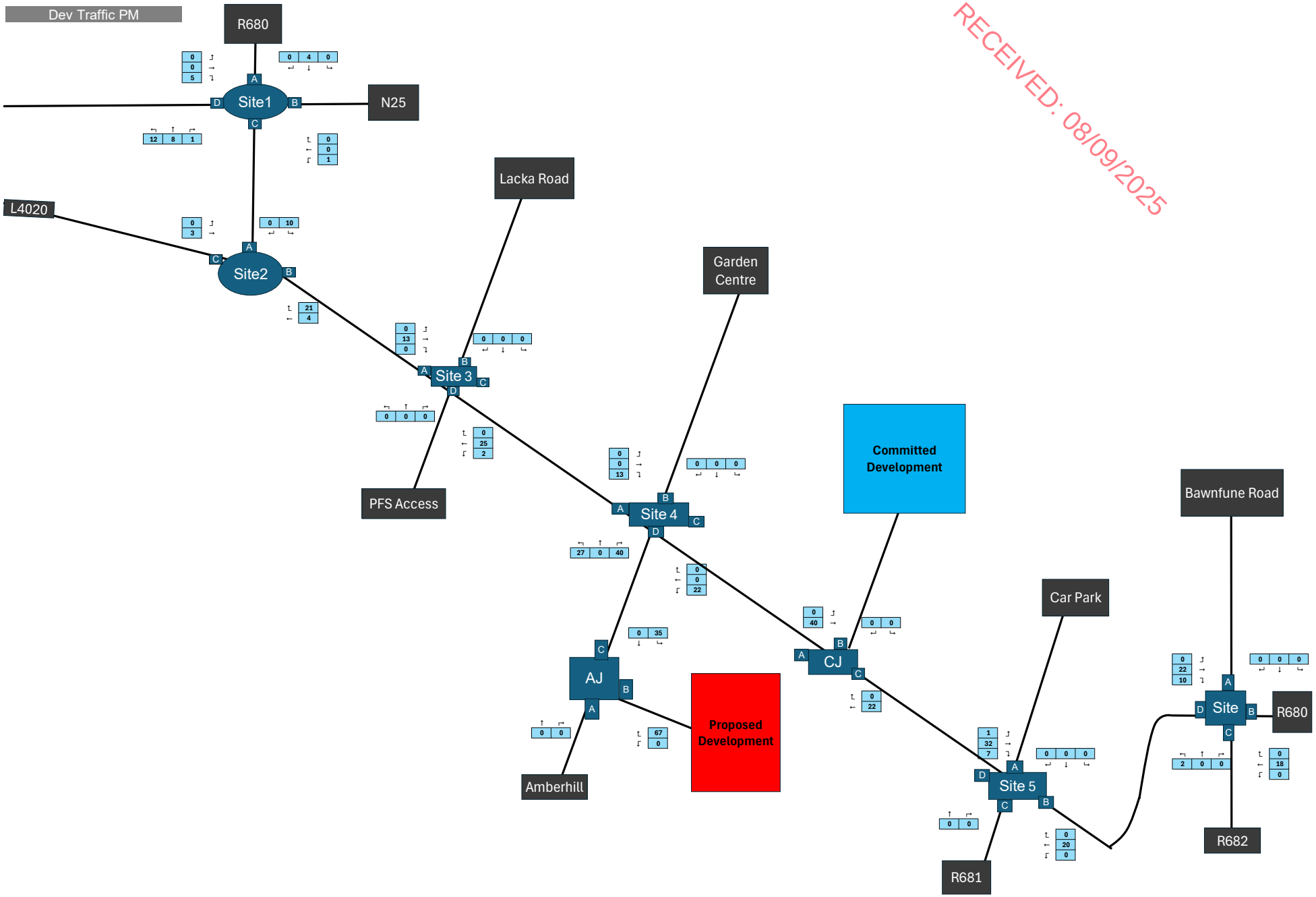
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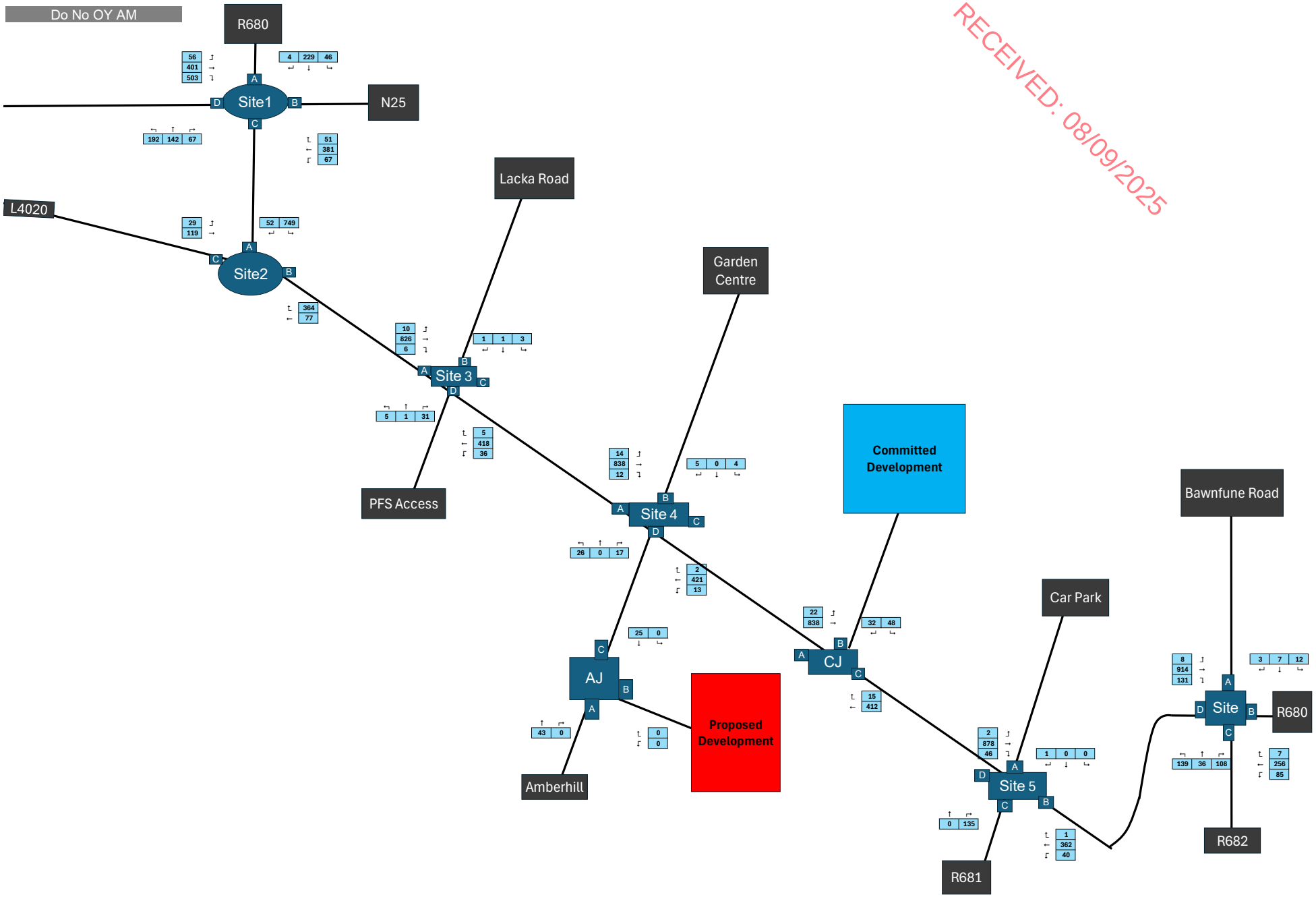
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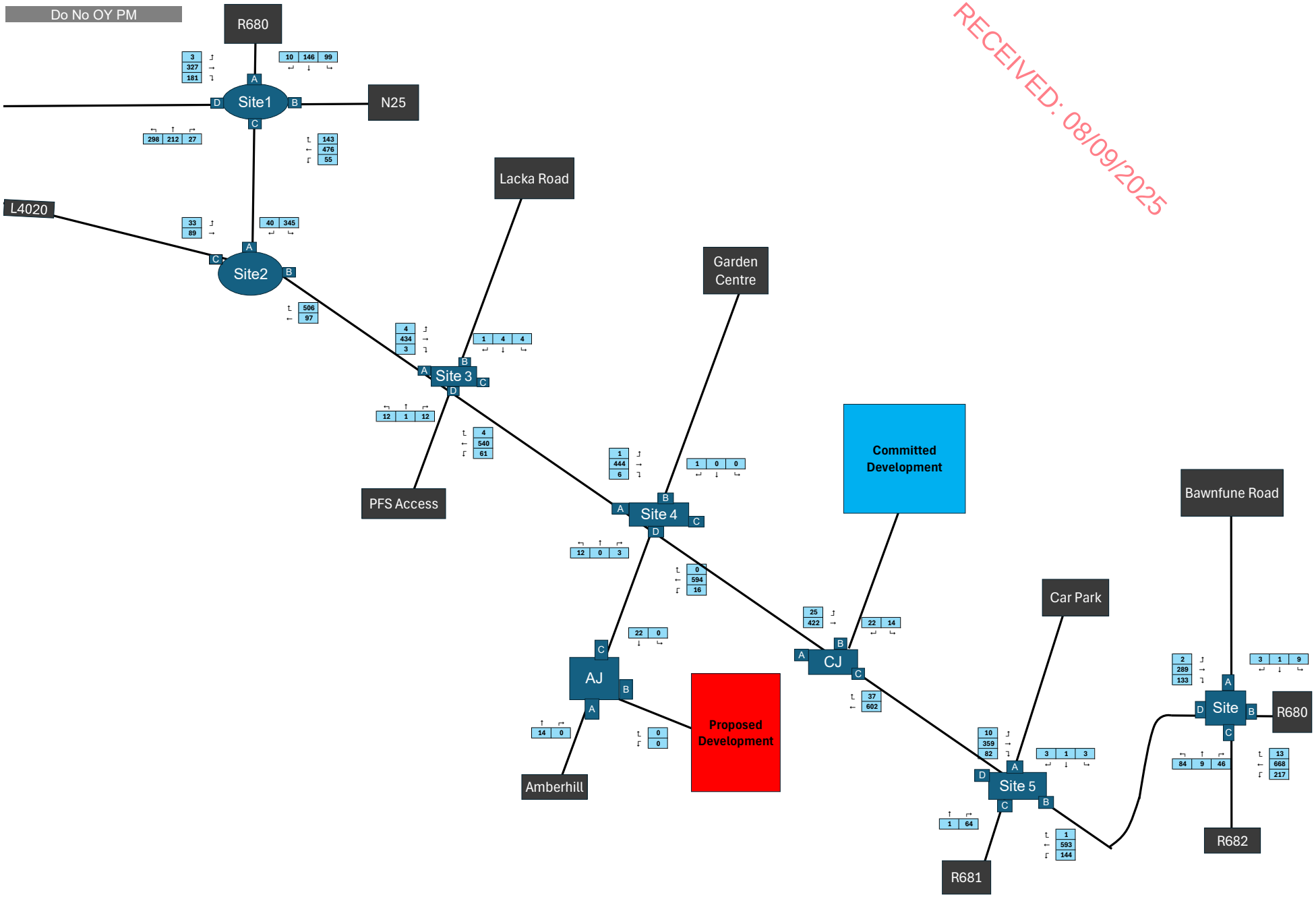
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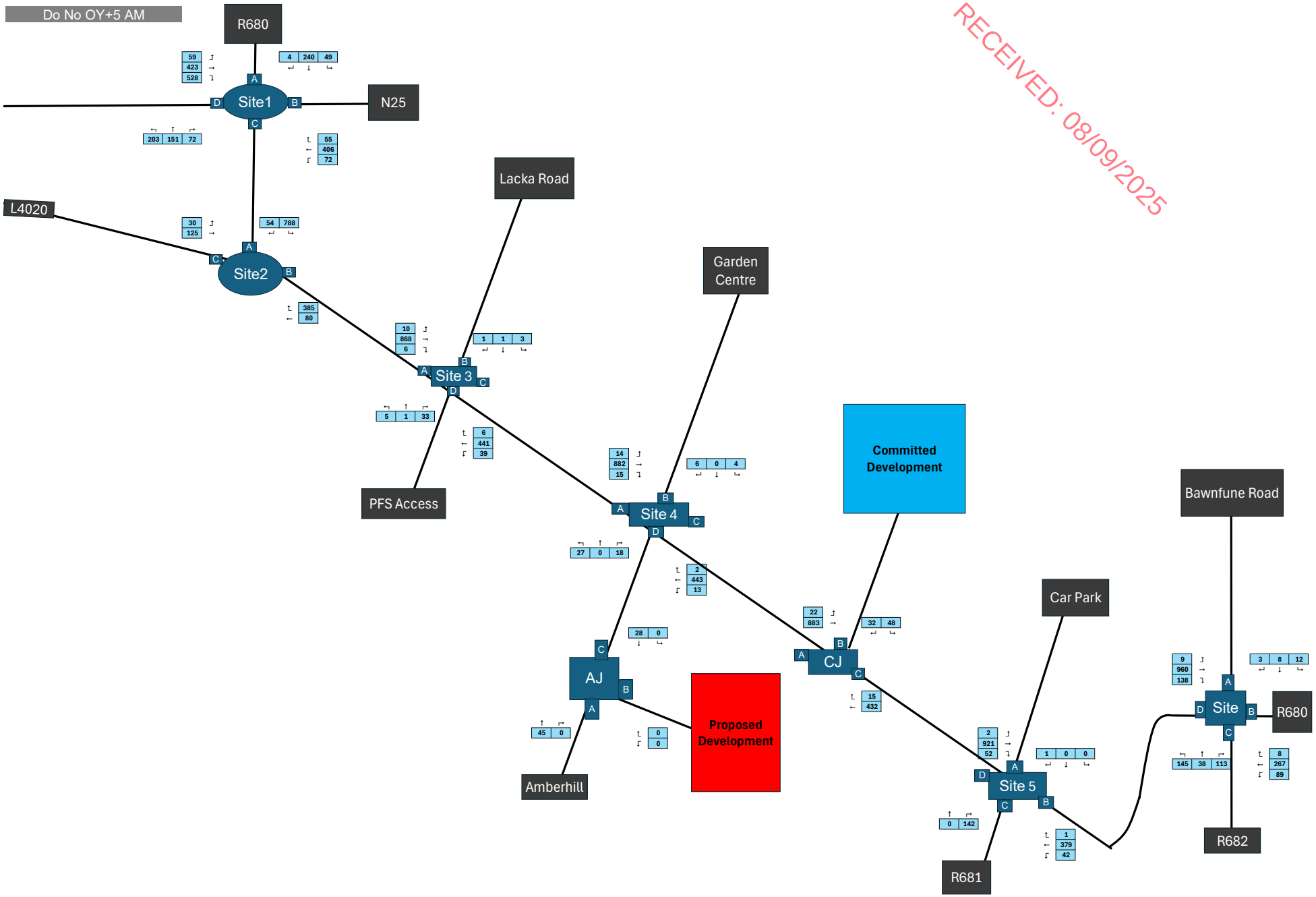
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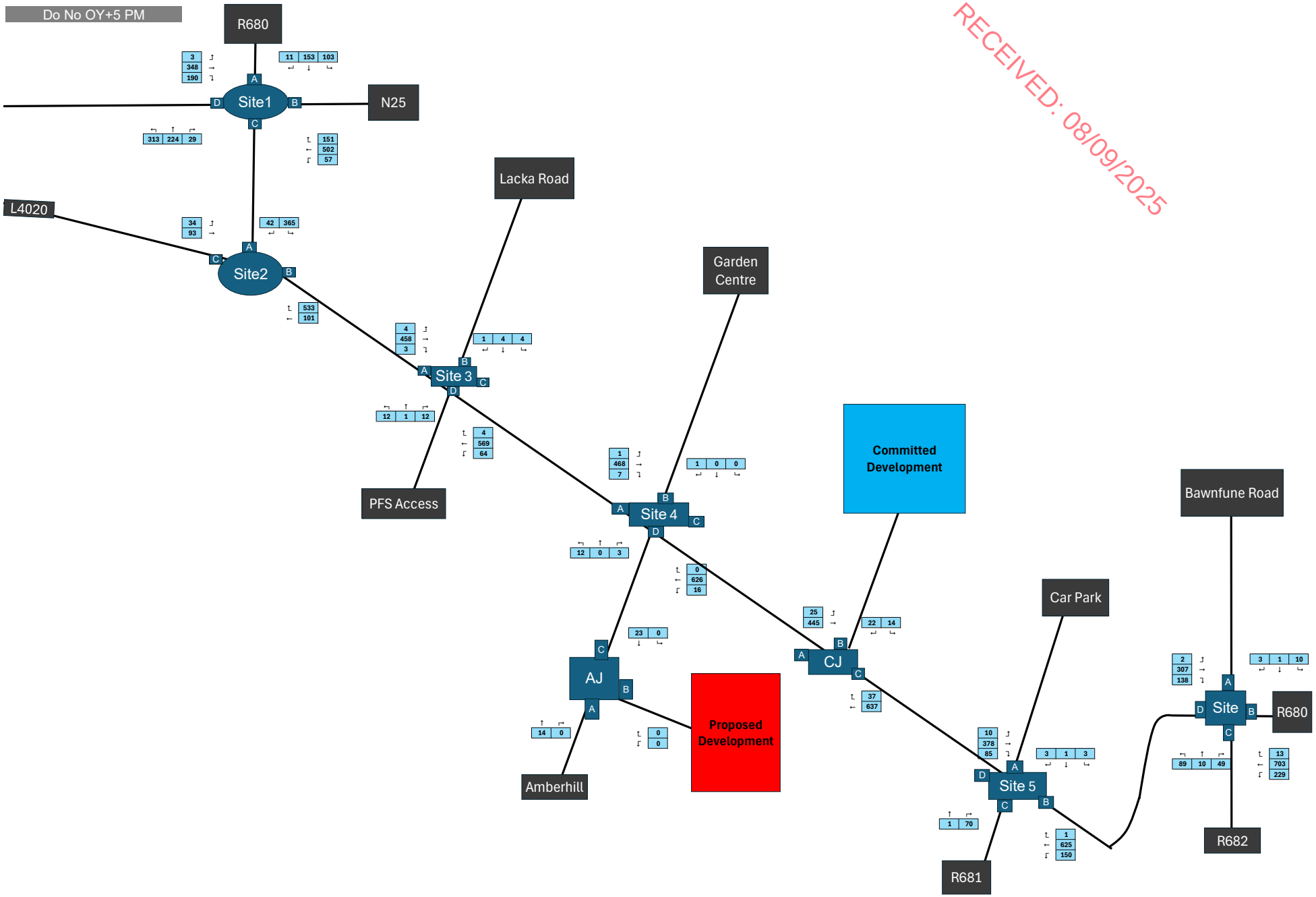
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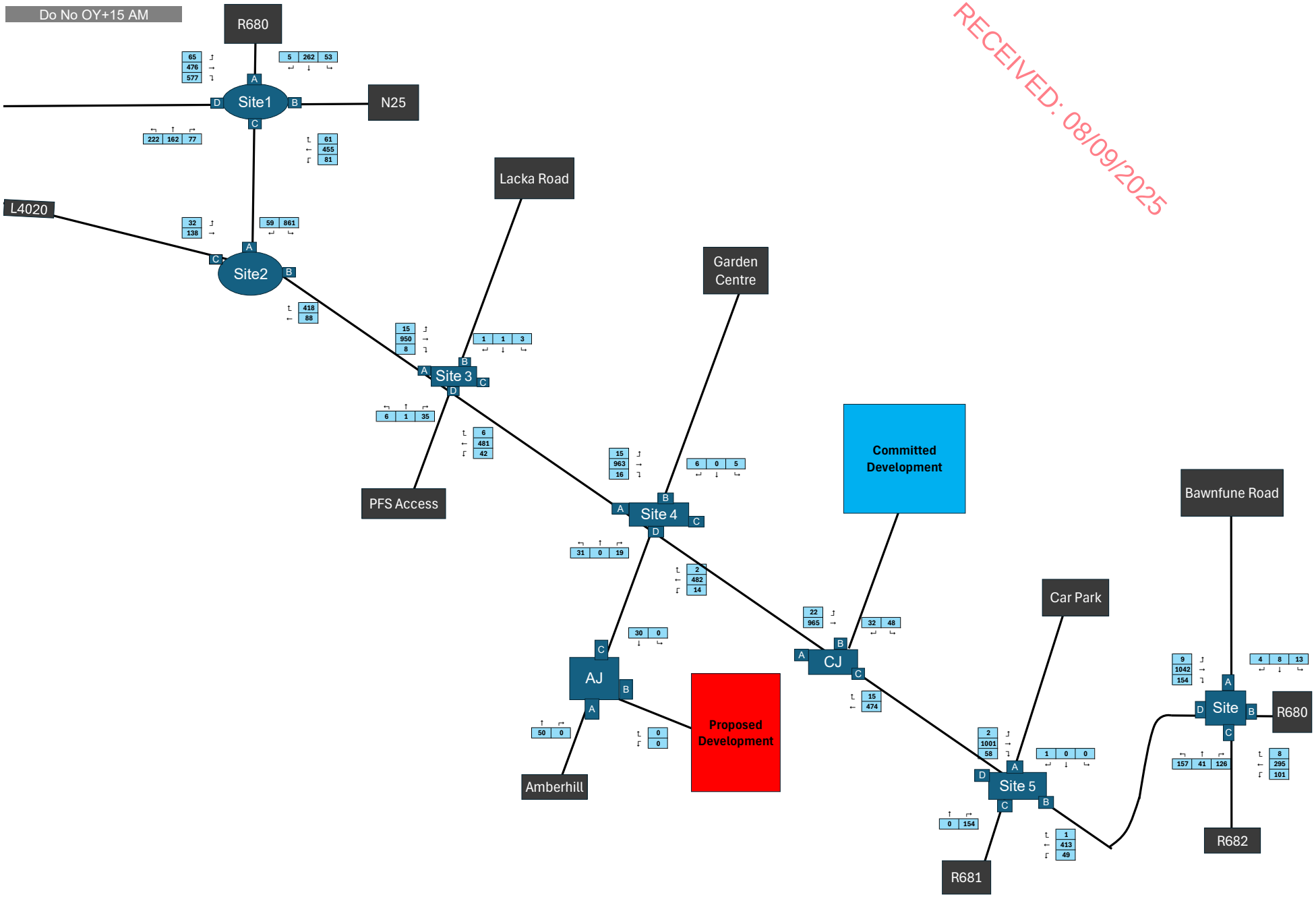
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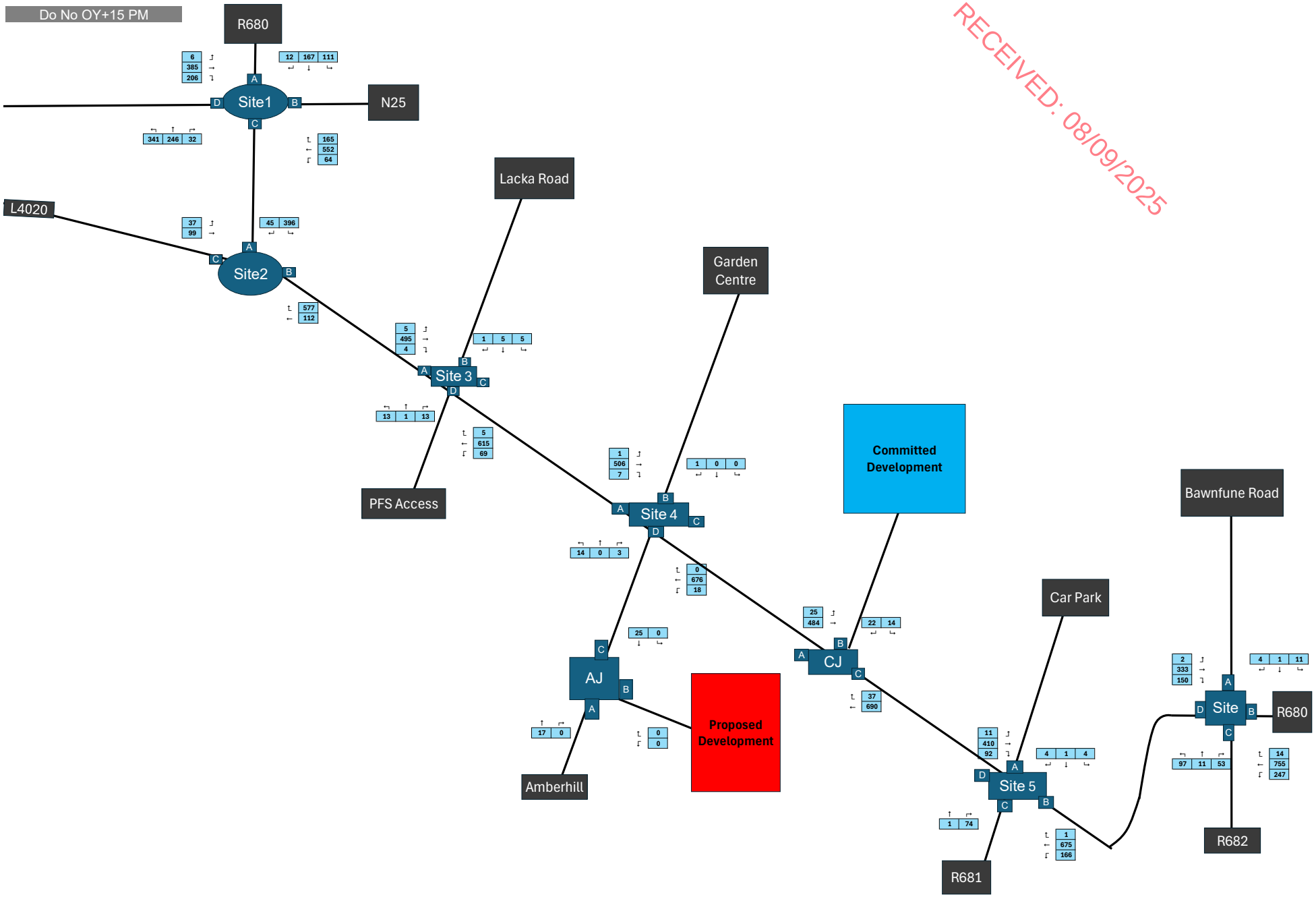
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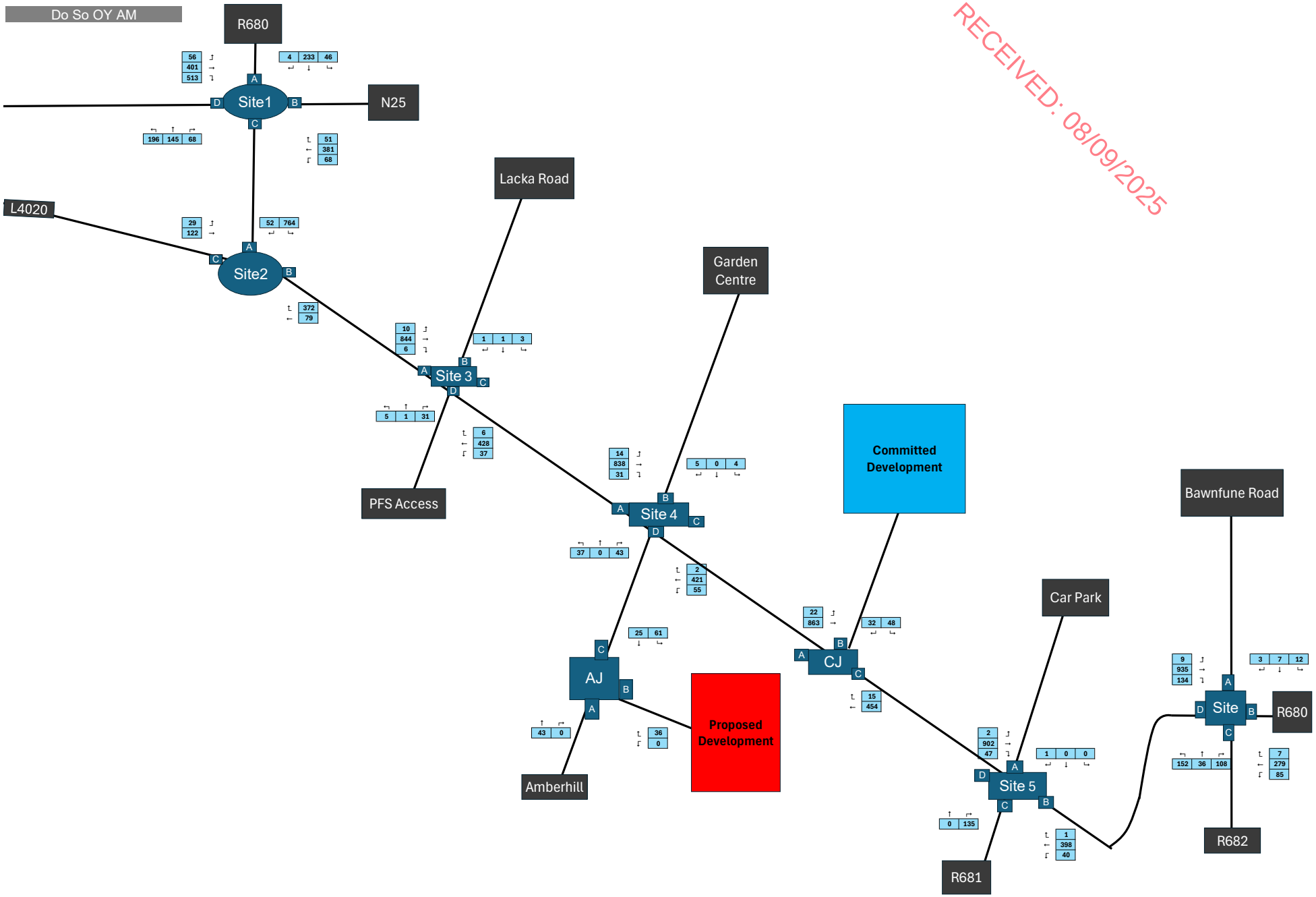
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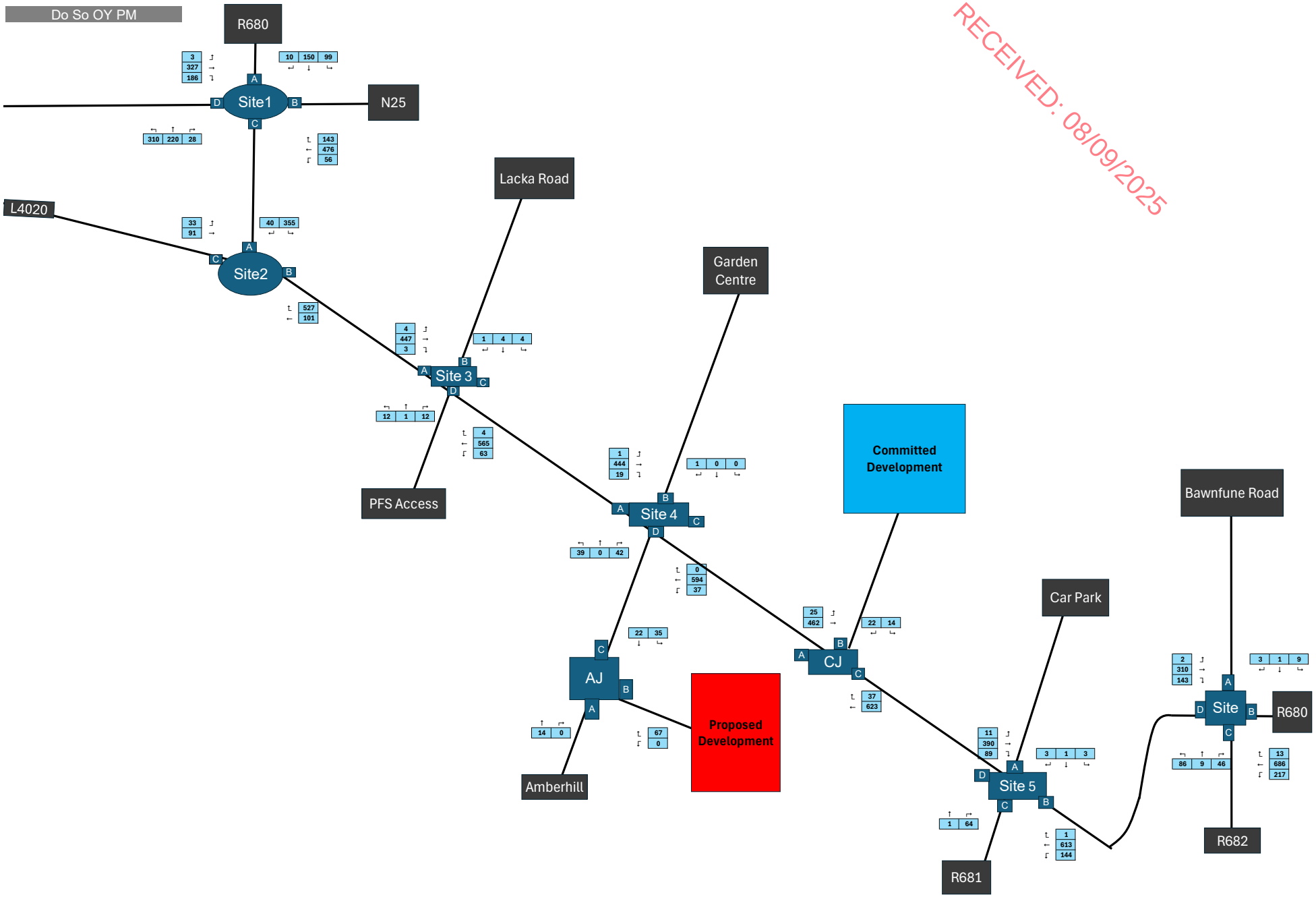
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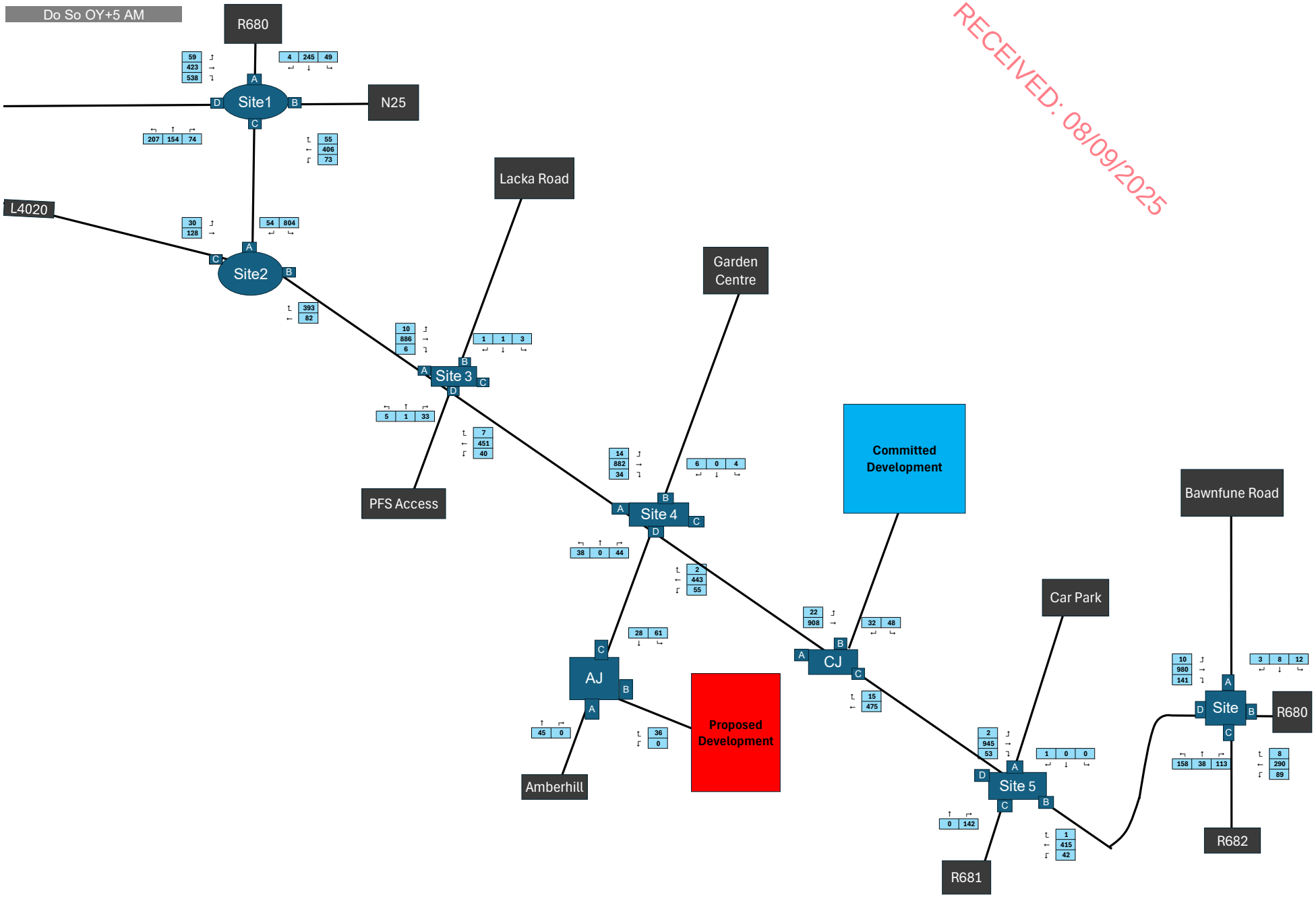
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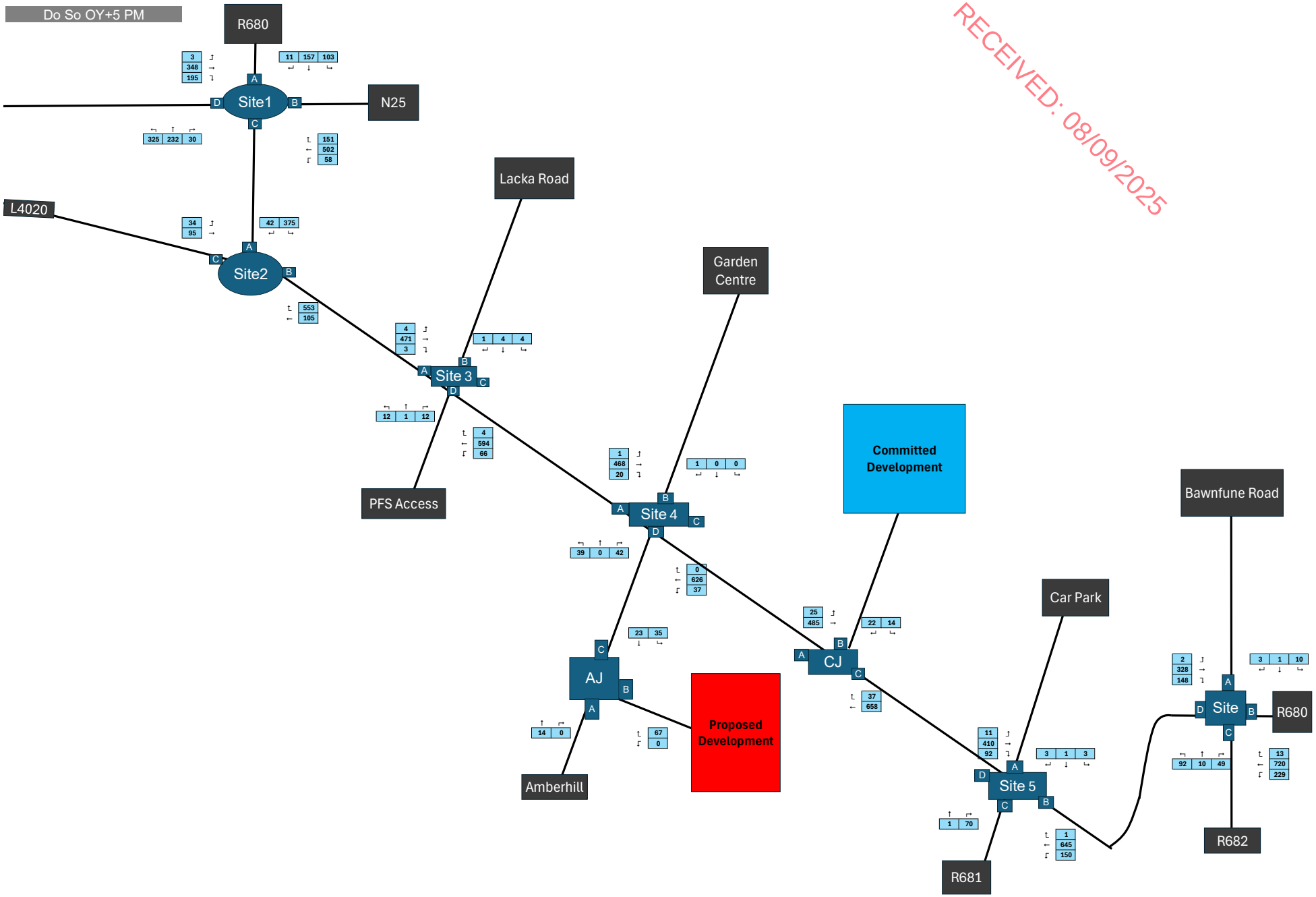
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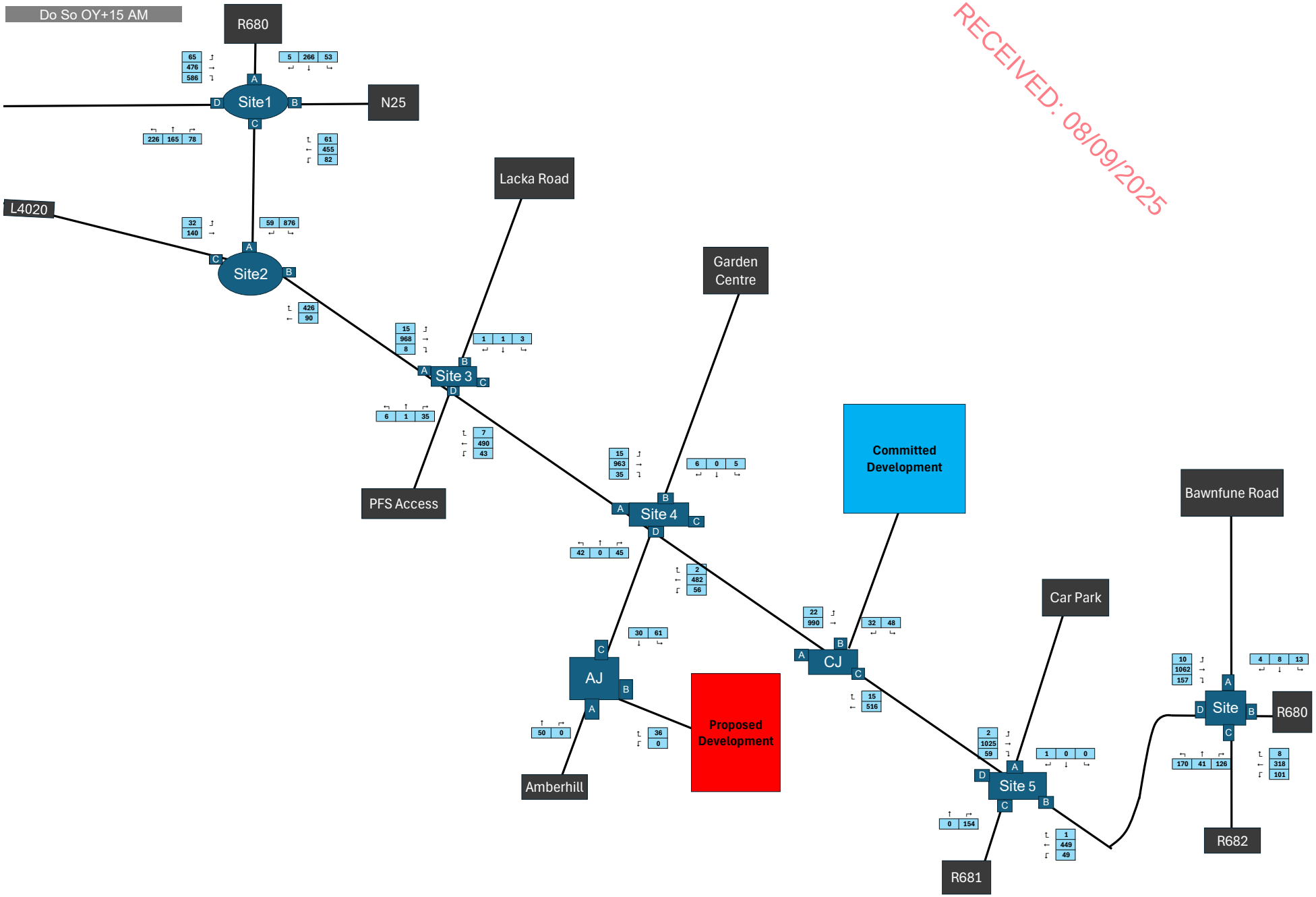
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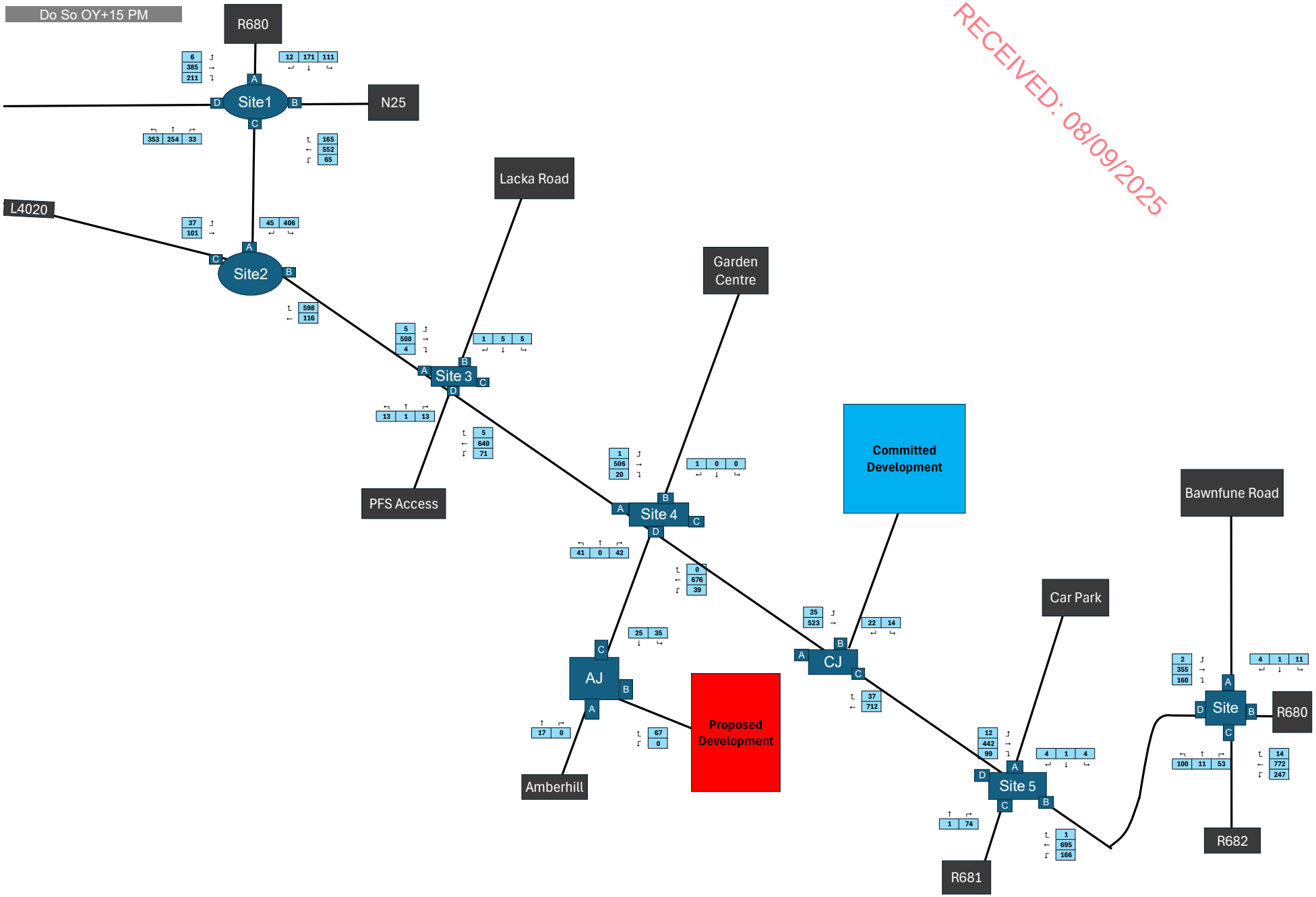
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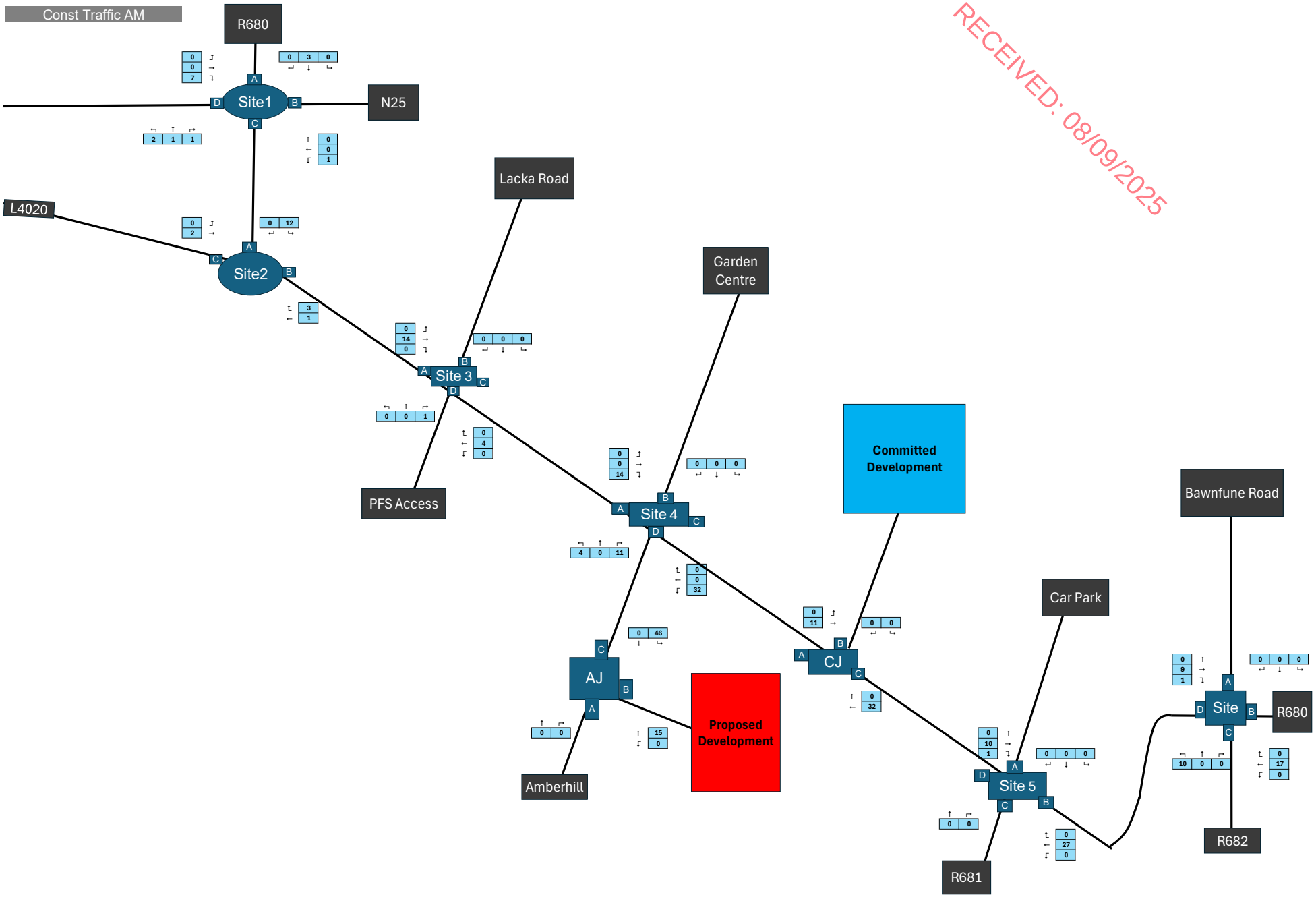
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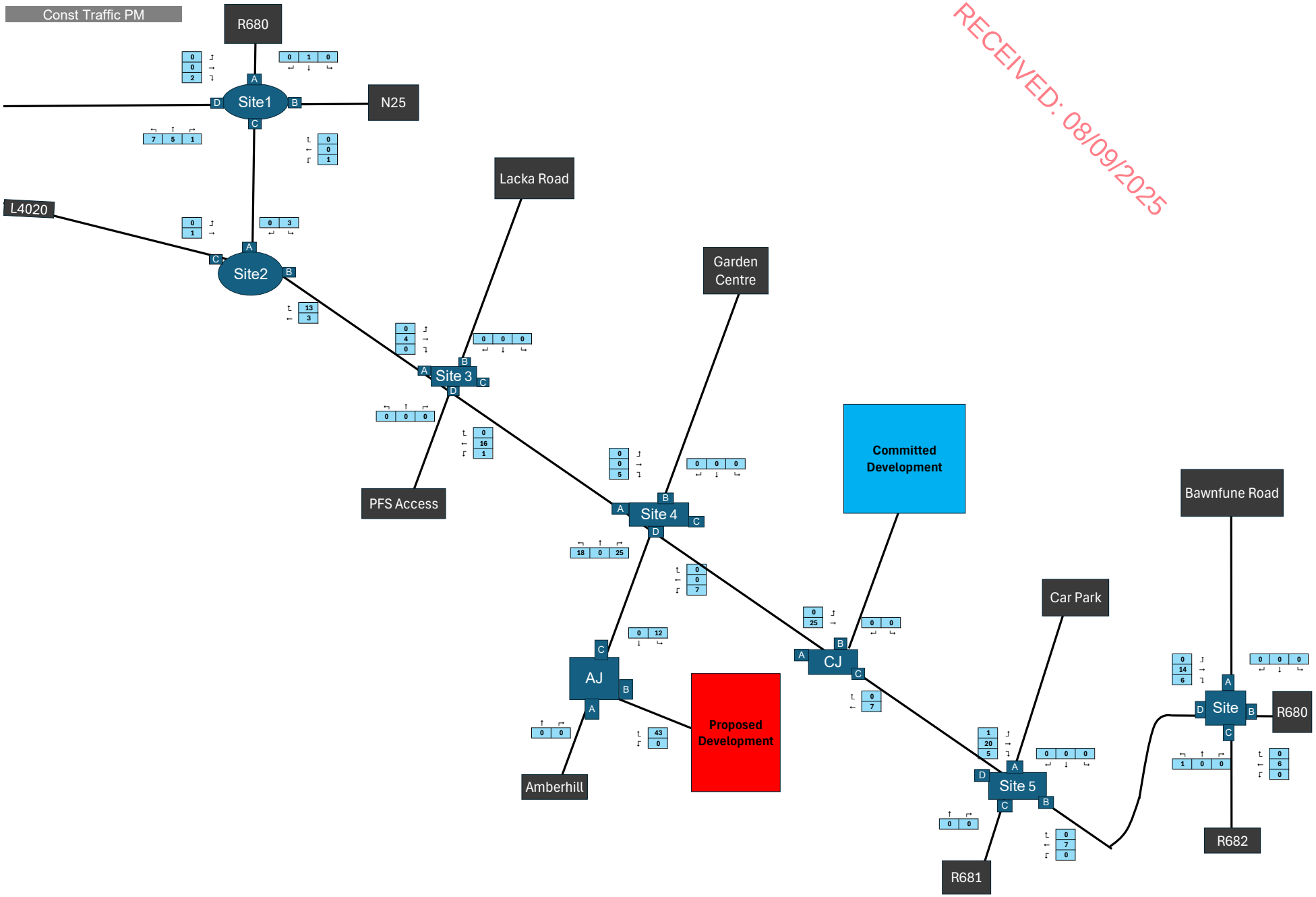
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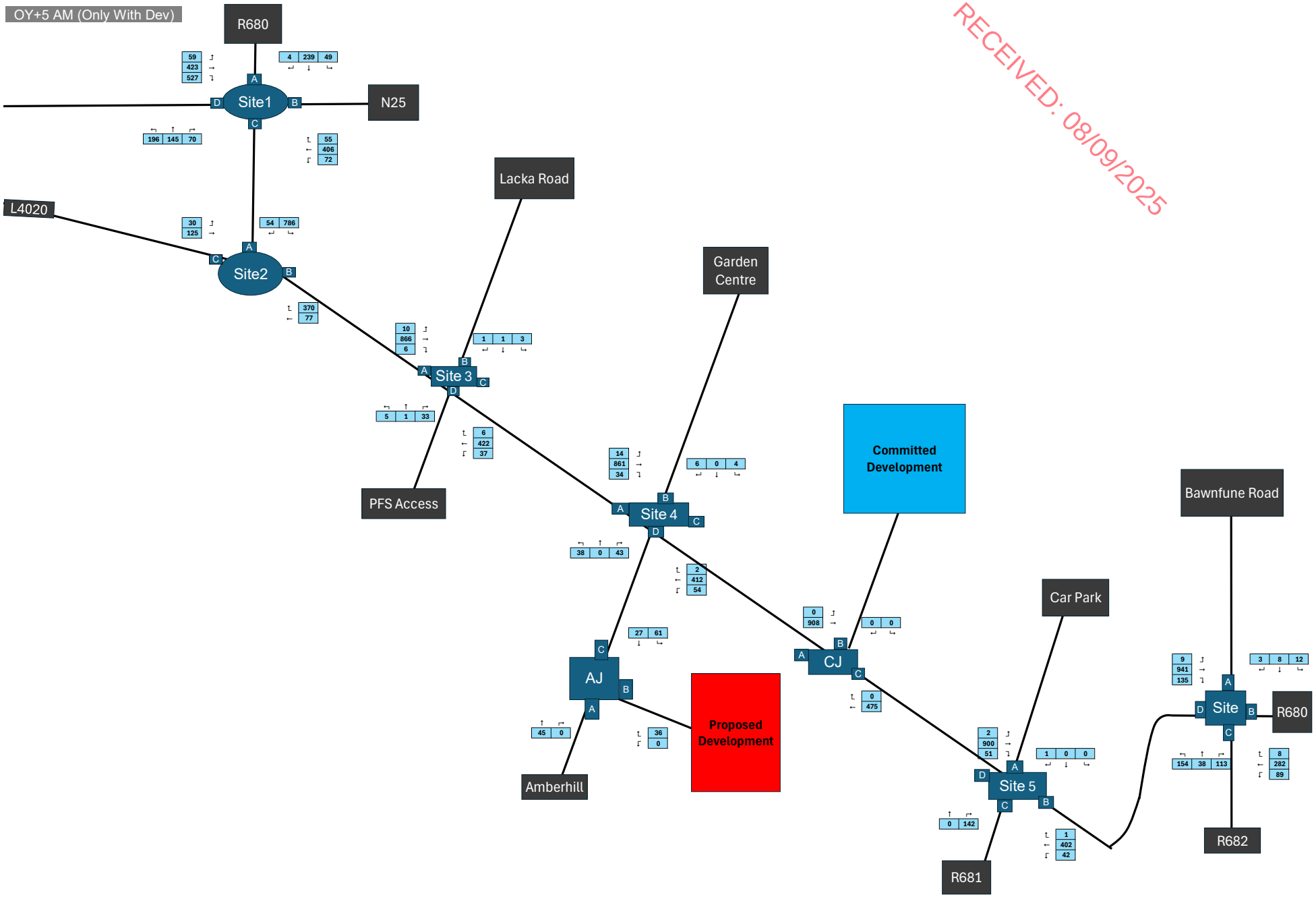
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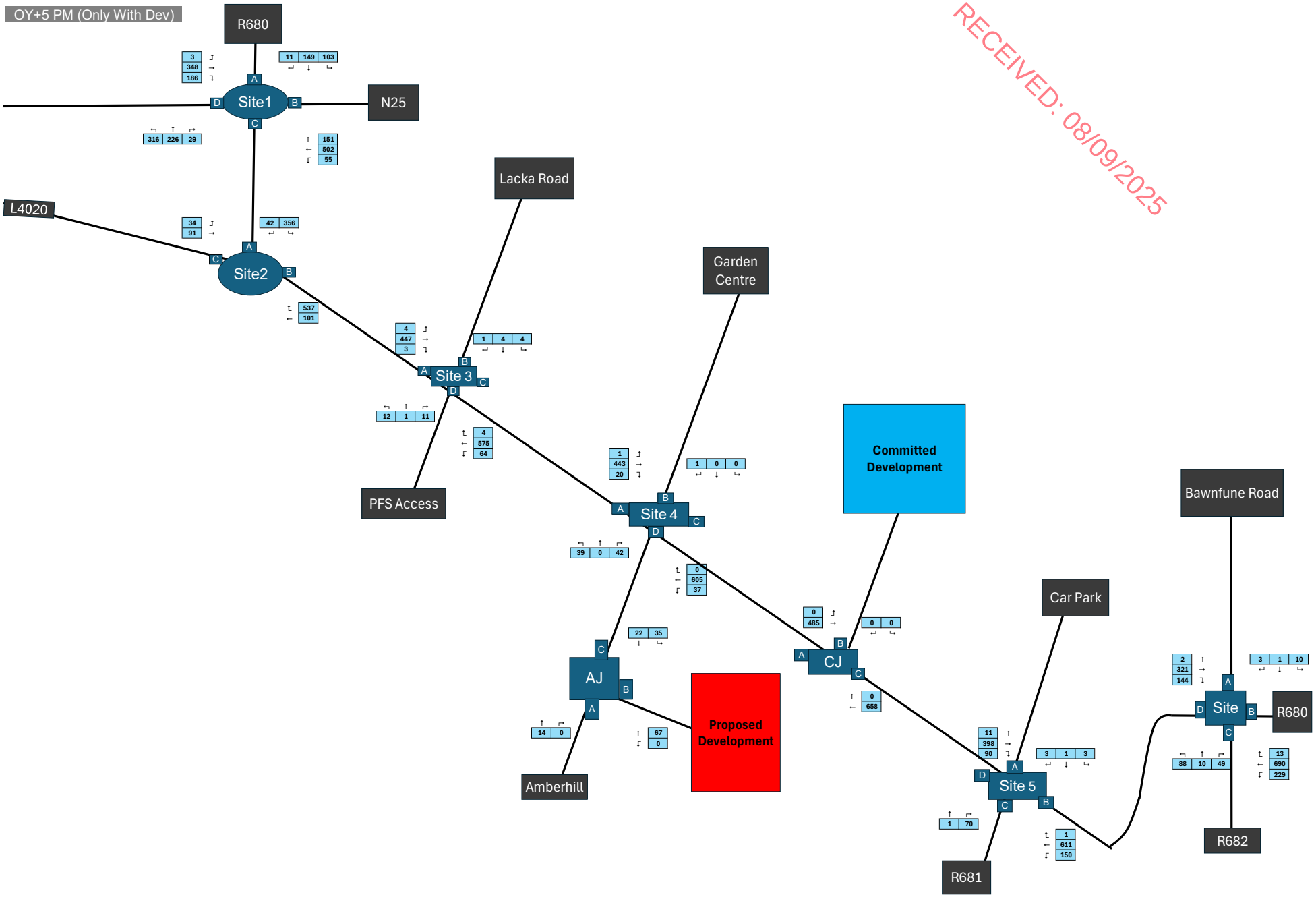
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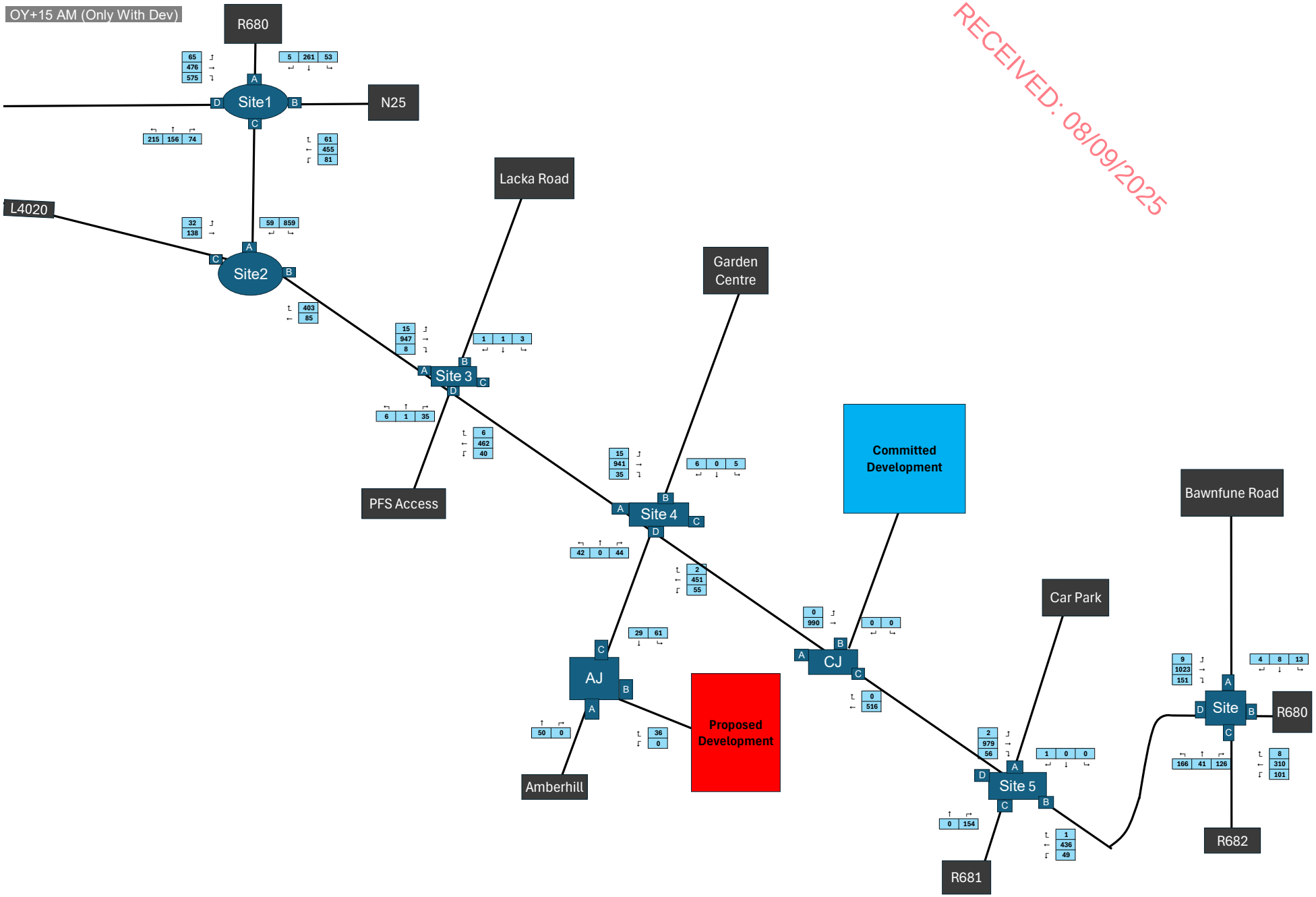
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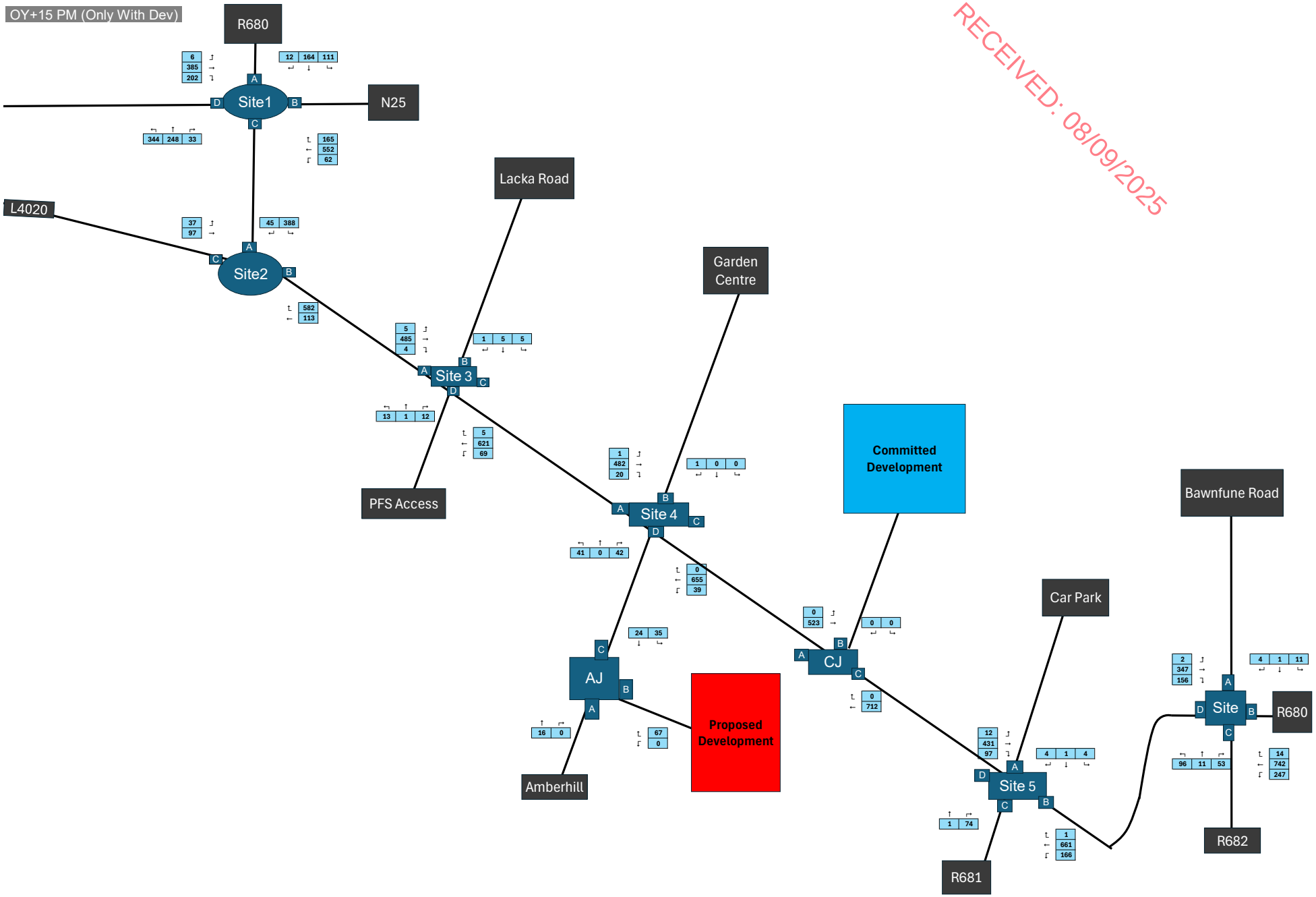
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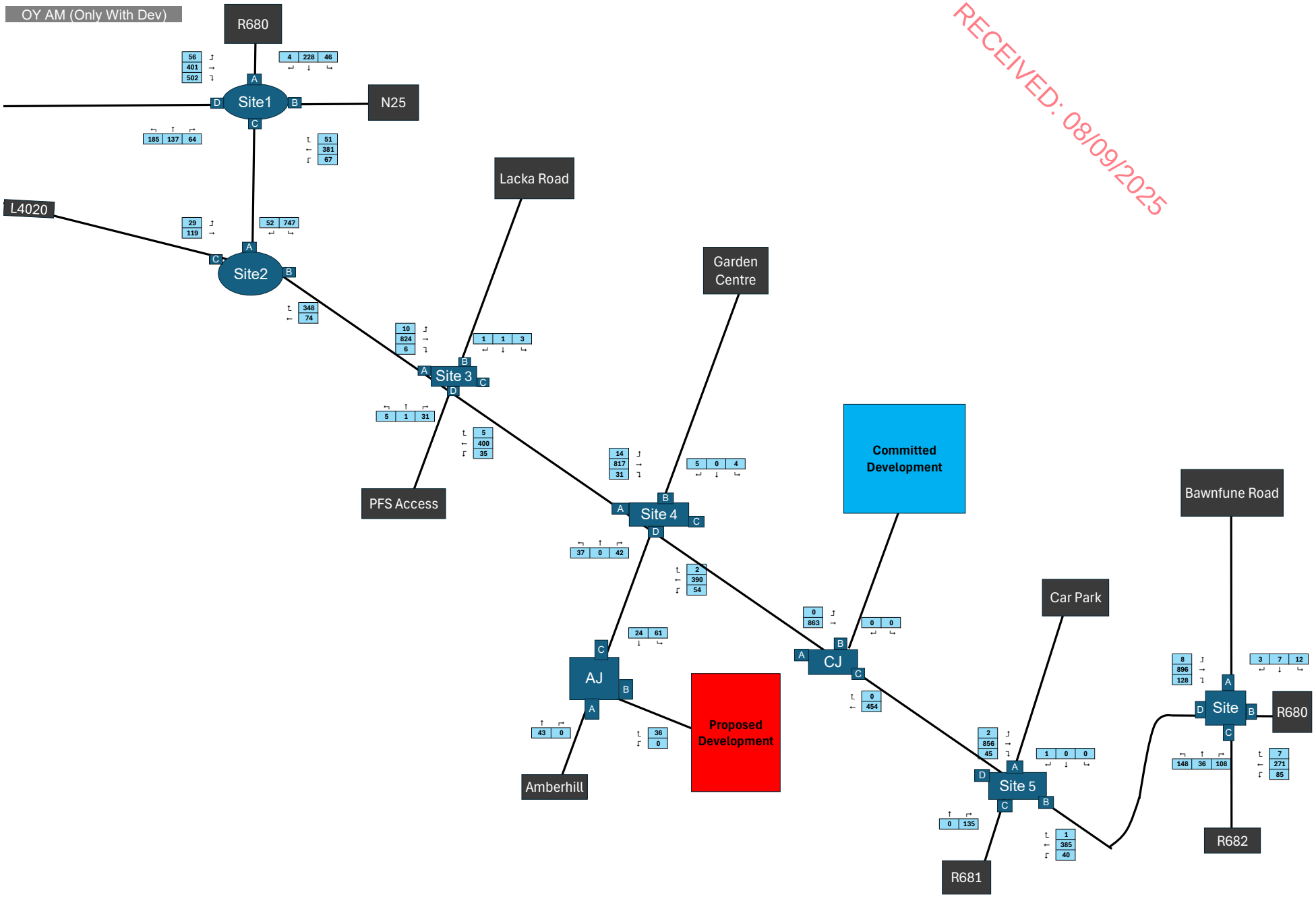
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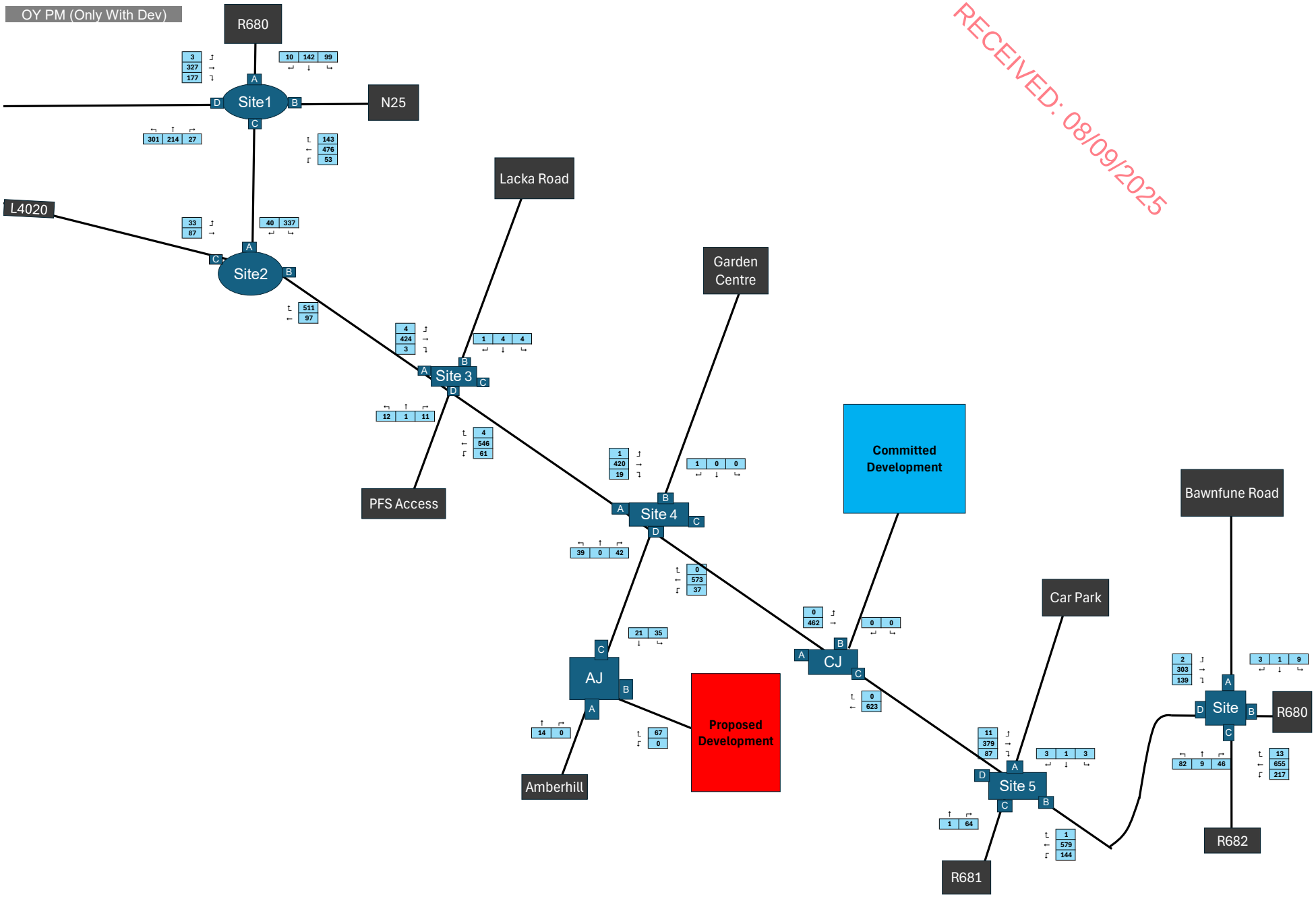
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APPENDIX 13.2

RECEIVED: 08/09/2025

TRICS Data

Atkins Réalis, 2025

Atkins Airside Swords Licence No: 332901

Filtering Summary

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Land Use	03/C	RESIDENTIAL/FLATS PRIVATELY OWNED
Selected Trip Rate Calculation Parameter Range	0.03-3.48 hect AREA	
Actual Trip Rate Calculation Parameter Range	0.19-0.93 hect AREA	
Date Range	Minimum: 01/01/16	Maximum: 05/09/24
Parking Spaces Range	All Surveys Included	
Parking Spaces Per Dwelling Range:	All Surveys Included	
Bedrooms Per Dwelling Range:	All Surveys Included	
Percentage of dwellings privately owned:	All Surveys Included	
Days of the week selected	Tuesday Wednesday Thursday	1 3 1
Main Location Types selected	Edge of Town Neighbourhood Centre (PPS6 Local Centre)	2 3
Inclusion of Servicing Vehicles Counts	Servicing vehicles Included Servicing vehicles Excluded	18 - Selected 2 - Selected
Population within 500m	All Surveys Included	
Population <1 Mile ranges selected	5,001 to 10,000 20,001 to 25,000	1 4
Population <5 Mile ranges selected	50,001 to 75,000 125,001 to 250,000	1 4
Car Ownership <5 Mile ranges selected	0.6 to 1.0 1.1 to 1.5	3 2
PTAL Rating	No PTAL Present	5

Calculation Reference: AUDIT-332901-250403-0426

TRIP RATE CALCULATION SELECTION PARAMETERS:

RECEIVED: 08/09/2025

Land Use : 03 - RESIDENTIAL
Category : C - FLATS PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	HF	HERTFORDSHIRE	3 days
	WS	WEST SUSSEX	1 days
14	LEINSTER		
	LU	LOUTH	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

RECEIVED: 08/09/2025

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Site area
Actual Range: 0.19 to 0.93 (units: hect)
Range Selected by User: 0.03 to 3.48 (units: hect)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/16 to 05/09/24

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Tuesday	1 days
Wednesday	3 days
Thursday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	5 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town	2
Neighbourhood Centre (PPS6 Local Centre)	3

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	5

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	18 days - Selected
Servicing vehicles Excluded	2 days - Selected

Secondary Filtering selection:

Use Class:

C3	5 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

RECEIVED: 08/09/2025

Population within 1 mile:

5,001 to 10,000	1 days
20,001 to 25,000	4 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

50,001 to 75,000	1 days
125,001 to 250,000	4 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	3 days
1.1 to 1.5	2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	3 days
No	2 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	5 days

This data displays the number of selected surveys with PTAL Ratings.

Covid-19 Restrictions	Yes	At least one survey within the selected data set was undertaken at a time of Covid-19 restrictions

LIST OF SITES relevant to selection parameters

RECEIVED: 08/09/2025

Site(1):	HF-03-C-06	Site area:	0.26 hect
Development Name:	BLOCKS OF FLATS	No of Dwellings:	26
Location:	WATFORD	Housing density:	217
Postcode:	WD19 6AE	Total Bedrooms:	45
Main Location Type:	Edge of Town	Survey Date:	08/06/23
Sub-Location Type:	Residential Zone	Survey Day:	Thursday
PTAL:	n/a	Parking Spaces:	36
Site(2):	HF-03-C-07	Site area:	0.65 hect
Development Name:	BLOCKS OF FLATS	No of Dwellings:	84
Location:	WATFORD	Housing density:	247
Postcode:	WD19 7EL	Total Bedrooms:	139
Main Location Type:	Neighbourhood Centre (PPS6 Local Centre)	Survey Date:	07/06/23
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	116
Site(3):	HF-03-C-08	Site area:	0.19 hect
Development Name:	BLOCKS OF FLATS	No of Dwellings:	22
Location:	WATFORD	Housing density:	275
Postcode:	WD19 7NT	Total Bedrooms:	38
Main Location Type:	Edge of Town	Survey Date:	06/06/23
Sub-Location Type:	Residential Zone	Survey Day:	Tuesday
PTAL:	n/a	Parking Spaces:	27
Site(4):	LU-03-C-04	Site area:	0.93 hect
Development Name:	BLOCKS OF FLATS	No of Dwellings:	42
Location:	DROGHEDA	Housing density:	45
Postcode:		Total Bedrooms:	94
Main Location Type:	Neighbourhood Centre (PPS6 Local Centre)	Survey Date:	22/09/21
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	72
Site(5):	WS-03-C-01	Site area:	0.32 hect
Development Name:	BLOCKS OF FLATS	No of Dwellings:	18
Location:	WORTHING	Housing density:	56
Postcode:	BN12 4PB	Total Bedrooms:	36
Main Location Type:	Neighbourhood Centre (PPS6 Local Centre)	Survey Date:	11/05/22
Sub-Location Type:	Residential Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	43

Trip Rates for Key Periods		Trips per 1 hect AREA	
Period	Inbound	Outbound	Total
0800-0900	8.085	16.596	24.681
1700-1800	17.872	7.234	25.106

RECEIVED: 08/09/2025

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 2.05

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	2.553	5	0.47	20.000	5	0.47	22.553
08:00 - 09:00	5	0.47	8.085	5	0.47	16.596	5	0.47	24.681
09:00 - 10:00	5	0.47	11.064	5	0.47	7.234	5	0.47	18.298
10:00 - 11:00	5	0.47	8.085	5	0.47	9.362	5	0.47	17.447
11:00 - 12:00	5	0.47	8.936	5	0.47	9.787	5	0.47	18.723
12:00 - 13:00	5	0.47	9.787	5	0.47	9.787	5	0.47	19.574
13:00 - 14:00	5	0.47	11.489	5	0.47	11.064	5	0.47	22.553
14:00 - 15:00	5	0.47	11.915	5	0.47	10.213	5	0.47	22.128
15:00 - 16:00	5	0.47	17.872	5	0.47	11.064	5	0.47	28.936
16:00 - 17:00	5	0.47	9.362	5	0.47	10.213	5	0.47	19.575
17:00 - 18:00	5	0.47	17.872	5	0.47	7.234	5	0.47	25.106
18:00 - 19:00	5	0.47	11.489	5	0.47	5.532	5	0.47	17.021
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			128.509			128.086			256.595

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

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Parameter summary

Trip rate parameter range selected:	0.19 to 0.93 (units: hect)
Survey date date range:	01/01/16 - 05/09/24
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	3
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

RECEIVED: 08/09/2025

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL TAXIS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
08:00 - 09:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
09:00 - 10:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
10:00 - 11:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
11:00 - 12:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
12:00 - 13:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
13:00 - 14:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
14:00 - 15:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
15:00 - 16:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
16:00 - 17:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
17:00 - 18:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
18:00 - 19:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.408			3.408			6.816

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL OGVS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
08:00 - 09:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
09:00 - 10:00	5	0.47	0.426	5	0.47	0.000	5	0.47	0.426
10:00 - 11:00	5	0.47	1.277	5	0.47	1.277	5	0.47	2.554
11:00 - 12:00	5	0.47	0.000	5	0.47	0.426	5	0.47	0.426
12:00 - 13:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
13:00 - 14:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
14:00 - 15:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
15:00 - 16:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
16:00 - 17:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
17:00 - 18:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
18:00 - 19:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.129			2.129			4.258

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL CYCLISTS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.000	5	0.47	0.426	5	0.47	0.426
08:00 - 09:00	5	0.47	0.000	5	0.47	1.277	5	0.47	1.277
09:00 - 10:00	5	0.47	0.426	5	0.47	0.000	5	0.47	0.426
10:00 - 11:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
11:00 - 12:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
12:00 - 13:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
13:00 - 14:00	5	0.47	0.000	5	0.47	0.426	5	0.47	0.426
14:00 - 15:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
15:00 - 16:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
16:00 - 17:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
17:00 - 18:00	5	0.47	0.851	5	0.47	0.000	5	0.47	0.851
18:00 - 19:00	5	0.47	0.851	5	0.47	1.277	5	0.47	2.128
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.128			3.406			5.534

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	2.128	5	0.47	26.383	5	0.47	28.511
08:00 - 09:00	5	0.47	8.511	5	0.47	25.106	5	0.47	33.617
09:00 - 10:00	5	0.47	12.340	5	0.47	8.085	5	0.47	20.425
10:00 - 11:00	5	0.47	9.362	5	0.47	11.915	5	0.47	21.277
11:00 - 12:00	5	0.47	12.340	5	0.47	11.915	5	0.47	24.255
12:00 - 13:00	5	0.47	11.489	5	0.47	10.638	5	0.47	22.127
13:00 - 14:00	5	0.47	14.043	5	0.47	13.617	5	0.47	27.660
14:00 - 15:00	5	0.47	15.745	5	0.47	13.617	5	0.47	29.362
15:00 - 16:00	5	0.47	23.404	5	0.47	12.340	5	0.47	35.744
16:00 - 17:00	5	0.47	15.745	5	0.47	13.617	5	0.47	29.362
17:00 - 18:00	5	0.47	23.830	5	0.47	8.511	5	0.47	32.341
18:00 - 19:00	5	0.47	16.170	5	0.47	6.383	5	0.47	22.553
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			165.107			162.127			327.234

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL PEDESTRIANS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.426	5	0.47	7.234	5	0.47	7.660
08:00 - 09:00	5	0.47	5.957	5	0.47	11.915	5	0.47	17.872
09:00 - 10:00	5	0.47	4.681	5	0.47	7.234	5	0.47	11.915
10:00 - 11:00	5	0.47	3.830	5	0.47	5.957	5	0.47	9.787
11:00 - 12:00	5	0.47	2.979	5	0.47	8.511	5	0.47	11.490
12:00 - 13:00	5	0.47	4.255	5	0.47	6.383	5	0.47	10.638
13:00 - 14:00	5	0.47	7.234	5	0.47	6.383	5	0.47	13.617
14:00 - 15:00	5	0.47	9.787	5	0.47	2.979	5	0.47	12.766
15:00 - 16:00	5	0.47	13.191	5	0.47	4.255	5	0.47	17.446
16:00 - 17:00	5	0.47	3.404	5	0.47	5.532	5	0.47	8.936
17:00 - 18:00	5	0.47	6.809	5	0.47	3.830	5	0.47	10.639
18:00 - 19:00	5	0.47	6.809	5	0.47	3.830	5	0.47	10.639
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			69.362			74.043			143.405

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
08:00 - 09:00	5	0.47	0.000	5	0.47	1.277	5	0.47	1.277
09:00 - 10:00	5	0.47	0.000	5	0.47	0.851	5	0.47	0.851
10:00 - 11:00	5	0.47	0.426	5	0.47	0.851	5	0.47	1.277
11:00 - 12:00	5	0.47	0.000	5	0.47	0.851	5	0.47	0.851
12:00 - 13:00	5	0.47	0.000	5	0.47	0.426	5	0.47	0.426
13:00 - 14:00	5	0.47	0.000	5	0.47	0.426	5	0.47	0.426
14:00 - 15:00	5	0.47	0.851	5	0.47	0.000	5	0.47	0.851
15:00 - 16:00	5	0.47	0.426	5	0.47	0.000	5	0.47	0.426
16:00 - 17:00	5	0.47	0.426	5	0.47	0.000	5	0.47	0.426
17:00 - 18:00	5	0.47	0.851	5	0.47	0.000	5	0.47	0.851
18:00 - 19:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.406			5.108			8.514

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL TOTAL RAIL PASSENGERS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.000	5	0.47	5.957	5	0.47	5.957
08:00 - 09:00	5	0.47	0.000	5	0.47	5.957	5	0.47	5.957
09:00 - 10:00	5	0.47	0.426	5	0.47	2.979	5	0.47	3.405
10:00 - 11:00	5	0.47	1.702	5	0.47	0.426	5	0.47	2.128
11:00 - 12:00	5	0.47	0.851	5	0.47	1.277	5	0.47	2.128
12:00 - 13:00	5	0.47	0.426	5	0.47	2.979	5	0.47	3.405
13:00 - 14:00	5	0.47	0.851	5	0.47	2.128	5	0.47	2.979
14:00 - 15:00	5	0.47	0.426	5	0.47	0.851	5	0.47	1.277
15:00 - 16:00	5	0.47	1.277	5	0.47	0.851	5	0.47	2.128
16:00 - 17:00	5	0.47	3.830	5	0.47	0.000	5	0.47	3.830
17:00 - 18:00	5	0.47	2.979	5	0.47	1.277	5	0.47	4.256
18:00 - 19:00	5	0.47	2.553	5	0.47	0.851	5	0.47	3.404
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			15.321			25.533			40.854

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.426	5	0.47	6.383	5	0.47	6.809
08:00 - 09:00	5	0.47	0.000	5	0.47	7.234	5	0.47	7.234
09:00 - 10:00	5	0.47	0.426	5	0.47	3.830	5	0.47	4.256
10:00 - 11:00	5	0.47	2.128	5	0.47	1.277	5	0.47	3.405
11:00 - 12:00	5	0.47	0.851	5	0.47	2.128	5	0.47	2.979
12:00 - 13:00	5	0.47	0.426	5	0.47	3.404	5	0.47	3.830
13:00 - 14:00	5	0.47	0.851	5	0.47	2.553	5	0.47	3.404
14:00 - 15:00	5	0.47	1.277	5	0.47	0.851	5	0.47	2.128
15:00 - 16:00	5	0.47	1.702	5	0.47	0.851	5	0.47	2.553
16:00 - 17:00	5	0.47	4.255	5	0.47	0.000	5	0.47	4.255
17:00 - 18:00	5	0.47	3.830	5	0.47	1.277	5	0.47	5.107
18:00 - 19:00	5	0.47	2.553	5	0.47	0.851	5	0.47	3.404
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			18.725			30.639			49.364

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 2.05

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	2.979	5	0.47	40.426	5	0.47	43.405
08:00 - 09:00	5	0.47	14.468	5	0.47	45.532	5	0.47	60.000
09:00 - 10:00	5	0.47	17.872	5	0.47	19.149	5	0.47	37.021
10:00 - 11:00	5	0.47	15.319	5	0.47	19.149	5	0.47	34.468
11:00 - 12:00	5	0.47	16.170	5	0.47	22.553	5	0.47	38.723
12:00 - 13:00	5	0.47	16.170	5	0.47	20.426	5	0.47	36.596
13:00 - 14:00	5	0.47	22.128	5	0.47	22.979	5	0.47	45.107
14:00 - 15:00	5	0.47	26.809	5	0.47	17.447	5	0.47	44.256
15:00 - 16:00	5	0.47	38.298	5	0.47	17.447	5	0.47	55.745
16:00 - 17:00	5	0.47	23.404	5	0.47	19.149	5	0.47	42.553
17:00 - 18:00	5	0.47	35.319	5	0.47	13.617	5	0.47	48.936
18:00 - 19:00	5	0.47	26.383	5	0.47	12.340	5	0.47	38.723
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			255.319			270.214			525.533

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL CARS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	1.702	5	0.47	17.872	5	0.47	19.574
08:00 - 09:00	5	0.47	7.234	5	0.47	15.745	5	0.47	22.979
09:00 - 10:00	5	0.47	8.936	5	0.47	6.809	5	0.47	15.745
10:00 - 11:00	5	0.47	5.957	5	0.47	6.383	5	0.47	12.340
11:00 - 12:00	5	0.47	7.660	5	0.47	7.234	5	0.47	14.894
12:00 - 13:00	5	0.47	8.085	5	0.47	7.660	5	0.47	15.745
13:00 - 14:00	5	0.47	10.213	5	0.47	10.213	5	0.47	20.426
14:00 - 15:00	5	0.47	9.787	5	0.47	8.085	5	0.47	17.872
15:00 - 16:00	5	0.47	14.894	5	0.47	8.085	5	0.47	22.979
16:00 - 17:00	5	0.47	8.511	5	0.47	8.936	5	0.47	17.447
17:00 - 18:00	5	0.47	16.596	5	0.47	7.234	5	0.47	23.830
18:00 - 19:00	5	0.47	10.638	5	0.47	5.106	5	0.47	15.744
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			110.213			109.362			219.575

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL LGVS
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.426	5	0.47	1.702	5	0.47	2.128
08:00 - 09:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
09:00 - 10:00	5	0.47	1.277	5	0.47	0.000	5	0.47	1.277
10:00 - 11:00	5	0.47	0.851	5	0.47	1.702	5	0.47	2.553
11:00 - 12:00	5	0.47	0.851	5	0.47	1.277	5	0.47	2.128
12:00 - 13:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
13:00 - 14:00	5	0.47	0.426	5	0.47	0.000	5	0.47	0.426
14:00 - 15:00	5	0.47	1.702	5	0.47	1.702	5	0.47	3.404
15:00 - 16:00	5	0.47	2.128	5	0.47	2.128	5	0.47	4.256
16:00 - 17:00	5	0.47	0.426	5	0.47	0.851	5	0.47	1.277
17:00 - 18:00	5	0.47	1.277	5	0.47	0.000	5	0.47	1.277
18:00 - 19:00	5	0.47	0.851	5	0.47	0.426	5	0.47	1.277
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			11.067			10.640			21.707

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRIP RATE for Land Use 03 - RESIDENTIAL/C - FLATS PRIVATELY OWNED
MULTI-MODAL MOTOR CYCLES
Calculation factor: 1 hect
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
08:00 - 09:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
09:00 - 10:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
10:00 - 11:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
11:00 - 12:00	5	0.47	0.000	5	0.47	0.426	5	0.47	0.426
12:00 - 13:00	5	0.47	0.426	5	0.47	0.851	5	0.47	1.277
13:00 - 14:00	5	0.47	0.851	5	0.47	0.851	5	0.47	1.702
14:00 - 15:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
15:00 - 16:00	5	0.47	0.426	5	0.47	0.426	5	0.47	0.852
16:00 - 17:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
17:00 - 18:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
18:00 - 19:00	5	0.47	0.000	5	0.47	0.000	5	0.47	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.703			2.554			4.257

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

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TRICS 7.11.3
Trip Rate P Gross floor area

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Filtering Summary
Land Use 06/K HOTEL FOOD & DRINK/CAFE

Selected Tr 38-325 sqm GFA

Actual Trip 60-320 sqm GFA

Date Range Minimum: (Maximum: 20/09/23

Parking Spa All Surveys Included

Days of the Tuesday 1
Wednesday 1
Thursday 1

Main Locati Town Centr 3

Inclusion o Servicing ve 12 - Selected
Servicing ve 1 - Selected

Population All Surveys Included

Population 5 001 to 10 000 2
15 001 to 20 000 1

Population 5 001 to 25 000 1
25 001 to 50 000 1
50 001 to 75 000 1

Car Owners 0.6 to 1.0 1
1.1 to 1.5 2

PTAL Rating No PTAL Pr 3

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 06 - HOTEL FOOD & DRINK
Category K - CAFE
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:
05 EAST MIDLANDS
LN LINCOLNSI 1 days
14 LEINSTER
WC WICKLOW 1 days
WX WEXFORD 1 days
This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Gross floor area
Actual Ran 60 to 320 (units: sqm)
Range Sele 38 to 325 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/16 to 20/09/23

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Tuesday 1 days
Wednesday 1 days
Thursday 1 days

This data displays the number of selected surveys by day of the week.

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Selected survey types:
Manual cou 3 days
Directional 0 days
This data di the total ac whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Centr 3
Edge of Tov 0
Suburban A 0
Edge of Tov 0
Neighbourh 0
Free Standi 0
Not Known 0
This data di Edge of To Suburban A Neighbourh Edge of To Town Centre and Not Known.

Selected Location Sub Categories:
Industrial Z 0
Commercia 0
Developme 0
Residential 0
Retail Zone 0
Built-Up Zo 1
Village 0
Out of Towr 0
High Street 1
No Sub Cat 1
This data di Industrial Z Developme Residentia Retail Zone Built-Up Zc Village Out of Tow High Street and No Sub Category.

Secondary Filtering selection:

Use Class:
E(b) 3 days
This data di which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:
5,001 to 10 2 days
15,001 to 2 1 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
5,001 to 25 1 days
25,001 to 5 1 days
50,001 to 7 1 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 1 days
1.1 to 1.5 2 days
This data di within a radius of 5-miles of selected survey sites.

Travel Plan:
No 3 days
This data di and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:
No PTAL Pr 3 days
This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters
Site(1): LN-06-K-01 Gross floor 190 sqm
Developme CAFÉ & TEA Number of 42
Location: STAMFORD

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Postcode:	PE9 2AJ	No of Empl	10
Main Locati	Town Centr	Survey Date	########
Sub-Locatio	Built-Up Zo	Survey Day	Tuesday
PTAL:	n/a	Parking Spaces:	
Site(2):	WC-06-K-0	Gross floor	320 sqm
Developme	CAFÉ	Number of	50
Location:	WICKLOW		
Postcode:	A67 EP95	No of Empl	9
Main Locati	Town Centr	Survey Date	########
Sub-Locatio	High Street	Survey Day	Wednesday
PTAL:	n/a	Parking Spaces:	
Site(3):	WX-06-K-0	Gross floor	60 sqm
Developme	CAFÉ	Number of	26
Location:	WEXFORD		
Postcode:	Y35 Y52K	No of Empl	6
Main Locati	Town Centr	Survey Date	########
Sub-Locatio	No Sub Cat	Survey Day	Thursday
PTAL:	n/a	Parking Spaces:	

This sectior it displays the selecte the day of t and whether the survey was a manual classified count or an ATC count.

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: TOTAL VEHICLES

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	1.875	1	320	1.25	1	320	3.125
08:00-09:0	2	255	1.373	2	255	0.98	2	255	2.353
09:00-10:0	3	190	4.386	3	190	3.509	3	190	7.895
10:00-11:0	3	190	5.088	3	190	5.439	3	190	10.527
11:00-12:0	3	190	5.263	3	190	4.737	3	190	10
12:00-13:0	3	190	5.614	3	190	5.439	3	190	11.053
13:00-14:0	3	190	6.491	3	190	6.14	3	190	12.631
14:00-15:0	3	190	5.088	3	190	5.789	3	190	10.877
15:00-16:0	3	190	3.684	3	190	3.86	3	190	7.544
16:00-17:0	3	190	2.456	3	190	2.807	3	190	5.263
17:00-18:0	2	190	2.105	2	190	2.895	2	190	5
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			43.423			42.845			86.268

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: TAXIS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									

RECEIVED: 08/09/2025

06:00-07:00									
07:00-08:0	1	320	0	1	320	0	1	320	0
08:00-09:0	2	255	0	2	255	0	2	255	0
09:00-10:0	3	190	0	3	190	0	3	190	0
10:00-11:0	3	190	0.175	3	190	0.175	3	190	0.35
11:00-12:0	3	190	0.175	3	190	0.175	3	190	0.35
12:00-13:0	3	190	0	3	190	0	3	190	0
13:00-14:0	3	190	0.175	3	190	0.175	3	190	0.35
14:00-15:0	3	190	0.175	3	190	0.175	3	190	0.35
15:00-16:0	3	190	0	3	190	0	3	190	0
16:00-17:0	3	190	0	3	190	0	3	190	0
17:00-18:0	2	190	0	2	190	0	2	190	0
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.7			0.7			1.4

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: OGVS

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0.313	1	320	0.313	1	320	0.624
08:00-09:0	2	255	0	2	255	0	2	255	0
09:00-10:0	3	190	0.175	3	190	0.175	3	190	0.35
10:00-11:0	3	190	0	3	190	0	3	190	0
11:00-12:0	3	190	0	3	190	0	3	190	0
12:00-13:0	3	190	0	3	190	0	3	190	0
13:00-14:0	3	190	0	3	190	0	3	190	0
14:00-15:0	3	190	0.175	3	190	0.175	3	190	0.35
15:00-16:0	3	190	0	3	190	0	3	190	0
16:00-17:0	3	190	0	3	190	0	3	190	0
17:00-18:0	2	190	0	2	190	0	2	190	0
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.662			0.662			1.324

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: CYCLISTS

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0	1	320	0	1	320	0

08:00-09:0	2	255	0	2	255	0	2	255	0
09:00-10:0	3	190	0.175	3	190	0.175	3	190	0.35
10:00-11:0	3	190	0	3	190	0	3	190	0
11:00-12:0	3	190	0	3	190	0	3	190	0
12:00-13:0	3	190	0.351	3	190	0.175	3	190	0.526
13:00-14:0	3	190	0	3	190	0.175	3	190	0.175
14:00-15:0	3	190	0	3	190	0	3	190	0
15:00-16:0	3	190	0	3	190	0	3	190	0
16:00-17:0	3	190	0	3	190	0	3	190	0
17:00-18:0	2	190	0	2	190	0	2	190	0
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.526			0.525			1.051

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TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: VEHICLE OCCUPANTS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0.625	1	320	0.313	1	320	0.937
08:00-09:0	2	255	1.765	2	255	0.98	2	255	2.745
09:00-10:0	3	190	5.614	3	190	4.035	3	190	9.649
10:00-11:0	3	190	6.842	3	190	7.193	3	190	14.035
11:00-12:0	3	190	7.018	3	190	6.491	3	190	13.509
12:00-13:0	3	190	7.544	3	190	7.368	3	190	14.912
13:00-14:0	3	190	10	3	190	9.649	3	190	19.649
14:00-15:0	3	190	6.491	3	190	8.07	3	190	14.561
15:00-16:0	3	190	4.386	3	190	4.737	3	190	9.123
16:00-17:0	3	190	2.632	3	190	2.982	3	190	5.614
17:00-18:0	2	190	2.105	2	190	3.158	2	190	5.263
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			55.022			54.975			109.997

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: PEDESTRIANS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0.625	1	320	0.625	1	320	1.25
08:00-09:0	2	255	0.784	2	255	0.392	2	255	1.176
09:00-10:0	3	190	5.789	3	190	3.684	3	190	9.473

10:00-11:0	3	190	7.895	3	190	6.842	3	190	14.737
11:00-12:0	3	190	6.842	3	190	7.018	3	190	13.86
12:00-13:0	3	190	9.649	3	190	7.368	3	190	17.017
13:00-14:0	3	190	10.175	3	190	12.105	3	190	22.28
14:00-15:0	3	190	5.439	3	190	6.842	3	190	12.281
15:00-16:0	3	190	5.789	3	190	5.965	3	190	11.754
16:00-17:0	3	190	3.86	3	190	5.088	3	190	8.948
17:00-18:0	2	190	1.842	2	190	2.895	2	190	4.737
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			58.689			58.824			117.513

RECEIVED: 08/09/2025

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: BUS/TRAM PASSENGERS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0	1	320	0	1	320	0
08:00-09:0	2	255	0.196	2	255	0	2	255	0.196
09:00-10:0	3	190	0.877	3	190	0.351	3	190	1.228
10:00-11:0	3	190	0.526	3	190	0.351	3	190	0.877
11:00-12:0	3	190	0.351	3	190	0	3	190	0.351
12:00-13:0	3	190	0.526	3	190	1.053	3	190	1.579
13:00-14:0	3	190	0	3	190	0.351	3	190	0.351
14:00-15:0	3	190	0.175	3	190	0.175	3	190	0.35
15:00-16:0	3	190	0.175	3	190	0	3	190	0.175
16:00-17:0	3	190	0	3	190	0.175	3	190	0.175
17:00-18:0	2	190	0	2	190	0	2	190	0
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			2.826			2.456			5.282

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: TOTAL RAIL PASSENGERS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0	1	320	0	1	320	0
08:00-09:0	2	255	0	2	255	0	2	255	0
09:00-10:0	3	190	0	3	190	0.526	3	190	0.526
10:00-11:0	3	190	0	3	190	0	3	190	0
11:00-12:0	3	190	0	3	190	0	3	190	0

12:00-13:0	3	190	0	3	190	0	3	190	0
13:00-14:0	3	190	0	3	190	0	3	190	0
14:00-15:0	3	190	0	3	190	0	3	190	0
15:00-16:0	3	190	0	3	190	0	3	190	0
16:00-17:0	3	190	0	3	190	0	3	190	0
17:00-18:0	2	190	0	2	190	0	2	190	0
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0			0.526			0.526

RECEIVED: 08/09/2025

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: PUBLIC TRANSPORT USERS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0	1	320	0	1	320	0
08:00-09:0	2	255	0.196	2	255	0	2	255	0.196
09:00-10:0	3	190	0.877	3	190	0.877	3	190	1.754
10:00-11:0	3	190	0.526	3	190	0.351	3	190	0.877
11:00-12:0	3	190	0.351	3	190	0	3	190	0.351
12:00-13:0	3	190	0.526	3	190	1.053	3	190	1.579
13:00-14:0	3	190	0	3	190	0.351	3	190	0.351
14:00-15:0	3	190	0.175	3	190	0.175	3	190	0.35
15:00-16:0	3	190	0.175	3	190	0	3	190	0.175
16:00-17:0	3	190	0	3	190	0.175	3	190	0.175
17:00-18:0	2	190	0	2	190	0	2	190	0
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			2.826			2.982			5.808

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: TOTAL PEOPLE

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	1.25	1	320	0.938	1	320	2.188
08:00-09:0	2	255	2.745	2	255	1.373	2	255	4.118
09:00-10:0	3	190	12.456	3	190	8.772	3	190	21.228
10:00-11:0	3	190	15.263	3	190	14.386	3	190	29.649
11:00-12:0	3	190	14.211	3	190	13.509	3	190	27.72
12:00-13:0	3	190	18.07	3	190	15.965	3	190	34.035
13:00-14:0	3	190	20.175	3	190	22.281	3	190	42.456

14:00-15:0	3	190	12.105	3	190	15.088	3	190	27.193
15:00-16:0	3	190	10.351	3	190	10.702	3	190	21.053
16:00-17:0	3	190	6.491	3	190	8.246	3	190	14.737
17:00-18:0	2	190	3.947	2	190	6.053	2	190	10
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			117.064			117.313			234.377

RECEIVED: 08/09/2025

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: CARS

			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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0.625	1	320	0.313	1	320	0.937
08:00-09:0	2	255	1.373	2	255	0.784	2	255	2.157
09:00-10:0	3	190	3.684	3	190	2.807	3	190	6.491
10:00-11:0	3	190	4.912	3	190	5.263	3	190	10.175
11:00-12:0	3	190	5.088	3	190	4.561	3	190	9.649
12:00-13:0	3	190	5.614	3	190	5.439	3	190	11.053
13:00-14:0	3	190	6.316	3	190	5.965	3	190	12.281
14:00-15:0	3	190	4.561	3	190	5.263	3	190	9.824
15:00-16:0	3	190	3.684	3	190	3.86	3	190	7.544
16:00-17:0	3	190	2.456	3	190	2.807	3	190	5.263
17:00-18:0	2	190	2.105	2	190	2.895	2	190	5
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			40.418			39.956			80.374

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: LGVS

			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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0.938	1	320	0.625	1	320	1.563
08:00-09:0	2	255	0	2	255	0.196	2	255	0.196
09:00-10:0	3	190	0.351	3	190	0.351	3	190	0.702
10:00-11:0	3	190	0	3	190	0	3	190	0
11:00-12:0	3	190	0	3	190	0	3	190	0
12:00-13:0	3	190	0	3	190	0	3	190	0
13:00-14:0	3	190	0	3	190	0	3	190	0
14:00-15:0	3	190	0	3	190	0	3	190	0
15:00-16:0	3	190	0	3	190	0	3	190	0

16:00-17:0	3	190	0	3	190	0	3	190	0
17:00-18:0	2	190	0	2	190	0	2	190	0
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			1.289			1.172			2.461

RECEIVED: 08/09/2025

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: MOTOR CYCLES

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	0	1	320	0	1	320	0
08:00-09:0	2	255	0	2	255	0	2	255	0
09:00-10:0	3	190	0.175	3	190	0.175	3	190	0.35
10:00-11:0	3	190	0	3	190	0	3	190	0
11:00-12:0	3	190	0	3	190	0	3	190	0
12:00-13:0	3	190	0	3	190	0	3	190	0
13:00-14:0	3	190	0	3	190	0	3	190	0
14:00-15:0	3	190	0.175	3	190	0.175	3	190	0.35
15:00-16:0	3	190	0	3	190	0	3	190	0
16:00-17:0	3	190	0	3	190	0	3	190	0
17:00-18:0	2	190	0	2	190	0	2	190	0
18:00-19:00									
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.35			0.35			0.7

TRIP RATE f FOOD & DRINK/K - CAFE
Calculation Factor: 100 sqm
Count Type: SERVICING VEHICLES

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	320	1.25	1	320	0.938	1	320	2.188
08:00-09:0	2	255	0	2	255	0.196	2	255	0.196
09:00-10:0	3	190	0.526	3	190	0.526	3	190	1.052
10:00-11:0	3	190	0	3	190	0	3	190	0
11:00-12:0	3	190	0	3	190	0	3	190	0
12:00-13:0	3	190	0	3	190	0	3	190	0
13:00-14:0	3	190	0	3	190	0	3	190	0
14:00-15:0	3	190	0.175	3	190	0.175	3	190	0.35
15:00-16:0	3	190	0	3	190	0	3	190	0
16:00-17:0	3	190	0	3	190	0	3	190	0
17:00-18:0	2	190	0	2	190	0	2	190	0

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18:00-19:00			
19:00-20:00			
20:00-21:00			
21:00-22:00			
22:00-23:00			
23:00-24:00			
Daily Trip Rates:	1.951	1.835	3.786

Parameter summary

Trip rate pa	60 - 320 (units: sqm)
Survey date	01/01/16 - 20/09/23
Number of	3
Number of	0
Number of	0
Surveys au	0
Surveys ma	0

This sectior followed b the total nu the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRICS 7.11.3
Trip Rate P Gross floor area

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Filtering Summary
Land Use 05/E HEALTH/CLINICS

Selected Tr 60-4000 sqm GFA

Actual Trip 80-229 sqm GFA

Date Range Minimum: (Maximum: 22/04/22

Parking Spa All Surveys Included

Days of the Thursday 1
Friday 1

Main Locati Edge of Tov 1
Suburban A 1

Inclusion o Servicing ve 4 - Selected
Servicing ve X - Selected

Population All Surveys Included

Population 1 001 to 5 000 1
10 001 to 15 000 1

Population 125 001 to 250 000 2

Car Owners 0.6 to 1.0 1
1.1 to 1.5 1

PTAL Rating No PTAL Pr 2

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 05 - HEALTH
Category E - CLINICS
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:
11 SCOTLAND
AD ABERDEEN 2 days
This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Gross floor area
Actual Ran 80 to 229 (units: sqm)
Range Sele 60 to 4000 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/16 to 22/04/22

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Thursday 1 days
Friday 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual cou 2 days
Directional 0 days
This data di the total ac whilst ATC surveys are undertaking using machines.

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Selected Locations:

Town Centr	0
Edge of Tov	1
Suburban A	1
Edge of Tov	0
Neighbourh	0
Free Standi	0
Not Known	0

This data di Edge of To Suburban / Neighbourl Edge of To Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	0
Commercia	0
Developme	0
Residential	2
Retail Zone	0
Built-Up Zo	0
Village	0
Out of Towr	0
High Street	0
No Sub Cat	0

This data di Industrial Z Developme Residentia Retail Zone Built-Up Zc Village Out of Tow High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

E(e)	2 days

This data di which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:

1,001 to 5,	1 days
10,001 to 1	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

125,001 to	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	1 days
1.1 to 1.5	1 days

This data di within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	1 days

This data di and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Pr	2 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

Site(1):	AD-05-E-01	Gross floor	80 sqm
Developme	PHYSIOTHERAPY CLIN		
Location:	ABERDEEN		
Postcode:	AB25 2SG	No of Empl	4
Main Locati	Edge of Tov	Survey Date	########
Sub-Locati	Residential	Survey Day	Thursday
PTAL:	n/a	Parking Spaces:	
Site(2):	AD-05-E-02	Gross floor	229 sqm
Developme	MULTI-TREATMENT CLI		
Location:	ABERDEEN		

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Postcode:	AB10 6HS	No of Empl	8
Main Locati	Suburban A	Survey Date	########
Sub-Locati	Residential	Survey Day	Friday
PTAL:	n/a	Parking Spa	2

This sectior it displays the selecte the day of t and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: TOTAL VEHICLES

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	1.942	2	155	0	2	155	1.942
09:00-10:0	2	155	0.971	2	155	0	2	155	0.971
10:00-11:0	2	155	1.294	2	155	1.618	2	155	2.912
11:00-12:0	2	155	0.647	2	155	1.294	2	155	1.941
12:00-13:0	2	155	2.265	2	155	1.294	2	155	3.559
13:00-14:0	2	155	0.971	2	155	1.618	2	155	2.589
14:00-15:0	2	155	0.324	2	155	0.647	2	155	0.971
15:00-16:0	2	155	1.942	2	155	1.618	2	155	3.56
16:00-17:0	2	155	1.294	2	155	1.294	2	155	2.588
17:00-18:0	2	155	0.324	2	155	1.942	2	155	2.266
18:00-19:0	1	80	1.25	1	80	0	1	80	1.25
19:00-20:0	1	80	0	1	80	3.75	1	80	3.75
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			13.224			15.075			28.299

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: TAXIS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	0	2	155	0	2	155	0
09:00-10:0	2	155	0	2	155	0	2	155	0
10:00-11:0	2	155	0	2	155	0	2	155	0
11:00-12:0	2	155	0	2	155	0	2	155	0
12:00-13:0	2	155	0	2	155	0	2	155	0
13:00-14:0	2	155	0	2	155	0	2	155	0
14:00-15:0	2	155	0	2	155	0	2	155	0
15:00-16:0	2	155	0.324	2	155	0.324	2	155	0.648
16:00-17:0	2	155	0	2	155	0	2	155	0
17:00-18:0	2	155	0	2	155	0	2	155	0
18:00-19:0	1	80	0	1	80	0	1	80	0
19:00-20:0	1	80	0	1	80	0	1	80	0

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Time Range	ARRIVALS No. Days	Ave. GFA	Trip Rate	DEPARTURES No. Days	Ave. GFA	Trip Rate	TOTALS No. Days	Ave. GFA	Trip Rate
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.324			0.324			0.648

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: CYCLISTS

Time Range	ARRIVALS No. Days	Ave. GFA	Trip Rate	DEPARTURES No. Days	Ave. GFA	Trip Rate	TOTALS No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	0	2	155	0	2	155	0
09:00-10:0	2	155	0	2	155	0	2	155	0
10:00-11:0	2	155	0	2	155	0	2	155	0
11:00-12:0	2	155	0	2	155	0	2	155	0
12:00-13:0	2	155	0.324	2	155	0	2	155	0.324
13:00-14:0	2	155	0	2	155	0.324	2	155	0.324
14:00-15:0	2	155	0	2	155	0	2	155	0
15:00-16:0	2	155	0	2	155	0	2	155	0
16:00-17:0	2	155	0	2	155	0	2	155	0
17:00-18:0	2	155	0	2	155	0	2	155	0
18:00-19:0	1	80	0	1	80	0	1	80	0
19:00-20:0	1	80	0	1	80	0	1	80	0
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.324			0.324			0.648

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: VEHICLE OCCUPANTS

Time Range	ARRIVALS No. Days	Ave. GFA	Trip Rate	DEPARTURES No. Days	Ave. GFA	Trip Rate	TOTALS No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	1.942	2	155	0	2	155	1.942
09:00-10:0	2	155	1.294	2	155	0	2	155	1.294
10:00-11:0	2	155	1.294	2	155	1.618	2	155	2.912
11:00-12:0	2	155	0.647	2	155	1.618	2	155	2.265
12:00-13:0	2	155	2.589	2	155	1.294	2	155	3.883
13:00-14:0	2	155	0.971	2	155	1.942	2	155	2.913
14:00-15:0	2	155	0.324	2	155	0.647	2	155	0.971
15:00-16:0	2	155	1.942	2	155	1.618	2	155	3.56
16:00-17:0	2	155	1.294	2	155	1.294	2	155	2.588
17:00-18:0	2	155	0.324	2	155	1.942	2	155	2.266
18:00-19:0	1	80	1.25	1	80	0	1	80	1.25
19:00-20:0	1	80	0	1	80	3.75	1	80	3.75
20:00-21:00									
21:00-22:00									

22:00-23:00									
23:00-24:00									
Daily Trip Rates:			13.871			15.723			29.594

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TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: PEDESTRIANS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	0.647	2	155	0	2	155	0.647
09:00-10:0	2	155	0	2	155	0.324	2	155	0.324
10:00-11:0	2	155	0.971	2	155	0.324	2	155	1.295
11:00-12:0	2	155	0.324	2	155	0.647	2	155	0.971
12:00-13:0	2	155	0.324	2	155	0.324	2	155	0.648
13:00-14:0	2	155	0.971	2	155	0	2	155	0.971
14:00-15:0	2	155	0	2	155	0.971	2	155	0.971
15:00-16:0	2	155	0	2	155	0.647	2	155	0.647
16:00-17:0	2	155	0.324	2	155	0	2	155	0.324
17:00-18:0	2	155	0.324	2	155	0	2	155	0.324
18:00-19:0	1	80	0	1	80	1.25	1	80	1.25
19:00-20:0	1	80	0	1	80	1.25	1	80	1.25
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			3.885			5.737			9.622

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: BUS/TRAM PASSENGERS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	0.324	2	155	0	2	155	0.324
09:00-10:0	2	155	0.324	2	155	0.324	2	155	0.648
10:00-11:0	2	155	0	2	155	0.324	2	155	0.324
11:00-12:0	2	155	0	2	155	0	2	155	0
12:00-13:0	2	155	0.324	2	155	0	2	155	0.324
13:00-14:0	2	155	0	2	155	0.324	2	155	0.324
14:00-15:0	2	155	0.647	2	155	0	2	155	0.647
15:00-16:0	2	155	0	2	155	0.647	2	155	0.647
16:00-17:0	2	155	0	2	155	0	2	155	0
17:00-18:0	2	155	0	2	155	0	2	155	0
18:00-19:0	1	80	0	1	80	0	1	80	0
19:00-20:0	1	80	0	1	80	0	1	80	0
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									

Daily Trip Rates:			1.619			1.619			3.238

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TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: PUBLIC TRANSPORT USERS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	0.324	2	155	0	2	155	0.324
09:00-10:0	2	155	0.324	2	155	0.324	2	155	0.648
10:00-11:0	2	155	0	2	155	0.324	2	155	0.324
11:00-12:0	2	155	0	2	155	0	2	155	0
12:00-13:0	2	155	0.324	2	155	0	2	155	0.324
13:00-14:0	2	155	0	2	155	0.324	2	155	0.324
14:00-15:0	2	155	0.647	2	155	0	2	155	0.647
15:00-16:0	2	155	0	2	155	0.647	2	155	0.647
16:00-17:0	2	155	0	2	155	0	2	155	0
17:00-18:0	2	155	0	2	155	0	2	155	0
18:00-19:0	1	80	0	1	80	0	1	80	0
19:00-20:0	1	80	0	1	80	0	1	80	0
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			1.619			1.619			3.238

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: TOTAL PEOPLE

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	2.913	2	155	0	2	155	2.913
09:00-10:0	2	155	1.618	2	155	0.647	2	155	2.265
10:00-11:0	2	155	2.265	2	155	2.265	2	155	4.53
11:00-12:0	2	155	0.971	2	155	2.265	2	155	3.236
12:00-13:0	2	155	3.56	2	155	1.618	2	155	5.178
13:00-14:0	2	155	1.942	2	155	2.589	2	155	4.531
14:00-15:0	2	155	0.971	2	155	1.618	2	155	2.589
15:00-16:0	2	155	1.942	2	155	2.913	2	155	4.855
16:00-17:0	2	155	1.618	2	155	1.294	2	155	2.912
17:00-18:0	2	155	0.647	2	155	1.942	2	155	2.589
18:00-19:0	1	80	1.25	1	80	1.25	1	80	2.5
19:00-20:0	1	80	0	1	80	5	1	80	5
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			19.697			23.401			43.098

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: CARS

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	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	1.942	2	155	0	2	155	1.942
09:00-10:0	2	155	0.647	2	155	0	2	155	0.647
10:00-11:0	2	155	0.971	2	155	0.971	2	155	1.942
11:00-12:0	2	155	0.647	2	155	1.294	2	155	1.941
12:00-13:0	2	155	2.265	2	155	1.294	2	155	3.559
13:00-14:0	2	155	0.971	2	155	1.618	2	155	2.589
14:00-15:0	2	155	0.324	2	155	0.647	2	155	0.971
15:00-16:0	2	155	1.618	2	155	1.294	2	155	2.912
16:00-17:0	2	155	1.294	2	155	1.294	2	155	2.588
17:00-18:0	2	155	0.324	2	155	1.942	2	155	2.266
18:00-19:0	1	80	1.25	1	80	0	1	80	1.25
19:00-20:0	1	80	0	1	80	3.75	1	80	3.75
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			12.253			14.104			26.357

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm
Count Type: LGVS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	0	2	155	0	2	155	0
09:00-10:0	2	155	0.324	2	155	0	2	155	0.324
10:00-11:0	2	155	0.324	2	155	0.647	2	155	0.971
11:00-12:0	2	155	0	2	155	0	2	155	0
12:00-13:0	2	155	0	2	155	0	2	155	0
13:00-14:0	2	155	0	2	155	0	2	155	0
14:00-15:0	2	155	0	2	155	0	2	155	0
15:00-16:0	2	155	0	2	155	0	2	155	0
16:00-17:0	2	155	0	2	155	0	2	155	0
17:00-18:0	2	155	0	2	155	0	2	155	0
18:00-19:0	1	80	0	1	80	0	1	80	0
19:00-20:0	1	80	0	1	80	0	1	80	0
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.648			0.647			1.295

TRIP RATE for Land Use 05 - HEALTH/E - CLINICS
Calculation Factor: 100 sqm

RECEIVED: 08/09/2025

Count Type: SERVICING VEHICLES

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:00									
08:00-09:0	2	155	0	2	155	0	2	155	0
09:00-10:0	2	155	0	2	155	0	2	155	0
10:00-11:0	2	155	0.324	2	155	0.324	2	155	0.648
11:00-12:0	2	155	0	2	155	0	2	155	0
12:00-13:0	2	155	0	2	155	0	2	155	0
13:00-14:0	2	155	0	2	155	0	2	155	0
14:00-15:0	2	155	0	2	155	0	2	155	0
15:00-16:0	2	155	0	2	155	0	2	155	0
16:00-17:0	2	155	0	2	155	0	2	155	0
17:00-18:0	2	155	0	2	155	0	2	155	0
18:00-19:0	1	80	0	1	80	0	1	80	0
19:00-20:0	1	80	0	1	80	0	1	80	0
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.324			0.324			0.648

Parameter summary

Trip rate pa	80 - 229 (units: sqm)
Survey date	01/01/16 - 22/04/22
Number of	2
Number of	0
Number of	0
Surveys au	0
Surveys ma	0

This sectior followed b the total nu the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

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TRICS 7.11.3
Trip Rate P Gross floor area

Filtering Summary
Land Use 07/Q LEISURE/COMMUNITY CENTRE

Selected Tr 100-2329 sqm GFA

Actual Trip 100-629 sqm GFA

Date Range Minimum: (Maximum: 13/10/22

Parking Spa All Surveys Included

Days of the	Tuesday	1
	Wednesda	1
	Thursday	2
Main Locati	Edge of Tov	1
	Edge of Tov	1
	Neighbourh	2
Inclusion o	Servicing ve	2 - Selected
	Servicing ve	3 - Selected

Population All Surveys Included

Population	1	000 or Less	1	
	5	001 to 10 000		2
	15	001 to 20 000		1
Population	5	001 to 25 000		1
	25	001 to 50 000		1
	50	001 to 75 000		2

Car Owners	0.6 to 1.0	3
	1.1 to 1.5	1
PTAL Rating	No PTAL Pr	4

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 07 - LEISURE
Category Q - COMMUNITY CENTRE
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

04	EAST ANGLIA		
	CA	CAMBRIDG	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YOI	1 days
08	NORTH WEST		
	EC	CHESHIRE	1 days
13	MUNSTER		
	TI	TIPPERARY	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Gross floor area
Actual Ran 100 to 629 (units: sqm)
Range Sele 100 to 2329 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/16 to 13/10/22

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Tuesday 1 days
Wednesday 1 days
Thursday 2 days
This data displays the number of selected surveys by day of the week.

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Selected survey types:
Manual cou 4 days
Directional 0 days
This data di the total ac whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Centr 0
Edge of Tov 1
Suburban A 0
Edge of Tov 1
Neighbourh 2
Free Standi 0
Not Known 0
This data di Edge of To Suburban A Neighbourh Edge of To Town Centre and Not Known.

Selected Location Sub Categories:
Industrial Z 0
Commercia 0
Developme 0
Residential 1
Retail Zone 0
Built-Up Zo 0
Village 1
Out of Towr 0
High Street 1
No Sub Cat 1
This data di Industrial Z Developme Residentia Retail Zone Built-Up Zc Village Out of Tow High Street and No Sub Category.

Secondary Filtering selection:

Use Class:
F2(b) 4 days
This data di which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:
1,000 or Le 1 days
5,001 to 10 2 days
15,001 to 2 1 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
5,001 to 25 1 days
25,001 to 5 1 days
50,001 to 7 2 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 3 days
1.1 to 1.5 1 days
This data di within a radius of 5-miles of selected survey sites.

Travel Plan:
No 4 days
This data di and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

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No PTAL Pr 4 days
This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

Site(1):	CA-07-Q-0	Site area:	0.37 hect
Developme	COMMUNI	Gross floor	629 sqm
Location:	CAMBOURNE		
Postcode:	CB23 6GW	No of Empl	7
Main Locati	Edge of Tov	Survey Dat	########
Sub-Locati	High Street	Survey Day	Thursday
PTAL:	n/a	Parking Spa	70
Site(2):	EC-07-Q-0	Site area:	0.30 hect
Developme	COMMUNI	Gross floor	100 sqm
Location:	MERE		
Postcode:	WA16 0PU	No of Empl	2
Main Locati	Neighbourh	Survey Dat	########
Sub-Locati	Village	Survey Day	Tuesday
PTAL:	n/a	Parking Spa	37
Site(3):	NY-07-Q-0	Site area:	0.10 hect
Developme	COMMUNI	Gross floor	316 sqm
Location:	CATTERRICK GARRISOI		
Postcode:	DL9 4AF	No of Empl	8
Main Locati	Neighbourh	Survey Dat	########
Sub-Locati	No Sub Cat	Survey Day	Wednesday
PTAL:	n/a	Parking Spa	10
Site(4):	TI-07-Q-01	Site area:	0.07 hect
Developme	COMMUNI	Gross floor	160 sqm
Location:	NENAGH		
Postcode:	E45 K309	No of Empl	3
Main Locati	Edge of Tov	Survey Dat	########
Sub-Locati	Residential	Survey Day	Thursday
PTAL:	n/a	Parking Spa	7

This sectior it displays the selecte the day of t and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: TOTAL VEHICLES

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0.383	3	348	0	3	348	0.383
08:00-09:0	4	301	1.245	4	301	0.166	4	301	1.411
09:00-10:0	4	301	1.079	4	301	0.581	4	301	1.66
10:00-11:0	4	301	0.664	4	301	0.498	4	301	1.162
11:00-12:0	4	301	0.249	4	301	1.079	4	301	1.328
12:00-13:0	4	301	0.249	4	301	0.415	4	301	0.664
13:00-14:0	4	301	0.166	4	301	0.166	4	301	0.332
14:00-15:0	4	301	0.498	4	301	0.332	4	301	0.83
15:00-16:0	4	301	0.996	4	301	0.83	4	301	1.826
16:00-17:0	3	296	0.225	3	296	0.675	3	296	0.9
17:00-18:0	3	296	2.137	3	296	1.35	3	296	3.487
18:00-19:0	3	296	2.025	3	296	0.225	3	296	2.25
19:00-20:0	3	296	3.712	3	296	3.375	3	296	7.087
20:00-21:0	3	296	0	3	296	0.787	3	296	0.787
21:00-22:0	2	130	0	2	130	8.077	2	130	8.077
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			13.628			18.556			32.184

RECEIVED: 08/09/2025

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: PSVS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0	3	348	0	3	348	0
08:00-09:0	4	301	0	4	301	0	4	301	0
09:00-10:0	4	301	0	4	301	0	4	301	0
10:00-11:0	4	301	0	4	301	0	4	301	0
11:00-12:0	4	301	0	4	301	0	4	301	0
12:00-13:0	4	301	0	4	301	0	4	301	0
13:00-14:0	4	301	0	4	301	0	4	301	0
14:00-15:0	4	301	0	4	301	0	4	301	0
15:00-16:0	4	301	0.083	4	301	0	4	301	0.083
16:00-17:0	3	296	0	3	296	0.112	3	296	0.112
17:00-18:0	3	296	0	3	296	0	3	296	0
18:00-19:0	3	296	0	3	296	0	3	296	0
19:00-20:0	3	296	0	3	296	0	3	296	0
20:00-21:0	3	296	0	3	296	0	3	296	0
21:00-22:0	2	130	0	2	130	0	2	130	0
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.083			0.112			0.195

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: CYCLISTS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0	3	348	0	3	348	0
08:00-09:0	4	301	0	4	301	0	4	301	0
09:00-10:0	4	301	0.083	4	301	0.083	4	301	0.166
10:00-11:0	4	301	0	4	301	0	4	301	0
11:00-12:0	4	301	0	4	301	0	4	301	0
12:00-13:0	4	301	0	4	301	0	4	301	0
13:00-14:0	4	301	0	4	301	0	4	301	0
14:00-15:0	4	301	0	4	301	0	4	301	0
15:00-16:0	4	301	0.083	4	301	0	4	301	0.083
16:00-17:0	3	296	0.112	3	296	0.225	3	296	0.337
17:00-18:0	3	296	0	3	296	0	3	296	0
18:00-19:0	3	296	0	3	296	0	3	296	0
19:00-20:0	3	296	0.225	3	296	0.112	3	296	0.337
20:00-21:0	3	296	0	3	296	0.112	3	296	0.112
21:00-22:0	2	130	0	2	130	0	2	130	0
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.503			0.532			1.035

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE

Calculation Factor: 100 sqm
Count Type: VEHICLE OCCUPANTS

RECEIVED: 08/09/2025

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0.383	3	348	0	3	348	0.383
08:00-09:0	4	301	2.075	4	301	0.249	4	301	2.324
09:00-10:0	4	301	1.743	4	301	1.162	4	301	2.905
10:00-11:0	4	301	1.079	4	301	0.664	4	301	1.743
11:00-12:0	4	301	0.415	4	301	2.075	4	301	2.49
12:00-13:0	4	301	0.332	4	301	0.581	4	301	0.913
13:00-14:0	4	301	0.166	4	301	0.166	4	301	0.332
14:00-15:0	4	301	0.498	4	301	0.498	4	301	0.996
15:00-16:0	4	301	1.079	4	301	0.83	4	301	1.909
16:00-17:0	3	296	0.225	3	296	0.675	3	296	0.9
17:00-18:0	3	296	4.612	3	296	1.575	3	296	6.187
18:00-19:0	3	296	3.262	3	296	0.225	3	296	3.487
19:00-20:0	3	296	4.724	3	296	7.087	3	296	11.811
20:00-21:0	3	296	0	3	296	0.9	3	296	0.9
21:00-22:0	2	130	0	2	130	10.769	2	130	10.769
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			20.593			27.456			48.049

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: PEDESTRIANS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0	3	348	0	3	348	0
08:00-09:0	4	301	0.581	4	301	0.083	4	301	0.664
09:00-10:0	4	301	4.149	4	301	0.083	4	301	4.232
10:00-11:0	4	301	0.913	4	301	0.83	4	301	1.743
11:00-12:0	4	301	0.498	4	301	3.9	4	301	4.398
12:00-13:0	4	301	0.332	4	301	0.664	4	301	0.996
13:00-14:0	4	301	0.249	4	301	0.166	4	301	0.415
14:00-15:0	4	301	0.083	4	301	0.332	4	301	0.415
15:00-16:0	4	301	1.328	4	301	0.664	4	301	1.992
16:00-17:0	3	296	0	3	296	0.337	3	296	0.337
17:00-18:0	3	296	0.562	3	296	1.35	3	296	1.912
18:00-19:0	3	296	1.35	3	296	0.45	3	296	1.8
19:00-20:0	3	296	1.237	3	296	2.137	3	296	3.374
20:00-21:0	3	296	0	3	296	0.9	3	296	0.9
21:00-22:0	2	130	0	2	130	0	2	130	0
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			11.282			11.896			23.178

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: BUS/TRAM PASSENGERS

RECEIVED: 08/09/2025

		ARRIVALS			DEPARTURES			TOTALS	
	No. Ave.	Trip	No. Ave.		Trip	No. Ave.		Trip	
Time Range	Days GFA	Rate	Days GFA		Rate	Days GFA		Rate	
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3 348	0	3 348		0	3 348		0	
08:00-09:0	4 301	0	4 301		0	4 301		0	
09:00-10:0	4 301	0	4 301		0	4 301		0	
10:00-11:0	4 301	1.909	4 301		0	4 301		1.909	
11:00-12:0	4 301	0.332	4 301		0.498	4 301		0.83	
12:00-13:0	4 301	0	4 301		0	4 301		0	
13:00-14:0	4 301	0.166	4 301		0.498	4 301		0.664	
14:00-15:0	4 301	0	4 301		0	4 301		0	
15:00-16:0	4 301	0	4 301		1.328	4 301		1.328	
16:00-17:0	3 296	0	3 296		0	3 296		0	
17:00-18:0	3 296	0	3 296		0	3 296		0	
18:00-19:0	3 296	0	3 296		0	3 296		0	
19:00-20:0	3 296	0	3 296		0	3 296		0	
20:00-21:0	3 296	0	3 296		0	3 296		0	
21:00-22:0	2 130	0	2 130		0	2 130		0	
22:00-23:00									
23:00-24:00									
Daily Trip Rates:		2.407			2.324			4.731	

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: COACH PASSENGERS

		ARRIVALS			DEPARTURES			TOTALS	
	No. Ave.	Trip	No. Ave.		Trip	No. Ave.		Trip	
Time Range	Days GFA	Rate	Days GFA		Rate	Days GFA		Rate	
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3 348	0	3 348		0	3 348		0	
08:00-09:0	4 301	0	4 301		0	4 301		0	
09:00-10:0	4 301	0	4 301		0	4 301		0	
10:00-11:0	4 301	0	4 301		0	4 301		0	
11:00-12:0	4 301	0	4 301		0	4 301		0	
12:00-13:0	4 301	0	4 301		0	4 301		0	
13:00-14:0	4 301	0	4 301		0	4 301		0	
14:00-15:0	4 301	0	4 301		0	4 301		0	
15:00-16:0	4 301	0.415	4 301		0	4 301		0.415	
16:00-17:0	3 296	0	3 296		0.562	3 296		0.562	
17:00-18:0	3 296	0	3 296		0	3 296		0	
18:00-19:0	3 296	0	3 296		0	3 296		0	
19:00-20:0	3 296	0	3 296		0	3 296		0	
20:00-21:0	3 296	0	3 296		0	3 296		0	
21:00-22:0	2 130	0	2 130		0	2 130		0	
22:00-23:00									
23:00-24:00									
Daily Trip Rates:		0.415			0.562			0.977	

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: PUBLIC TRANSPORT USERS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0	3	348	0	3	348	0
08:00-09:0	4	301	0	4	301	0	4	301	0
09:00-10:0	4	301	0	4	301	0	4	301	0
10:00-11:0	4	301	1.909	4	301	0	4	301	1.909
11:00-12:0	4	301	0.332	4	301	0.498	4	301	0.83
12:00-13:0	4	301	0	4	301	0	4	301	0
13:00-14:0	4	301	0.166	4	301	0.498	4	301	0.664
14:00-15:0	4	301	0	4	301	0	4	301	0
15:00-16:0	4	301	0.415	4	301	1.328	4	301	1.743
16:00-17:0	3	296	0	3	296	0.562	3	296	0.562
17:00-18:0	3	296	0	3	296	0	3	296	0
18:00-19:0	3	296	0	3	296	0	3	296	0
19:00-20:0	3	296	0	3	296	0	3	296	0
20:00-21:0	3	296	0	3	296	0	3	296	0
21:00-22:0	2	130	0	2	130	0	2	130	0
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			2.822			2.886			5.708

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: TOTAL PEOPLE

			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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0.383	3	348	0	3	348	0.383
08:00-09:0	4	301	2.656	4	301	0.332	4	301	2.988
09:00-10:0	4	301	5.975	4	301	1.328	4	301	7.303
10:00-11:0	4	301	3.9	4	301	1.494	4	301	5.394
11:00-12:0	4	301	1.245	4	301	6.473	4	301	7.718
12:00-13:0	4	301	0.664	4	301	1.245	4	301	1.909
13:00-14:0	4	301	0.581	4	301	0.83	4	301	1.411
14:00-15:0	4	301	0.581	4	301	0.83	4	301	1.411
15:00-16:0	4	301	2.905	4	301	2.822	4	301	5.727
16:00-17:0	3	296	0.337	3	296	1.8	3	296	2.137
17:00-18:0	3	296	5.174	3	296	2.925	3	296	8.099
18:00-19:0	3	296	4.612	3	296	0.675	3	296	5.287
19:00-20:0	3	296	6.187	3	296	9.336	3	296	15.523
20:00-21:0	3	296	0	3	296	1.912	3	296	1.912
21:00-22:0	2	130	0	2	130	10.769	2	130	10.769
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			35.2			42.771			77.971

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: CARS

			ARRIVALS			DEPARTURES			TOTALS
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate

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00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0.383	3	348	0	3	348	0.383
08:00-09:0	4	301	1.162	4	301	0.166	4	301	1.328
09:00-10:0	4	301	0.996	4	301	0.581	4	301	1.577
10:00-11:0	4	301	0.664	4	301	0.415	4	301	1.079
11:00-12:0	4	301	0.249	4	301	1.079	4	301	1.328
12:00-13:0	4	301	0.249	4	301	0.415	4	301	0.664
13:00-14:0	4	301	0.166	4	301	0.166	4	301	0.332
14:00-15:0	4	301	0.415	4	301	0.332	4	301	0.747
15:00-16:0	4	301	0.913	4	301	0.747	4	301	1.66
16:00-17:0	3	296	0.225	3	296	0.562	3	296	0.787
17:00-18:0	3	296	2.137	3	296	1.35	3	296	3.487
18:00-19:0	3	296	2.025	3	296	0.225	3	296	2.25
19:00-20:0	3	296	3.712	3	296	3.375	3	296	7.087
20:00-21:0	3	296	0	3	296	0.787	3	296	0.787
21:00-22:0	2	130	0	2	130	8.077	2	130	8.077
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			13.296			18.277			31.573

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: LGVS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0	3	348	0	3	348	0
08:00-09:0	4	301	0	4	301	0	4	301	0
09:00-10:0	4	301	0.083	4	301	0	4	301	0.083
10:00-11:0	4	301	0	4	301	0.083	4	301	0.083
11:00-12:0	4	301	0	4	301	0	4	301	0
12:00-13:0	4	301	0	4	301	0	4	301	0
13:00-14:0	4	301	0	4	301	0	4	301	0
14:00-15:0	4	301	0.083	4	301	0	4	301	0.083
15:00-16:0	4	301	0	4	301	0	4	301	0
16:00-17:0	3	296	0	3	296	0	3	296	0
17:00-18:0	3	296	0	3	296	0	3	296	0
18:00-19:0	3	296	0	3	296	0	3	296	0
19:00-20:0	3	296	0	3	296	0	3	296	0
20:00-21:0	3	296	0	3	296	0	3	296	0
21:00-22:0	2	130	0	2	130	0	2	130	0
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.166			0.083			0.249

TRIP RATE for Land Use 07 - LEISURE/Q - COMMUNITY CENTRE
Calculation Factor: 100 sqm
Count Type: MOTOR CYCLES

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									

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02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	348	0	3	348	0	3	348	0
08:00-09:0	4	301	0.083	4	301	0	4	301	0.083
09:00-10:0	4	301	0	4	301	0	4	301	0
10:00-11:0	4	301	0	4	301	0	4	301	0
11:00-12:0	4	301	0	4	301	0	4	301	0
12:00-13:0	4	301	0	4	301	0	4	301	0
13:00-14:0	4	301	0	4	301	0	4	301	0
14:00-15:0	4	301	0	4	301	0	4	301	0
15:00-16:0	4	301	0	4	301	0.083	4	301	0.083
16:00-17:0	3	296	0	3	296	0	3	296	0
17:00-18:0	3	296	0	3	296	0	3	296	0
18:00-19:0	3	296	0	3	296	0	3	296	0
19:00-20:0	3	296	0	3	296	0	3	296	0
20:00-21:0	3	296	0	3	296	0	3	296	0
21:00-22:0	2	130	0	2	130	0	2	130	0
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.083			0.083			0.166

Parameter summary

Trip rate pa	100 - 629 (units: sqm)
Survey date	01/01/16 - 13/10/22
Number of	4
Number of	0
Number of	0
Surveys aut	0
Surveys ma	0

This sectior followed b the total nu the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRICS 7.11.3
Trip Rate P Gross floor area

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Filtering Summary
Land Use 04/D EDUCATION/NURSERY

Selected Tr 185-2350 sqm GFA

Actual Trip 1250-1250 sqm GFA

Date Range Minimum: (Maximum: 06/09/23

Parking Spa All Surveys Included

Days of the Friday 1

Main Locati Suburban A 1

Inclusion o Servicing ve 10 - Selected
Servicing ve X - Selected

Population All Surveys Included

Population 10 001 to 15 000 1

Population 25 001 to 50 000 1

Car Owners 0.6 to 1.0 1

PTAL Rating No PTAL Pr 1

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 04 - EDUCATION
Category D - NURSERY
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:
07 YORKSHIRE & NORTH LINCOLNSHIRE
DR DONCASTE 1 days
This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Gross floor area
Actual Ran 1250 to 1250 (units: sqm)
Range Sele 185 to 2350 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/16 to 06/09/23

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Friday 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual cou 1 days
Directional 0 days
This data di the total ac whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Centr 0
Edge of Tow 0
Suburban A 1

Edge of Tov 0
Neighbourh 0
Free Standi 0
Not Known 0
This data di Edge of To\ Suburban / Neighbourl Edge of To\ Town Centre and Not Known.

Selected Location Sub Categories:
Industrial Z 0
Commercia 0
Developme 0
Residential 1
Retail Zone 0
Built-Up Zo 0
Village 0
Out of Towr 0
High Street 0
No Sub Cat 0
This data di Industrial Z Developme Residentia Retail Zone Built-Up Zc Village Out of Tow High Street and No Sub Category.

Secondary Filtering selection:

Use Class:
E(f) 1 days
This data di which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:
10,001 to 1 1 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
25,001 to 5 1 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 1 days
This data di within a radius of 5-miles of selected survey sites.

Travel Plan:
No 1 days
This data di and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:
No PTAL Pr 1 days
This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters
Site(1): DR-04-D-0: Gross floor 1250 sqm
Developme NURSERY Number of 111
Location: DONCASTER
Postcode: DN4 7AD No of Empl 36
Main Locati Suburban A Survey Date ########
Sub-Locati Residential Survey Day Friday
PTAL: n/a Parking Spa 29

This sectior it displays the selecte the day of t and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: TOTAL VEHICLES

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate

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Time Range	No. Days	Ave. GFA	ARRIVALS Trip Rate	No. Days	Ave. GFA	DEPARTURES Trip Rate	No. Days	Ave. GFA	TOTALS Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	1.28	1	1250	0.48	1	1250	1.76
08:00-09:0	1	1250	1.36	1	1250	1.04	1	1250	2.4
09:00-10:0	1	1250	0.4	1	1250	0.4	1	1250	0.8
10:00-11:0	1	1250	0.24	1	1250	0.16	1	1250	0.4
11:00-12:0	1	1250	0.08	1	1250	0.08	1	1250	0.16
12:00-13:0	1	1250	0.88	1	1250	0.8	1	1250	1.68
13:00-14:0	1	1250	0.96	1	1250	1.36	1	1250	2.32
14:00-15:0	1	1250	0.16	1	1250	0.32	1	1250	0.48
15:00-16:0	1	1250	0.48	1	1250	0.48	1	1250	0.96
16:00-17:0	1	1250	0.56	1	1250	0.72	1	1250	1.28
17:00-18:0	1	1250	0.64	1	1250	0.88	1	1250	1.52
18:00-19:0	1	1250	0	1	1250	0.4	1	1250	0.4
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			7.04			7.12			14.16

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: TAXIS

Time Range	No. Days	Ave. GFA	ARRIVALS Trip Rate	No. Days	Ave. GFA	DEPARTURES Trip Rate	No. Days	Ave. GFA	TOTALS Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	0	1	1250	0	1	1250	0
08:00-09:0	1	1250	0	1	1250	0	1	1250	0
09:00-10:0	1	1250	0	1	1250	0	1	1250	0
10:00-11:0	1	1250	0	1	1250	0	1	1250	0
11:00-12:0	1	1250	0	1	1250	0	1	1250	0
12:00-13:0	1	1250	0.16	1	1250	0.16	1	1250	0.32
13:00-14:0	1	1250	0	1	1250	0	1	1250	0
14:00-15:0	1	1250	0	1	1250	0	1	1250	0
15:00-16:0	1	1250	0	1	1250	0	1	1250	0
16:00-17:0	1	1250	0	1	1250	0	1	1250	0
17:00-18:0	1	1250	0	1	1250	0	1	1250	0
18:00-19:0	1	1250	0	1	1250	0	1	1250	0
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.16			0.16			0.32

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: VEHICLE OCCUPANTS

Time Range	No. Days	Ave. GFA	ARRIVALS Trip Rate	No. Days	Ave. GFA	DEPARTURES Trip Rate	No. Days	Ave. GFA	TOTALS Trip Rate
00:00-01:00									
01:00-02:00									

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02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	2	1	1250	0.48	1	1250	2.48
08:00-09:0	1	1250	2.08	1	1250	1.28	1	1250	3.36
09:00-10:0	1	1250	0.88	1	1250	0.48	1	1250	1.36
10:00-11:0	1	1250	0.24	1	1250	0.16	1	1250	0.4
11:00-12:0	1	1250	0.08	1	1250	0.08	1	1250	0.16
12:00-13:0	1	1250	1.28	1	1250	1.04	1	1250	2.32
13:00-14:0	1	1250	1.6	1	1250	1.92	1	1250	3.52
14:00-15:0	1	1250	0.16	1	1250	0.72	1	1250	0.88
15:00-16:0	1	1250	0.56	1	1250	1.04	1	1250	1.6
16:00-17:0	1	1250	0.64	1	1250	1.44	1	1250	2.08
17:00-18:0	1	1250	0.8	1	1250	1.36	1	1250	2.16
18:00-19:0	1	1250	0	1	1250	0.48	1	1250	0.48
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			10.32			10.48			20.8

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: PEDESTRIANS

	ARRIVALS				DEPARTURES				TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	1.36	1	1250	0.72	1	1250	2.08
08:00-09:0	1	1250	1.12	1	1250	0.56	1	1250	1.68
09:00-10:0	1	1250	0	1	1250	0	1	1250	0
10:00-11:0	1	1250	0	1	1250	0	1	1250	0
11:00-12:0	1	1250	0	1	1250	0	1	1250	0
12:00-13:0	1	1250	0.88	1	1250	0.88	1	1250	1.76
13:00-14:0	1	1250	1.12	1	1250	1.2	1	1250	2.32
14:00-15:0	1	1250	0.16	1	1250	0.08	1	1250	0.24
15:00-16:0	1	1250	0.4	1	1250	0.64	1	1250	1.04
16:00-17:0	1	1250	0.48	1	1250	0.96	1	1250	1.44
17:00-18:0	1	1250	0.56	1	1250	1.2	1	1250	1.76
18:00-19:0	1	1250	0	1	1250	0	1	1250	0
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			6.08			6.24			12.32

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: BUS/TRAM PASSENGERS

	ARRIVALS				DEPARTURES				TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									

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04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	0.16	1	1250	0.08	1	1250	0.24
08:00-09:0	1	1250	0.16	1	1250	0.08	1	1250	0.24
09:00-10:0	1	1250	0	1	1250	0	1	1250	0
10:00-11:0	1	1250	0	1	1250	0	1	1250	0
11:00-12:0	1	1250	0	1	1250	0	1	1250	0
12:00-13:0	1	1250	0	1	1250	0	1	1250	0
13:00-14:0	1	1250	0.08	1	1250	0.16	1	1250	0.24
14:00-15:0	1	1250	0.16	1	1250	0.08	1	1250	0.24
15:00-16:0	1	1250	0.08	1	1250	0.16	1	1250	0.24
16:00-17:0	1	1250	0.08	1	1250	0	1	1250	0.08
17:00-18:0	1	1250	0.08	1	1250	0.16	1	1250	0.24
18:00-19:0	1	1250	0	1	1250	0	1	1250	0
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.8			0.72			1.52

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: PUBLIC TRANSPORT USERS

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	0.16	1	1250	0.08	1	1250	0.24
08:00-09:0	1	1250	0.16	1	1250	0.08	1	1250	0.24
09:00-10:0	1	1250	0	1	1250	0	1	1250	0
10:00-11:0	1	1250	0	1	1250	0	1	1250	0
11:00-12:0	1	1250	0	1	1250	0	1	1250	0
12:00-13:0	1	1250	0	1	1250	0	1	1250	0
13:00-14:0	1	1250	0.08	1	1250	0.16	1	1250	0.24
14:00-15:0	1	1250	0.16	1	1250	0.08	1	1250	0.24
15:00-16:0	1	1250	0.08	1	1250	0.16	1	1250	0.24
16:00-17:0	1	1250	0.08	1	1250	0	1	1250	0.08
17:00-18:0	1	1250	0.08	1	1250	0.16	1	1250	0.24
18:00-19:0	1	1250	0	1	1250	0	1	1250	0
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.8			0.72			1.52

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: TOTAL PEOPLE

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									

06:00-07:00									
07:00-08:0	1	1250	3.52	1	1250	1.28	1	1250	4.8
08:00-09:0	1	1250	3.36	1	1250	1.92	1	1250	5.28
09:00-10:0	1	1250	0.88	1	1250	0.48	1	1250	1.36
10:00-11:0	1	1250	0.24	1	1250	0.16	1	1250	0.4
11:00-12:0	1	1250	0.08	1	1250	0.08	1	1250	0.16
12:00-13:0	1	1250	2.16	1	1250	1.92	1	1250	4.08
13:00-14:0	1	1250	2.8	1	1250	3.28	1	1250	6.08
14:00-15:0	1	1250	0.48	1	1250	0.88	1	1250	1.36
15:00-16:0	1	1250	1.04	1	1250	1.84	1	1250	2.88
16:00-17:0	1	1250	1.2	1	1250	2.4	1	1250	3.6
17:00-18:0	1	1250	1.44	1	1250	2.72	1	1250	4.16
18:00-19:0	1	1250	0	1	1250	0.48	1	1250	0.48
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			17.2			17.44			34.64

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TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: CARS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	1.28	1	1250	0.48	1	1250	1.76
08:00-09:0	1	1250	1.28	1	1250	0.96	1	1250	2.24
09:00-10:0	1	1250	0.4	1	1250	0.4	1	1250	0.8
10:00-11:0	1	1250	0.16	1	1250	0.16	1	1250	0.32
11:00-12:0	1	1250	0	1	1250	0	1	1250	0
12:00-13:0	1	1250	0.72	1	1250	0.56	1	1250	1.28
13:00-14:0	1	1250	0.88	1	1250	1.36	1	1250	2.24
14:00-15:0	1	1250	0.16	1	1250	0.32	1	1250	0.48
15:00-16:0	1	1250	0.48	1	1250	0.4	1	1250	0.88
16:00-17:0	1	1250	0.56	1	1250	0.72	1	1250	1.28
17:00-18:0	1	1250	0.64	1	1250	0.88	1	1250	1.52
18:00-19:0	1	1250	0	1	1250	0.4	1	1250	0.4
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			6.56			6.64			13.2

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: LGVS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	0	1	1250	0	1	1250	0

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08:00-09:0	1	1250	0.08	1	1250	0.08	1	1250	0.16
09:00-10:0	1	1250	0	1	1250	0	1	1250	0
10:00-11:0	1	1250	0.08	1	1250	0	1	1250	0.08
11:00-12:0	1	1250	0.08	1	1250	0.08	1	1250	0.16
12:00-13:0	1	1250	0	1	1250	0.08	1	1250	0.08
13:00-14:0	1	1250	0.08	1	1250	0	1	1250	0.08
14:00-15:0	1	1250	0	1	1250	0	1	1250	0
15:00-16:0	1	1250	0	1	1250	0.08	1	1250	0.08
16:00-17:0	1	1250	0	1	1250	0	1	1250	0
17:00-18:0	1	1250	0	1	1250	0	1	1250	0
18:00-19:0	1	1250	0	1	1250	0	1	1250	0
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.32			0.32			0.64

TRIP RATE for Land Use 04 - EDUCATION/D - NURSERY
Calculation Factor: 100 sqm
Count Type: SERVICING VEHICLES

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	1	1250	0	1	1250	0	1	1250	0
08:00-09:0	1	1250	0	1	1250	0	1	1250	0
09:00-10:0	1	1250	0	1	1250	0	1	1250	0
10:00-11:0	1	1250	0.08	1	1250	0	1	1250	0.08
11:00-12:0	1	1250	0.08	1	1250	0.08	1	1250	0.16
12:00-13:0	1	1250	0	1	1250	0.08	1	1250	0.08
13:00-14:0	1	1250	0.08	1	1250	0	1	1250	0.08
14:00-15:0	1	1250	0	1	1250	0	1	1250	0
15:00-16:0	1	1250	0	1	1250	0.08	1	1250	0.08
16:00-17:0	1	1250	0	1	1250	0	1	1250	0
17:00-18:0	1	1250	0	1	1250	0	1	1250	0
18:00-19:0	1	1250	0	1	1250	0	1	1250	0
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.24			0.24			0.48

Parameter summary

Trip rate pa	1250 - 1250 (units: sqm)
Survey date	01/01/16 - 06/09/23
Number of	1
Number of	0
Number of	0
Surveys aut	0
Surveys ma	0

This sectior followed b the total nu the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Atkins Airside Swords Licence No: 332901

Filtering Summary

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Land Use	02/I	EMPLOYMENT/DATA CENTRE
Selected Trip Rate Calculation Parameter Range	5677-16000 sqm GFA	
Actual Trip Rate Calculation Parameter Range	5677-16000 sqm GFA	
Date Range	Minimum: 01/01/16	Maximum: 24/05/23
Parking Spaces Range	All Surveys Included	
Days of the week selected	Monday Wednesday	1 3
Main Location Types selected	Suburban Area (PPS6 Out of Centre)	4
Inclusion of Servicing Vehicles Counts	Servicing vehicles Included Servicing vehicles Excluded	5 - Selected X - Selected
Population within 500m	All Surveys Included	
Population <1 Mile ranges selected	25,001 to 50,000	4
Population <5 Mile ranges selected	250,001 to 500,000	4
Car Ownership <5 Mile ranges selected	0.6 to 1.0	4
PTAL Rating	No PTAL Present	4
Filter by Site Operations Breakdown	All Surveys Included	

Calculation Reference: AUDIT-332901-250403-0428

TRIP RATE CALCULATION SELECTION PARAMETERS:

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Land Use : 02 - EMPLOYMENT
Category : I - DATA CENTRE
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02 SOUTH EAST
SO SLOUGH 4 days

This section displays the number of survey days per TRICS® sub-region in the selected set

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Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Gross floor area
Actual Range:	5677 to 16000 (units: sqm)
Range Selected by User:	5677 to 16000 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/16 to 24/05/23

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Wednesday	3 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	4 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	4

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	4

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	5 days - Selected
Servicing vehicles Excluded	X days - Selected

Secondary Filtering selection:

Use Class:

Not Known	4 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Filter by Site Operations Breakdown:
All Surveys Included

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:
25,001 to 50,000 4 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
250,001 to 500,000 4 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 4 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:
No 4 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:
No PTAL Present 4 days

This data displays the number of selected surveys with PTAL Ratings.

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LIST OF SITES relevant to selection parameters

Site(1):	SO-02-I-01	Gross floor area:	16000 sqm
Development Name:	DATA CENTRE		
Location:	SLOUGH		
Postcode:	SL1 4QZ	No of Employees:	25
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	26/04/23
Sub-Location Type:	Industrial Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	78
Site(2):	SO-02-I-02	Gross floor area:	5677 sqm
Development Name:	DATA CENTRE		
Location:	SLOUGH		
Postcode:	SL1 4QZ	No of Employees:	
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	24/05/23
Sub-Location Type:	Industrial Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	34
Site(3):	SO-02-I-03	Gross floor area:	11700 sqm
Development Name:	DATA CENTRE		
Location:	SLOUGH		
Postcode:	SL1 4QZ	No of Employees:	
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	24/05/23
Sub-Location Type:	Industrial Zone	Survey Day:	Wednesday
PTAL:	n/a	Parking Spaces:	96
Site(4):	SO-02-I-04	Gross floor area:	11402 sqm
Development Name:	DATA CENTRE		
Location:	SLOUGH		
Postcode:	SL1 4DG	No of Employees:	
Main Location Type:	Suburban Area (PPS6 Out of Centre)	Survey Date:	22/05/23
Sub-Location Type:	Industrial Zone	Survey Day:	Monday
PTAL:	n/a	Parking Spaces:	162

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Trip Rates for Key Periods		Trips per 100 sqm GFA	
Period	Inbound	Outbound	Total
0800-0900	0.100	0.029	0.129
1700-1800	0.016	0.063	0.079
0700-0800	0.130	0.022	0.152

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TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 2.02

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.007	3	9593	0.000	3	9593	0.007
05:00 - 06:00	3	9593	0.024	3	9593	0.007	3	9593	0.031
06:00 - 07:00	4	11195	0.100	4	11195	0.042	4	11195	0.142
07:00 - 08:00	4	11195	0.130	4	11195	0.022	4	11195	0.152
08:00 - 09:00	4	11195	0.100	4	11195	0.029	4	11195	0.129
09:00 - 10:00	4	11195	0.067	4	11195	0.040	4	11195	0.107
10:00 - 11:00	4	11195	0.054	4	11195	0.025	4	11195	0.079
11:00 - 12:00	4	11195	0.031	4	11195	0.047	4	11195	0.078
12:00 - 13:00	4	11195	0.029	4	11195	0.040	4	11195	0.069
13:00 - 14:00	4	11195	0.040	4	11195	0.045	4	11195	0.085
14:00 - 15:00	4	11195	0.042	4	11195	0.047	4	11195	0.089
15:00 - 16:00	4	11195	0.013	4	11195	0.089	4	11195	0.102
16:00 - 17:00	4	11195	0.011	4	11195	0.080	4	11195	0.091
17:00 - 18:00	4	11195	0.016	4	11195	0.063	4	11195	0.079
18:00 - 19:00	4	11195	0.029	4	11195	0.060	4	11195	0.089
19:00 - 20:00	4	11195	0.009	4	11195	0.025	4	11195	0.034
20:00 - 21:00	3	9593	0.003	3	9593	0.021	3	9593	0.024
21:00 - 22:00	3	9593	0.003	3	9593	0.014	3	9593	0.017
22:00 - 23:00	3	9593	0.010	3	9593	0.017	3	9593	0.027
23:00 - 24:00	3	9593	0.007	3	9593	0.003	3	9593	0.010
Total Rates:			0.725			0.716			1.441

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

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Parameter summary

Trip rate parameter range selected:	5677 - 16000 (units: sqm)
Survey date date range:	01/01/16 - 24/05/23
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL TAXIS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

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	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.003	3	9593	0.003	3	9593	0.006
06:00 - 07:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
07:00 - 08:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
08:00 - 09:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
09:00 - 10:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
10:00 - 11:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
11:00 - 12:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
12:00 - 13:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
13:00 - 14:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
14:00 - 15:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
15:00 - 16:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
16:00 - 17:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
17:00 - 18:00	4	11195	0.004	4	11195	0.004	4	11195	0.008
18:00 - 19:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
19:00 - 20:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
20:00 - 21:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.013			0.013			0.026

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

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Time Range	ARRIVALS No. Days	ARRIVALS Ave. GFA	ARRIVALS Trip Rate	DEPARTURES No. Days	DEPARTURES Ave. GFA	DEPARTURES Trip Rate	TOTALS No. Days	TOTALS Ave. GFA	TOTALS Trip Rate
00:00 - 01:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
06:00 - 07:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
07:00 - 08:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
08:00 - 09:00	4	11195	0.004	4	11195	0.004	4	11195	0.008
09:00 - 10:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
10:00 - 11:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
11:00 - 12:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
12:00 - 13:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
13:00 - 14:00	4	11195	0.004	4	11195	0.004	4	11195	0.008
14:00 - 15:00	4	11195	0.007	4	11195	0.004	4	11195	0.011
15:00 - 16:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
16:00 - 17:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
17:00 - 18:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
18:00 - 19:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
19:00 - 20:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
20:00 - 21:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.019			0.018			0.037

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 09/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
06:00 - 07:00	4	11195	0.016	4	11195	0.000	4	11195	0.016
07:00 - 08:00	4	11195	0.004	4	11195	0.000	4	11195	0.004
08:00 - 09:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
09:00 - 10:00	4	11195	0.004	4	11195	0.000	4	11195	0.004
10:00 - 11:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
11:00 - 12:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
12:00 - 13:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
13:00 - 14:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
14:00 - 15:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
15:00 - 16:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
16:00 - 17:00	4	11195	0.000	4	11195	0.004	4	11195	0.004
17:00 - 18:00	4	11195	0.000	4	11195	0.011	4	11195	0.011
18:00 - 19:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
19:00 - 20:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
20:00 - 21:00	3	9593	0.000	3	9593	0.003	3	9593	0.003
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.028			0.028			0.056

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 09/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.007	3	9593	0.000	3	9593	0.007
05:00 - 06:00	3	9593	0.028	3	9593	0.003	3	9593	0.031
06:00 - 07:00	4	11195	0.105	4	11195	0.040	4	11195	0.145
07:00 - 08:00	4	11195	0.138	4	11195	0.020	4	11195	0.158
08:00 - 09:00	4	11195	0.109	4	11195	0.031	4	11195	0.140
09:00 - 10:00	4	11195	0.067	4	11195	0.042	4	11195	0.109
10:00 - 11:00	4	11195	0.065	4	11195	0.025	4	11195	0.090
11:00 - 12:00	4	11195	0.033	4	11195	0.051	4	11195	0.084
12:00 - 13:00	4	11195	0.033	4	11195	0.047	4	11195	0.080
13:00 - 14:00	4	11195	0.042	4	11195	0.051	4	11195	0.093
14:00 - 15:00	4	11195	0.042	4	11195	0.051	4	11195	0.093
15:00 - 16:00	4	11195	0.018	4	11195	0.098	4	11195	0.116
16:00 - 17:00	4	11195	0.011	4	11195	0.089	4	11195	0.100
17:00 - 18:00	4	11195	0.011	4	11195	0.063	4	11195	0.074
18:00 - 19:00	4	11195	0.033	4	11195	0.067	4	11195	0.100
19:00 - 20:00	4	11195	0.009	4	11195	0.025	4	11195	0.034
20:00 - 21:00	3	9593	0.003	3	9593	0.024	3	9593	0.027
21:00 - 22:00	3	9593	0.007	3	9593	0.021	3	9593	0.028
22:00 - 23:00	3	9593	0.010	3	9593	0.017	3	9593	0.027
23:00 - 24:00	3	9593	0.007	3	9593	0.003	3	9593	0.010
Total Rates:			0.778			0.768			1.546

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL PEDESTRIANS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 09/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.003	3	9593	0.003	3	9593	0.006
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
06:00 - 07:00	4	11195	0.004	4	11195	0.002	4	11195	0.006
07:00 - 08:00	4	11195	0.011	4	11195	0.002	4	11195	0.013
08:00 - 09:00	4	11195	0.013	4	11195	0.004	4	11195	0.017
09:00 - 10:00	4	11195	0.007	4	11195	0.000	4	11195	0.007
10:00 - 11:00	4	11195	0.000	4	11195	0.016	4	11195	0.016
11:00 - 12:00	4	11195	0.013	4	11195	0.002	4	11195	0.015
12:00 - 13:00	4	11195	0.020	4	11195	0.025	4	11195	0.045
13:00 - 14:00	4	11195	0.007	4	11195	0.004	4	11195	0.011
14:00 - 15:00	4	11195	0.004	4	11195	0.002	4	11195	0.006
15:00 - 16:00	4	11195	0.002	4	11195	0.009	4	11195	0.011
16:00 - 17:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
17:00 - 18:00	4	11195	0.004	4	11195	0.011	4	11195	0.015
18:00 - 19:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
19:00 - 20:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
20:00 - 21:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.090			0.084			0.174

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 04/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.007	3	9593	0.000	3	9593	0.007
05:00 - 06:00	3	9593	0.003	3	9593	0.000	3	9593	0.003
06:00 - 07:00	4	11195	0.011	4	11195	0.000	4	11195	0.011
07:00 - 08:00	4	11195	0.045	4	11195	0.002	4	11195	0.047
08:00 - 09:00	4	11195	0.025	4	11195	0.016	4	11195	0.041
09:00 - 10:00	4	11195	0.018	4	11195	0.009	4	11195	0.027
10:00 - 11:00	4	11195	0.031	4	11195	0.031	4	11195	0.062
11:00 - 12:00	4	11195	0.020	4	11195	0.045	4	11195	0.065
12:00 - 13:00	4	11195	0.051	4	11195	0.031	4	11195	0.082
13:00 - 14:00	4	11195	0.027	4	11195	0.013	4	11195	0.040
14:00 - 15:00	4	11195	0.013	4	11195	0.009	4	11195	0.022
15:00 - 16:00	4	11195	0.009	4	11195	0.018	4	11195	0.027
16:00 - 17:00	4	11195	0.007	4	11195	0.031	4	11195	0.038
17:00 - 18:00	4	11195	0.000	4	11195	0.042	4	11195	0.042
18:00 - 19:00	4	11195	0.004	4	11195	0.013	4	11195	0.017
19:00 - 20:00	4	11195	0.004	4	11195	0.007	4	11195	0.011
20:00 - 21:00	3	9593	0.003	3	9593	0.003	3	9593	0.006
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.003	3	9593	0.003	3	9593	0.006
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.281			0.273			0.554

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL TOTAL RAIL PASSENGERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 04/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.003	3	9593	0.000	3	9593	0.003
06:00 - 07:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
07:00 - 08:00	4	11195	0.011	4	11195	0.002	4	11195	0.013
08:00 - 09:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
09:00 - 10:00	4	11195	0.004	4	11195	0.004	4	11195	0.008
10:00 - 11:00	4	11195	0.004	4	11195	0.000	4	11195	0.004
11:00 - 12:00	4	11195	0.004	4	11195	0.007	4	11195	0.011
12:00 - 13:00	4	11195	0.009	4	11195	0.007	4	11195	0.016
13:00 - 14:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
14:00 - 15:00	4	11195	0.007	4	11195	0.000	4	11195	0.007
15:00 - 16:00	4	11195	0.000	4	11195	0.009	4	11195	0.009
16:00 - 17:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
17:00 - 18:00	4	11195	0.000	4	11195	0.004	4	11195	0.004
18:00 - 19:00	4	11195	0.004	4	11195	0.000	4	11195	0.004
19:00 - 20:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
20:00 - 21:00	3	9593	0.000	3	9593	0.003	3	9593	0.003
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.052			0.042			0.094

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 03/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.007	3	9593	0.000	3	9593	0.007
05:00 - 06:00	3	9593	0.007	3	9593	0.000	3	9593	0.007
06:00 - 07:00	4	11195	0.011	4	11195	0.000	4	11195	0.011
07:00 - 08:00	4	11195	0.056	4	11195	0.004	4	11195	0.060
08:00 - 09:00	4	11195	0.027	4	11195	0.018	4	11195	0.045
09:00 - 10:00	4	11195	0.022	4	11195	0.013	4	11195	0.035
10:00 - 11:00	4	11195	0.036	4	11195	0.031	4	11195	0.067
11:00 - 12:00	4	11195	0.025	4	11195	0.051	4	11195	0.076
12:00 - 13:00	4	11195	0.060	4	11195	0.038	4	11195	0.098
13:00 - 14:00	4	11195	0.029	4	11195	0.016	4	11195	0.045
14:00 - 15:00	4	11195	0.020	4	11195	0.009	4	11195	0.029
15:00 - 16:00	4	11195	0.009	4	11195	0.027	4	11195	0.036
16:00 - 17:00	4	11195	0.007	4	11195	0.033	4	11195	0.040
17:00 - 18:00	4	11195	0.000	4	11195	0.047	4	11195	0.047
18:00 - 19:00	4	11195	0.009	4	11195	0.013	4	11195	0.022
19:00 - 20:00	4	11195	0.007	4	11195	0.007	4	11195	0.014
20:00 - 21:00	3	9593	0.003	3	9593	0.007	3	9593	0.010
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.003	3	9593	0.003	3	9593	0.006
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.338			0.317			0.655

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.41

RECEIVED: 08/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.003	3	9593	0.003	3	9593	0.006
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.014	3	9593	0.000	3	9593	0.014
05:00 - 06:00	3	9593	0.035	3	9593	0.003	3	9593	0.038
06:00 - 07:00	4	11195	0.136	4	11195	0.042	4	11195	0.178
07:00 - 08:00	4	11195	0.210	4	11195	0.027	4	11195	0.237
08:00 - 09:00	4	11195	0.152	4	11195	0.054	4	11195	0.206
09:00 - 10:00	4	11195	0.100	4	11195	0.056	4	11195	0.156
10:00 - 11:00	4	11195	0.100	4	11195	0.071	4	11195	0.171
11:00 - 12:00	4	11195	0.071	4	11195	0.107	4	11195	0.178
12:00 - 13:00	4	11195	0.114	4	11195	0.109	4	11195	0.223
13:00 - 14:00	4	11195	0.080	4	11195	0.074	4	11195	0.154
14:00 - 15:00	4	11195	0.067	4	11195	0.065	4	11195	0.132
15:00 - 16:00	4	11195	0.029	4	11195	0.134	4	11195	0.163
16:00 - 17:00	4	11195	0.018	4	11195	0.130	4	11195	0.148
17:00 - 18:00	4	11195	0.016	4	11195	0.132	4	11195	0.148
18:00 - 19:00	4	11195	0.045	4	11195	0.085	4	11195	0.130
19:00 - 20:00	4	11195	0.016	4	11195	0.033	4	11195	0.049
20:00 - 21:00	3	9593	0.007	3	9593	0.035	3	9593	0.042
21:00 - 22:00	3	9593	0.007	3	9593	0.021	3	9593	0.028
22:00 - 23:00	3	9593	0.014	3	9593	0.021	3	9593	0.035
23:00 - 24:00	3	9593	0.007	3	9593	0.003	3	9593	0.010
Total Rates:			1.241			1.205			2.446

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL CARS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 03/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.007	3	9593	0.000	3	9593	0.007
05:00 - 06:00	3	9593	0.021	3	9593	0.003	3	9593	0.024
06:00 - 07:00	4	11195	0.096	4	11195	0.038	4	11195	0.134
07:00 - 08:00	4	11195	0.098	4	11195	0.013	4	11195	0.111
08:00 - 09:00	4	11195	0.067	4	11195	0.009	4	11195	0.076
09:00 - 10:00	4	11195	0.045	4	11195	0.022	4	11195	0.067
10:00 - 11:00	4	11195	0.038	4	11195	0.011	4	11195	0.049
11:00 - 12:00	4	11195	0.022	4	11195	0.029	4	11195	0.051
12:00 - 13:00	4	11195	0.016	4	11195	0.027	4	11195	0.043
13:00 - 14:00	4	11195	0.016	4	11195	0.027	4	11195	0.043
14:00 - 15:00	4	11195	0.022	4	11195	0.031	4	11195	0.053
15:00 - 16:00	4	11195	0.007	4	11195	0.045	4	11195	0.052
16:00 - 17:00	4	11195	0.007	4	11195	0.065	4	11195	0.072
17:00 - 18:00	4	11195	0.009	4	11195	0.056	4	11195	0.065
18:00 - 19:00	4	11195	0.029	4	11195	0.060	4	11195	0.089
19:00 - 20:00	4	11195	0.007	4	11195	0.020	4	11195	0.027
20:00 - 21:00	3	9593	0.003	3	9593	0.021	3	9593	0.024
21:00 - 22:00	3	9593	0.003	3	9593	0.014	3	9593	0.017
22:00 - 23:00	3	9593	0.010	3	9593	0.017	3	9593	0.027
23:00 - 24:00	3	9593	0.007	3	9593	0.003	3	9593	0.010
Total Rates:			0.530			0.511			1.041

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL LGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 09/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
06:00 - 07:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
07:00 - 08:00	4	11195	0.025	4	11195	0.004	4	11195	0.029
08:00 - 09:00	4	11195	0.029	4	11195	0.016	4	11195	0.045
09:00 - 10:00	4	11195	0.018	4	11195	0.016	4	11195	0.034
10:00 - 11:00	4	11195	0.011	4	11195	0.013	4	11195	0.024
11:00 - 12:00	4	11195	0.007	4	11195	0.011	4	11195	0.018
12:00 - 13:00	4	11195	0.013	4	11195	0.013	4	11195	0.026
13:00 - 14:00	4	11195	0.020	4	11195	0.013	4	11195	0.033
14:00 - 15:00	4	11195	0.011	4	11195	0.009	4	11195	0.020
15:00 - 16:00	4	11195	0.007	4	11195	0.042	4	11195	0.049
16:00 - 17:00	4	11195	0.004	4	11195	0.013	4	11195	0.017
17:00 - 18:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
18:00 - 19:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
19:00 - 20:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
20:00 - 21:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.149			0.154			0.303

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL MOTOR CYCLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 09/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
06:00 - 07:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
07:00 - 08:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
08:00 - 09:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
09:00 - 10:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
10:00 - 11:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
11:00 - 12:00	4	11195	0.002	4	11195	0.004	4	11195	0.006
12:00 - 13:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
13:00 - 14:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
14:00 - 15:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
15:00 - 16:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
16:00 - 17:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
17:00 - 18:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
18:00 - 19:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
19:00 - 20:00	4	11195	0.002	4	11195	0.004	4	11195	0.006
20:00 - 21:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.012			0.012			0.024

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL Servicing Vehicles
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 03/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
06:00 - 07:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
07:00 - 08:00	4	11195	0.004	4	11195	0.002	4	11195	0.006
08:00 - 09:00	4	11195	0.018	4	11195	0.018	4	11195	0.036
09:00 - 10:00	4	11195	0.013	4	11195	0.016	4	11195	0.029
10:00 - 11:00	4	11195	0.013	4	11195	0.009	4	11195	0.022
11:00 - 12:00	4	11195	0.009	4	11195	0.011	4	11195	0.020
12:00 - 13:00	4	11195	0.004	4	11195	0.004	4	11195	0.008
13:00 - 14:00	4	11195	0.009	4	11195	0.011	4	11195	0.020
14:00 - 15:00	4	11195	0.013	4	11195	0.011	4	11195	0.024
15:00 - 16:00	4	11195	0.002	4	11195	0.004	4	11195	0.006
16:00 - 17:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
17:00 - 18:00	4	11195	0.004	4	11195	0.004	4	11195	0.008
18:00 - 19:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
19:00 - 20:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
20:00 - 21:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.095			0.096			0.191

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/I - DATA CENTRE
MULTI-MODAL Scooters
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 09/09/2025

	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	3	9593	0.000	3	9593	0.000	3	9593	0.000
01:00 - 02:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
02:00 - 03:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
03:00 - 04:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
04:00 - 05:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
05:00 - 06:00	3	9593	0.003	3	9593	0.000	3	9593	0.003
06:00 - 07:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
07:00 - 08:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
08:00 - 09:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
09:00 - 10:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
10:00 - 11:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
11:00 - 12:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
12:00 - 13:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
13:00 - 14:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
14:00 - 15:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
15:00 - 16:00	4	11195	0.002	4	11195	0.002	4	11195	0.004
16:00 - 17:00	4	11195	0.002	4	11195	0.000	4	11195	0.002
17:00 - 18:00	4	11195	0.000	4	11195	0.002	4	11195	0.002
18:00 - 19:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
19:00 - 20:00	4	11195	0.000	4	11195	0.000	4	11195	0.000
20:00 - 21:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
21:00 - 22:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
22:00 - 23:00	3	9593	0.000	3	9593	0.003	3	9593	0.003
23:00 - 24:00	3	9593	0.000	3	9593	0.000	3	9593	0.000
Total Rates:			0.013			0.013			0.026

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRICS 7.11.3
Trip Rate P Site area

RECEIVED: 08/09/2025

Filtering Summary
Land Use 07/K LEISURE/FITNESS CLUB (PRIVATE)

Selected Tr 0.02-2.50 hect AREA

Actual Trip 0.07-0.50 hect AREA

Date Range Minimum: (Maximum: 13/11/23

Parking Sp All Surveys Included

Days of the	Monday	1
	Thursday	1
Main Locati	Suburban A	1
	Edge of Tov	1
Inclusion o	Servicing ve	3 - Selected
	Servicing ve	3 - Selected

Population All Surveys Included

Population	5	001 to 10	000	2
Population	125	001 to 250	000	2

Car Owners	0.6 to 1.0	2
PTAL Rating	No PTAL Pr	2

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 07 - LEISURE
Category K - FITNESS CLUB (PRIVATE)
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

02	SOUTH EAST	
	HF	HERTFORD 1 days
09	NORTH	
	TW	TYNE & WE 1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Site area
Actual Ran 0.07 to 0.50 (units: hect)
Range Sele 0.02 to 2.50 (units: hect)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/16 to 13/11/23

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Monday 1 days
Thursday 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual cou 2 days
Directional 0 days
This data di the total ac whilst ATC surveys are undertaking using machines.

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Selected Locations:

Town Centr	0
Edge of Tov	0
Suburban A	1
Edge of Tov	1
Neighbourh	0
Free Standi	0
Not Known	0

This data di Edge of To Suburban A Neighbourl Edge of To Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	0
Commercia	0
Developme	1
Residential	0
Retail Zone	1
Built-Up Zo	0
Village	0
Out of Towr	0
High Street	0
No Sub Cat	0

This data di Industrial Z Developme Residentia Retail Zone Built-Up Zc Village Out of Tow High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

n/a	1 days
E(d)	1 days

This data di which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:

5,001 to 1(	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

125,001 to	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days

This data di within a radius of 5-miles of selected survey sites.

Travel Plan:

No	2 days

This data di and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Pr	2 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

Site(1):	HF-07-K-01	Site area:	0.07 hect
Developme	LEANERLIF	Gross floor	766 sqm
Location:	STEVENAG	Parking spa	38
Postcode:	SG1 1XZ	No of Empl	10
Main Locati	Edge of Tov	Survey Date	########
Sub-Locati	Retail Zone	Survey Day	Monday
PTAL:	n/a		
Site(2):	TW-07-K-0:	Site area:	0.50 hect
Developme	DW SPORT	Gross floor	1380 sqm
Location:	SUNDERLA	Parking spa	111
Postcode:	SR5 3XG	No of Empl	38
Main Locati	Suburban A	Survey Date	########

Sub-Locati Developme Survey Day Thursday
PTAL: n/a

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This sectior it displays the selecte the day of t and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: TOTAL VEHICLES

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	28.571	1	0.07	0	1	0.07	28.571
06:00-07:0	2	0.29	26.316	2	0.29	1.754	2	0.29	28.07
07:00-08:0	2	0.29	42.105	2	0.29	14.035	2	0.29	56.14
08:00-09:0	2	0.29	33.333	2	0.29	28.07	2	0.29	61.403
09:00-10:0	2	0.29	36.842	2	0.29	22.807	2	0.29	59.649
10:00-11:0	2	0.29	33.333	2	0.29	38.596	2	0.29	71.929
11:00-12:0	2	0.29	42.105	2	0.29	29.825	2	0.29	71.93
12:00-13:0	2	0.29	26.316	2	0.29	24.561	2	0.29	50.877
13:00-14:0	2	0.29	31.579	2	0.29	24.561	2	0.29	56.14
14:00-15:0	2	0.29	28.07	2	0.29	45.614	2	0.29	73.684
15:00-16:0	2	0.29	64.912	2	0.29	22.807	2	0.29	87.719
16:00-17:0	2	0.29	68.421	2	0.29	43.86	2	0.29	112.281
17:00-18:0	2	0.29	75.439	2	0.29	77.193	2	0.29	152.632
18:00-19:0	2	0.29	71.93	2	0.29	96.491	2	0.29	168.421
19:00-20:0	2	0.29	82.456	2	0.29	103.509	2	0.29	185.965
20:00-21:0	2	0.29	57.895	2	0.29	59.649	2	0.29	117.544
21:00-22:0	2	0.29	28.07	2	0.29	77.193	2	0.29	105.263
22:00-23:0	1	0.07	14.286	1	0.07	357.143	1	0.07	371.429
23:00-24:00									
Daily Trip Rates:			791.979			1067.668			1859.647

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: TAXIS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	0	1	0.07	0	1	0.07	0
06:00-07:0	2	0.29	0	2	0.29	0	2	0.29	0
07:00-08:0	2	0.29	0	2	0.29	0	2	0.29	0
08:00-09:0	2	0.29	0	2	0.29	0	2	0.29	0
09:00-10:0	2	0.29	0	2	0.29	0	2	0.29	0
10:00-11:0	2	0.29	0	2	0.29	0	2	0.29	0
11:00-12:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
12:00-13:0	2	0.29	0	2	0.29	0	2	0.29	0
13:00-14:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
14:00-15:0	2	0.29	0	2	0.29	0	2	0.29	0
15:00-16:0	2	0.29	0	2	0.29	0	2	0.29	0
16:00-17:0	2	0.29	0	2	0.29	0	2	0.29	0
17:00-18:0	2	0.29	0	2	0.29	0	2	0.29	0
18:00-19:0	2	0.29	0	2	0.29	0	2	0.29	0
19:00-20:0	2	0.29	0	2	0.29	0	2	0.29	0
20:00-21:0	2	0.29	0	2	0.29	0	2	0.29	0
21:00-22:0	2	0.29	0	2	0.29	0	2	0.29	0

22:00-23:0	1	0.07	0	1	0.07	0	1	0.07	0
23:00-24:00									
Daily Trip Rates:			3.508			3.508			7.016

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TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: CYCLISTS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	0	1	0.07	0	1	0.07	0
06:00-07:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
07:00-08:0	2	0.29	0	2	0.29	0	2	0.29	0
08:00-09:0	2	0.29	0	2	0.29	0	2	0.29	0
09:00-10:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
10:00-11:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
11:00-12:0	2	0.29	3.509	2	0.29	0	2	0.29	3.509
12:00-13:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
13:00-14:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
14:00-15:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
15:00-16:0	2	0.29	1.754	2	0.29	3.509	2	0.29	5.263
16:00-17:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
17:00-18:0	2	0.29	3.509	2	0.29	1.754	2	0.29	5.263
18:00-19:0	2	0.29	1.754	2	0.29	3.509	2	0.29	5.263
19:00-20:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
20:00-21:0	2	0.29	0	2	0.29	0	2	0.29	0
21:00-22:0	2	0.29	0	2	0.29	0	2	0.29	0
22:00-23:0	1	0.07	0	1	0.07	0	1	0.07	0
23:00-24:00									
Daily Trip Rates:			21.05			21.05			42.1

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: VEHICLE OCCUPANTS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	28.571	1	0.07	0	1	0.07	28.571
06:00-07:0	2	0.29	26.316	2	0.29	1.754	2	0.29	28.07
07:00-08:0	2	0.29	45.614	2	0.29	14.035	2	0.29	59.649
08:00-09:0	2	0.29	35.088	2	0.29	31.579	2	0.29	66.667
09:00-10:0	2	0.29	38.596	2	0.29	22.807	2	0.29	61.403
10:00-11:0	2	0.29	38.596	2	0.29	38.596	2	0.29	77.192
11:00-12:0	2	0.29	45.614	2	0.29	29.825	2	0.29	75.439
12:00-13:0	2	0.29	29.825	2	0.29	28.07	2	0.29	57.895
13:00-14:0	2	0.29	31.579	2	0.29	26.316	2	0.29	57.895
14:00-15:0	2	0.29	28.07	2	0.29	49.123	2	0.29	77.193
15:00-16:0	2	0.29	66.667	2	0.29	22.807	2	0.29	89.474
16:00-17:0	2	0.29	75.439	2	0.29	45.614	2	0.29	121.053
17:00-18:0	2	0.29	84.211	2	0.29	84.211	2	0.29	168.422
18:00-19:0	2	0.29	82.456	2	0.29	105.263	2	0.29	187.719
19:00-20:0	2	0.29	94.737	2	0.29	121.053	2	0.29	215.79
20:00-21:0	2	0.29	64.912	2	0.29	68.421	2	0.29	133.333
21:00-22:0	2	0.29	28.07	2	0.29	84.211	2	0.29	112.281
22:00-23:0	1	0.07	14.286	1	0.07	385.714	1	0.07	400
23:00-24:00									

Daily Trip Rates:	858.647	1159.399	2018.046

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TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: PEDESTRIANS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	0	1	0.07	0	1	0.07	0
06:00-07:0	2	0.29	5.263	2	0.29	0	2	0.29	5.263
07:00-08:0	2	0.29	7.018	2	0.29	5.263	2	0.29	12.281
08:00-09:0	2	0.29	7.018	2	0.29	8.772	2	0.29	15.79
09:00-10:0	2	0.29	8.772	2	0.29	8.772	2	0.29	17.544
10:00-11:0	2	0.29	5.263	2	0.29	3.509	2	0.29	8.772
11:00-12:0	2	0.29	3.509	2	0.29	7.018	2	0.29	10.527
12:00-13:0	2	0.29	7.018	2	0.29	3.509	2	0.29	10.527
13:00-14:0	2	0.29	3.509	2	0.29	8.772	2	0.29	12.281
14:00-15:0	2	0.29	7.018	2	0.29	3.509	2	0.29	10.527
15:00-16:0	2	0.29	12.281	2	0.29	10.526	2	0.29	22.807
16:00-17:0	2	0.29	5.263	2	0.29	12.281	2	0.29	17.544
17:00-18:0	2	0.29	14.035	2	0.29	12.281	2	0.29	26.316
18:00-19:0	2	0.29	10.526	2	0.29	3.509	2	0.29	14.035
19:00-20:0	2	0.29	5.263	2	0.29	7.018	2	0.29	12.281
20:00-21:0	2	0.29	0	2	0.29	5.263	2	0.29	5.263
21:00-22:0	2	0.29	0	2	0.29	0	2	0.29	0
22:00-23:0	1	0.07	0	1	0.07	14.286	1	0.07	14.286
23:00-24:00									
Daily Trip Rates:			101.756			114.288			216.044

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: BUS/TRAM PASSENGERS

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	0	1	0.07	0	1	0.07	0
06:00-07:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
07:00-08:0	2	0.29	3.509	2	0.29	1.754	2	0.29	5.263
08:00-09:0	2	0.29	0	2	0.29	3.509	2	0.29	3.509
09:00-10:0	2	0.29	0	2	0.29	0	2	0.29	0
10:00-11:0	2	0.29	0	2	0.29	0	2	0.29	0
11:00-12:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
12:00-13:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
13:00-14:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
14:00-15:0	2	0.29	0	2	0.29	0	2	0.29	0
15:00-16:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
16:00-17:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
17:00-18:0	2	0.29	3.509	2	0.29	0	2	0.29	3.509
18:00-19:0	2	0.29	7.018	2	0.29	0	2	0.29	7.018
19:00-20:0	2	0.29	3.509	2	0.29	7.018	2	0.29	10.527
20:00-21:0	2	0.29	3.509	2	0.29	3.509	2	0.29	7.018
21:00-22:0	2	0.29	0	2	0.29	3.509	2	0.29	3.509
22:00-23:0	1	0.07	0	1	0.07	14.286	1	0.07	14.286
23:00-24:00									
Daily Trip Rates:			28.07			38.847			66.917

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: PUBLIC TRANSPORT USERS

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	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	0	1	0.07	0	1	0.07	0
06:00-07:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
07:00-08:0	2	0.29	3.509	2	0.29	1.754	2	0.29	5.263
08:00-09:0	2	0.29	0	2	0.29	3.509	2	0.29	3.509
09:00-10:0	2	0.29	0	2	0.29	0	2	0.29	0
10:00-11:0	2	0.29	0	2	0.29	0	2	0.29	0
11:00-12:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
12:00-13:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
13:00-14:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
14:00-15:0	2	0.29	0	2	0.29	0	2	0.29	0
15:00-16:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
16:00-17:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
17:00-18:0	2	0.29	3.509	2	0.29	0	2	0.29	3.509
18:00-19:0	2	0.29	7.018	2	0.29	0	2	0.29	7.018
19:00-20:0	2	0.29	3.509	2	0.29	7.018	2	0.29	10.527
20:00-21:0	2	0.29	3.509	2	0.29	3.509	2	0.29	7.018
21:00-22:0	2	0.29	0	2	0.29	3.509	2	0.29	3.509
22:00-23:0	1	0.07	0	1	0.07	14.286	1	0.07	14.286
23:00-24:00									
Daily Trip Rates:			28.07			38.847			66.917

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: TOTAL PEOPLE

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	28.571	1	0.07	0	1	0.07	28.571
06:00-07:0	2	0.29	35.088	2	0.29	1.754	2	0.29	36.842
07:00-08:0	2	0.29	56.14	2	0.29	21.053	2	0.29	77.193
08:00-09:0	2	0.29	42.105	2	0.29	43.86	2	0.29	85.965
09:00-10:0	2	0.29	49.123	2	0.29	33.333	2	0.29	82.456
10:00-11:0	2	0.29	43.86	2	0.29	43.86	2	0.29	87.72
11:00-12:0	2	0.29	54.386	2	0.29	38.596	2	0.29	92.982
12:00-13:0	2	0.29	38.596	2	0.29	35.088	2	0.29	73.684
13:00-14:0	2	0.29	38.596	2	0.29	36.842	2	0.29	75.438
14:00-15:0	2	0.29	36.842	2	0.29	54.386	2	0.29	91.228
15:00-16:0	2	0.29	82.456	2	0.29	36.842	2	0.29	119.298
16:00-17:0	2	0.29	82.456	2	0.29	61.404	2	0.29	143.86
17:00-18:0	2	0.29	105.263	2	0.29	98.246	2	0.29	203.509
18:00-19:0	2	0.29	101.754	2	0.29	112.281	2	0.29	214.035
19:00-20:0	2	0.29	103.509	2	0.29	136.842	2	0.29	240.351
20:00-21:0	2	0.29	68.421	2	0.29	77.193	2	0.29	145.614
21:00-22:0	2	0.29	28.07	2	0.29	87.719	2	0.29	115.789
22:00-23:0	1	0.07	14.286	1	0.07	414.286	1	0.07	428.572
23:00-24:00									
Daily Trip Rates:			1009.522			1333.585			2343.107

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect

RECEIVED: 08/09/2025

Count Type: CARS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	AREA	Rate	Days	AREA	Rate	Days	AREA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	28.571	1	0.07	0	1	0.07	28.571
06:00-07:0	2	0.29	26.316	2	0.29	1.754	2	0.29	28.07
07:00-08:0	2	0.29	42.105	2	0.29	14.035	2	0.29	56.14
08:00-09:0	2	0.29	31.579	2	0.29	28.07	2	0.29	59.649
09:00-10:0	2	0.29	36.842	2	0.29	22.807	2	0.29	59.649
10:00-11:0	2	0.29	31.579	2	0.29	38.596	2	0.29	70.175
11:00-12:0	2	0.29	40.351	2	0.29	26.316	2	0.29	66.667
12:00-13:0	2	0.29	26.316	2	0.29	22.807	2	0.29	49.123
13:00-14:0	2	0.29	26.316	2	0.29	22.807	2	0.29	49.123
14:00-15:0	2	0.29	26.316	2	0.29	43.86	2	0.29	70.176
15:00-16:0	2	0.29	64.912	2	0.29	21.053	2	0.29	85.965
16:00-17:0	2	0.29	66.667	2	0.29	42.105	2	0.29	108.772
17:00-18:0	2	0.29	73.684	2	0.29	77.193	2	0.29	150.877
18:00-19:0	2	0.29	70.175	2	0.29	92.982	2	0.29	163.157
19:00-20:0	2	0.29	80.702	2	0.29	103.509	2	0.29	184.211
20:00-21:0	2	0.29	57.895	2	0.29	56.14	2	0.29	114.035
21:00-22:0	2	0.29	28.07	2	0.29	77.193	2	0.29	105.263
22:00-23:0	1	0.07	14.286	1	0.07	357.143	1	0.07	371.429
23:00-24:00									
Daily Trip Rates:			772.682			1048.37			1821.052

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: LGVS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	AREA	Rate	Days	AREA	Rate	Days	AREA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	0	1	0.07	0	1	0.07	0
06:00-07:0	2	0.29	0	2	0.29	0	2	0.29	0
07:00-08:0	2	0.29	0	2	0.29	0	2	0.29	0
08:00-09:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
09:00-10:0	2	0.29	0	2	0.29	0	2	0.29	0
10:00-11:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
11:00-12:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
12:00-13:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
13:00-14:0	2	0.29	0	2	0.29	0	2	0.29	0
14:00-15:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
15:00-16:0	2	0.29	0	2	0.29	0	2	0.29	0
16:00-17:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
17:00-18:0	2	0.29	0	2	0.29	0	2	0.29	0
18:00-19:0	2	0.29	1.754	2	0.29	1.754	2	0.29	3.508
19:00-20:0	2	0.29	0	2	0.29	0	2	0.29	0
20:00-21:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
21:00-22:0	2	0.29	0	2	0.29	0	2	0.29	0
22:00-23:0	1	0.07	0	1	0.07	0	1	0.07	0
23:00-24:00									
Daily Trip Rates:			8.77			8.77			17.54

TRIP RATE for Land Use 07 - LEISURE/K - FITNESS CLUB (PRIVATE)
Calculation Factor: 1 hect
Count Type: MOTOR CYCLES

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		ARRIVALS			DEPARTURES			TOTALS	
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	AREA	Rate	Days	AREA	Rate	Days	AREA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:0	1	0.07	0	1	0.07	0	1	0.07	0
06:00-07:0	2	0.29	0	2	0.29	0	2	0.29	0
07:00-08:0	2	0.29	0	2	0.29	0	2	0.29	0
08:00-09:0	2	0.29	0	2	0.29	0	2	0.29	0
09:00-10:0	2	0.29	0	2	0.29	0	2	0.29	0
10:00-11:0	2	0.29	0	2	0.29	0	2	0.29	0
11:00-12:0	2	0.29	0	2	0.29	0	2	0.29	0
12:00-13:0	2	0.29	0	2	0.29	0	2	0.29	0
13:00-14:0	2	0.29	3.509	2	0.29	0	2	0.29	3.509
14:00-15:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
15:00-16:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
16:00-17:0	2	0.29	0	2	0.29	0	2	0.29	0
17:00-18:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
18:00-19:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
19:00-20:0	2	0.29	1.754	2	0.29	0	2	0.29	1.754
20:00-21:0	2	0.29	0	2	0.29	1.754	2	0.29	1.754
21:00-22:0	2	0.29	0	2	0.29	0	2	0.29	0
22:00-23:0	1	0.07	0	1	0.07	0	1	0.07	0
23:00-24:00									
Daily Trip Rates:			7.017			7.016			14.033

Parameter summary

Trip rate pa	0.07 to 0.50 (units: hect)
Survey date	01/01/16 - 13/11/23
Number of	2
Number of	0
Number of	0
Surveys au	0
Surveys ma	0

This sectior followed b the total nu the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

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TRICS 7.11.3
Trip Rate P: Gross floor area

Filtering Summary
Land Use 01/A RETAIL/FOOD SUPERSTORE

Selected Tr 800-15124 sqm GFA

Actual Trip 5500-9854 sqm GFA

Date Range Minimum: (Maximum: 17/05/23

Parking Sp: All Surveys Included

Days of the	Thursday	1
	Friday	1
Main Locati	Town Centr	1
	Edge of Tov	1
Inclusion o	Servicing ve	13 - Selected
	Servicing ve	7 - Selected

Population All Surveys Included

Population	5	001 to 10	000	1
	10	001 to 15	000	1
Population	25	001 to 50	000	1
	50	001 to 75	000	1

Car Owners	0.6 to 1.0	1
	1.6 to 2.0	1
PTAL Rating	No PTAL Pr	2

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 01 - RETAIL
Category A - FOOD SUPERSTORE
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:
04 EAST ANGLIA
CA CAMBRIDG 1 days
10 WALES
CO CONWY 1 days
This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Gross floor area
Actual Ran 5500 to 9854 (units: sqm)
Range Sele 800 to 15124 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/16 to 17/05/23

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Thursday 1 days
Friday 1 days
This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual cou 2 days
Directional 0 days
This data di the total ac whilst ATC surveys are undertaking using machines.

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Selected Locations:

Town Centr	1
Edge of Tov	1
Suburban A	0
Edge of Tov	0
Neighbourh	0
Free Standi	0
Not Known	0

This data di Edge of To Suburban A Neighbourh Edge of To Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Z	0
Commercia	0
Developme	0
Residential	0
Retail Zone	2
Built-Up Zo	0
Village	0
Out of Towr	0
High Street	0
No Sub Cat	0

This data di Industrial Z Developme Residentia Retail Zone Built-Up Zo Village Out of Tow High Street and No Sub Category.

Secondary Filtering selection:

Use Class:
E(a) 2 days
This data di which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Population within 1 mile:
5,001 to 10 1 days
10,001 to 1 1 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
25,001 to 5 1 days
50,001 to 7 1 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 1 days
1.6 to 2.0 1 days
This data di within a radius of 5-miles of selected survey sites.

Petrol filling station:
PFS is pres 2 days
PFS is pres 0 days
There is no 0 days
This data di and the number of surveys that do not.

Travel Plan:
No 2 days
This data di and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:
No PTAL Pr 2 days
This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters
Site(1): CA-01-A-03 Gross floor 5500 sqm
Developme MORRISON Retail floor 4000 sqm

Location:	CAMBOURI	Parking spa	385
Postcode:	CB23 6EY	No of Empl	192
Main Locati	Town Centr	Survey Date	########
Sub-Locati	Retail Zone	Survey Day	Thursday
PTAL:	n/a		
Site(2):	CO-01-A-0	Gross floor	9854 sqm
Developme	ASDA	Retail floor	7853 sqm
Location:	LLANDUDN	Parking spa	680
Postcode:	LL30 1PJ	No of Empl	
Main Locati	Edge of Tov	Survey Date	########
Sub-Locati	Retail Zone	Survey Day	Friday
PTAL:	n/a		

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This sectior it displays the selecte the day of t and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: TOTAL VEHICLES

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.355	1	9854	0.132	1	9854	0.487
07:00-08:0	2	7677	1.485	2	7677	1.094	2	7677	2.579
08:00-09:0	2	7677	2.299	2	7677	1.7	2	7677	3.999
09:00-10:0	2	7677	2.657	2	7677	2.377	2	7677	5.034
10:00-11:0	2	7677	2.748	2	7677	2.41	2	7677	5.158
11:00-12:0	2	7677	2.801	2	7677	2.82	2	7677	5.621
12:00-13:0	2	7677	3.296	2	7677	2.722	2	7677	6.018
13:00-14:0	2	7677	2.573	2	7677	3.009	2	7677	5.582
14:00-15:0	2	7677	2.931	2	7677	3.055	2	7677	5.986
15:00-16:0	2	7677	2.488	2	7677	2.755	2	7677	5.243
16:00-17:0	2	7677	2.566	2	7677	2.827	2	7677	5.393
17:00-18:0	2	7677	3.074	2	7677	2.963	2	7677	6.037
18:00-19:0	2	7677	2.716	2	7677	2.879	2	7677	5.595
19:00-20:0	2	7677	1.941	2	7677	2.507	2	7677	4.448
20:00-21:0	2	7677	2.019	2	7677	2.319	2	7677	4.338
21:00-22:0	1	9854	0.223	1	9854	0.467	1	9854	0.69
22:00-23:0	1	9854	0.02	1	9854	0.132	1	9854	0.152
23:00-24:00									
Daily Trip Rates:			36.192			36.168			72.36

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: TAXIS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.01	1	9854	0.01	1	9854	0.02
07:00-08:0	2	7677	0.026	2	7677	0.02	2	7677	0.046
08:00-09:0	2	7677	0.059	2	7677	0.052	2	7677	0.111
09:00-10:0	2	7677	0.059	2	7677	0.065	2	7677	0.124
10:00-11:0	2	7677	0.065	2	7677	0.059	2	7677	0.124
11:00-12:0	2	7677	0.039	2	7677	0.052	2	7677	0.091

12:00-13:0	2	7677	0.065	2	7677	0.052	2	7677	0.117
13:00-14:0	2	7677	0.046	2	7677	0.052	2	7677	0.098
14:00-15:0	2	7677	0.078	2	7677	0.085	2	7677	0.163
15:00-16:0	2	7677	0.02	2	7677	0.02	2	7677	0.04
16:00-17:0	2	7677	0.046	2	7677	0.046	2	7677	0.092
17:00-18:0	2	7677	0.078	2	7677	0.078	2	7677	0.156
18:00-19:0	2	7677	0.033	2	7677	0.02	2	7677	0.053
19:00-20:0	2	7677	0.013	2	7677	0.026	2	7677	0.039
20:00-21:0	2	7677	0.007	2	7677	0	2	7677	0.007
21:00-22:0	1	9854	0	1	9854	0.01	1	9854	0.01
22:00-23:0	1	9854	0.01	1	9854	0.01	1	9854	0.02
23:00-24:00									
Daily Trip Rates:			0.654			0.657			1.311

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TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: OGVS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.01	1	9854	0	1	9854	0.01
07:00-08:0	2	7677	0.026	2	7677	0.007	2	7677	0.033
08:00-09:0	2	7677	0.033	2	7677	0.02	2	7677	0.053
09:00-10:0	2	7677	0.02	2	7677	0.026	2	7677	0.046
10:00-11:0	2	7677	0.033	2	7677	0.033	2	7677	0.066
11:00-12:0	2	7677	0.039	2	7677	0.026	2	7677	0.065
12:00-13:0	2	7677	0.033	2	7677	0.033	2	7677	0.066
13:00-14:0	2	7677	0.026	2	7677	0.039	2	7677	0.065
14:00-15:0	2	7677	0.039	2	7677	0.033	2	7677	0.072
15:00-16:0	2	7677	0.046	2	7677	0.033	2	7677	0.079
16:00-17:0	2	7677	0.02	2	7677	0.039	2	7677	0.059
17:00-18:0	2	7677	0.02	2	7677	0.039	2	7677	0.059
18:00-19:0	2	7677	0.007	2	7677	0.013	2	7677	0.02
19:00-20:0	2	7677	0.026	2	7677	0.02	2	7677	0.046
20:00-21:0	2	7677	0	2	7677	0.013	2	7677	0.013
21:00-22:0	1	9854	0	1	9854	0	1	9854	0
22:00-23:0	1	9854	0	1	9854	0	1	9854	0
23:00-24:00									
Daily Trip Rates:			0.378			0.374			0.752

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: CYCLISTS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.051	1	9854	0.03	1	9854	0.081
07:00-08:0	2	7677	0.098	2	7677	0.026	2	7677	0.124
08:00-09:0	2	7677	0.098	2	7677	0.039	2	7677	0.137
09:00-10:0	2	7677	0.085	2	7677	0.078	2	7677	0.163
10:00-11:0	2	7677	0.117	2	7677	0.065	2	7677	0.182
11:00-12:0	2	7677	0.104	2	7677	0.111	2	7677	0.215
12:00-13:0	2	7677	0.091	2	7677	0.098	2	7677	0.189
13:00-14:0	2	7677	0.078	2	7677	0.052	2	7677	0.13

14:00-15:0	2	7677	0.104	2	7677	0.111	2	7677	0.215
15:00-16:0	2	7677	0.117	2	7677	0.111	2	7677	0.228
16:00-17:0	2	7677	0.059	2	7677	0.085	2	7677	0.144
17:00-18:0	2	7677	0.039	2	7677	0.072	2	7677	0.111
18:00-19:0	2	7677	0.039	2	7677	0.104	2	7677	0.143
19:00-20:0	2	7677	0.02	2	7677	0.052	2	7677	0.072
20:00-21:0	2	7677	0	2	7677	0.033	2	7677	0.033
21:00-22:0	1	9854	0	1	9854	0.02	1	9854	0.02
22:00-23:0	1	9854	0	1	9854	0.02	1	9854	0.02
23:00-24:00									
Daily Trip Rates:			1.1			1.107			2.207

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TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: VEHICLE OCCUPANTS

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.447	1	9854	0.142	1	9854	0.589
07:00-08:0	2	7677	1.843	2	7677	1.264	2	7677	3.107
08:00-09:0	2	7677	2.95	2	7677	2.143	2	7677	5.093
09:00-10:0	2	7677	3.445	2	7677	2.931	2	7677	6.376
10:00-11:0	2	7677	3.751	2	7677	3.159	2	7677	6.91
11:00-12:0	2	7677	3.843	2	7677	3.797	2	7677	7.64
12:00-13:0	2	7677	4.448	2	7677	4.005	2	7677	8.453
13:00-14:0	2	7677	3.673	2	7677	3.96	2	7677	7.633
14:00-15:0	2	7677	4.123	2	7677	4.305	2	7677	8.428
15:00-16:0	2	7677	3.602	2	7677	3.908	2	7677	7.51
16:00-17:0	2	7677	3.419	2	7677	3.986	2	7677	7.405
17:00-18:0	2	7677	4.194	2	7677	4.194	2	7677	8.388
18:00-19:0	2	7677	3.719	2	7677	4.038	2	7677	7.757
19:00-20:0	2	7677	2.788	2	7677	3.387	2	7677	6.175
20:00-21:0	2	7677	2.703	2	7677	3.094	2	7677	5.797
21:00-22:0	1	9854	0.304	1	9854	0.792	1	9854	1.096
22:00-23:0	1	9854	0.01	1	9854	0.173	1	9854	0.183
23:00-24:00									
Daily Trip Rates:			49.262			49.278			98.54

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: PEDESTRIANS

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.274	1	9854	0.152	1	9854	0.426
07:00-08:0	2	7677	0.573	2	7677	0.482	2	7677	1.055
08:00-09:0	2	7677	0.756	2	7677	0.736	2	7677	1.492
09:00-10:0	2	7677	1.01	2	7677	0.788	2	7677	1.798
10:00-11:0	2	7677	0.944	2	7677	0.762	2	7677	1.706
11:00-12:0	2	7677	1.348	2	7677	1.127	2	7677	2.475
12:00-13:0	2	7677	1.772	2	7677	1.589	2	7677	3.361
13:00-14:0	2	7677	1.706	2	7677	1.303	2	7677	3.009
14:00-15:0	2	7677	1.198	2	7677	1.426	2	7677	2.624
15:00-16:0	2	7677	1.609	2	7677	1.407	2	7677	3.016

16:00-17:0	2	7677	1.491	2	7677	1.628	2	7677	3.119
17:00-18:0	2	7677	1.133	2	7677	1.309	2	7677	2.442
18:00-19:0	2	7677	0.99	2	7677	1.029	2	7677	2.019
19:00-20:0	2	7677	0.606	2	7677	0.899	2	7677	1.505
20:00-21:0	2	7677	0.332	2	7677	0.573	2	7677	0.905
21:00-22:0	1	9854	0.122	1	9854	0.304	1	9854	0.426
22:00-23:0	1	9854	0.112	1	9854	0.254	1	9854	0.366
23:00-24:00									
Daily Trip Rates:			15.976			15.768			31.744

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TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: BUS/TRAM PASSENGERS

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.091	1	9854	0	1	9854	0.091
07:00-08:0	2	7677	0.117	2	7677	0.039	2	7677	0.156
08:00-09:0	2	7677	0.169	2	7677	0.078	2	7677	0.247
09:00-10:0	2	7677	0.261	2	7677	0.124	2	7677	0.385
10:00-11:0	2	7677	0.443	2	7677	0.221	2	7677	0.664
11:00-12:0	2	7677	0.41	2	7677	0.267	2	7677	0.677
12:00-13:0	2	7677	0.345	2	7677	0.378	2	7677	0.723
13:00-14:0	2	7677	0.287	2	7677	0.3	2	7677	0.587
14:00-15:0	2	7677	0.234	2	7677	0.306	2	7677	0.54
15:00-16:0	2	7677	0.163	2	7677	0.241	2	7677	0.404
16:00-17:0	2	7677	0.124	2	7677	0.163	2	7677	0.287
17:00-18:0	2	7677	0.078	2	7677	0.182	2	7677	0.26
18:00-19:0	2	7677	0.078	2	7677	0.202	2	7677	0.28
19:00-20:0	2	7677	0.02	2	7677	0.052	2	7677	0.072
20:00-21:0	2	7677	0.026	2	7677	0.026	2	7677	0.052
21:00-22:0	1	9854	0	1	9854	0	1	9854	0
22:00-23:0	1	9854	0	1	9854	0.01	1	9854	0.01
23:00-24:00									
Daily Trip Rates:			2.846			2.589			5.435

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: TOTAL RAIL PASSENGERS

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0	1	9854	0	1	9854	0
07:00-08:0	2	7677	0	2	7677	0.013	2	7677	0.013
08:00-09:0	2	7677	0	2	7677	0.026	2	7677	0.026
09:00-10:0	2	7677	0	2	7677	0	2	7677	0
10:00-11:0	2	7677	0	2	7677	0.02	2	7677	0.02
11:00-12:0	2	7677	0.007	2	7677	0.026	2	7677	0.033
12:00-13:0	2	7677	0.007	2	7677	0.013	2	7677	0.02
13:00-14:0	2	7677	0	2	7677	0.007	2	7677	0.007
14:00-15:0	2	7677	0	2	7677	0	2	7677	0
15:00-16:0	2	7677	0	2	7677	0.007	2	7677	0.007
16:00-17:0	2	7677	0	2	7677	0	2	7677	0
17:00-18:0	2	7677	0	2	7677	0	2	7677	0

18:00-19:0	2	7677	0	2	7677	0	2	7677	0
19:00-20:0	2	7677	0	2	7677	0	2	7677	0
20:00-21:0	2	7677	0	2	7677	0	2	7677	0
21:00-22:0	1	9854	0	1	9854	0	1	9854	0
22:00-23:0	1	9854	0	1	9854	0	1	9854	0
23:00-24:00									
Daily Trip Rates:			0.014			0.112			0.126

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TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: PUBLIC TRANSPORT USERS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.091	1	9854	0	1	9854	0.091
07:00-08:0	2	7677	0.117	2	7677	0.052	2	7677	0.169
08:00-09:0	2	7677	0.169	2	7677	0.104	2	7677	0.273
09:00-10:0	2	7677	0.261	2	7677	0.124	2	7677	0.385
10:00-11:0	2	7677	0.443	2	7677	0.241	2	7677	0.684
11:00-12:0	2	7677	0.417	2	7677	0.293	2	7677	0.71
12:00-13:0	2	7677	0.352	2	7677	0.391	2	7677	0.743
13:00-14:0	2	7677	0.287	2	7677	0.306	2	7677	0.593
14:00-15:0	2	7677	0.234	2	7677	0.306	2	7677	0.54
15:00-16:0	2	7677	0.163	2	7677	0.247	2	7677	0.41
16:00-17:0	2	7677	0.124	2	7677	0.163	2	7677	0.287
17:00-18:0	2	7677	0.078	2	7677	0.182	2	7677	0.26
18:00-19:0	2	7677	0.078	2	7677	0.202	2	7677	0.28
19:00-20:0	2	7677	0.02	2	7677	0.052	2	7677	0.072
20:00-21:0	2	7677	0.026	2	7677	0.026	2	7677	0.052
21:00-22:0	1	9854	0	1	9854	0	1	9854	0
22:00-23:0	1	9854	0	1	9854	0.01	1	9854	0.01
23:00-24:00									
Daily Trip Rates:			2.86			2.699			5.559

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: TOTAL PEOPLE

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.863	1	9854	0.325	1	9854	1.188
07:00-08:0	2	7677	2.631	2	7677	1.824	2	7677	4.455
08:00-09:0	2	7677	3.973	2	7677	3.022	2	7677	6.995
09:00-10:0	2	7677	4.8	2	7677	3.921	2	7677	8.721
10:00-11:0	2	7677	5.256	2	7677	4.227	2	7677	9.483
11:00-12:0	2	7677	5.712	2	7677	5.328	2	7677	11.04
12:00-13:0	2	7677	6.663	2	7677	6.083	2	7677	12.746
13:00-14:0	2	7677	5.744	2	7677	5.621	2	7677	11.365
14:00-15:0	2	7677	5.66	2	7677	6.148	2	7677	11.808
15:00-16:0	2	7677	5.49	2	7677	5.673	2	7677	11.163
16:00-17:0	2	7677	5.093	2	7677	5.862	2	7677	10.955
17:00-18:0	2	7677	5.445	2	7677	5.757	2	7677	11.202
18:00-19:0	2	7677	4.826	2	7677	5.373	2	7677	10.199
19:00-20:0	2	7677	3.432	2	7677	4.39	2	7677	7.822

20:00-21:0	2	7677	3.061	2	7677	3.725	2	7677	6.786
21:00-22:0	1	9854	0.426	1	9854	1.116	1	9854	1.542
22:00-23:0	1	9854	0.122	1	9854	0.457	1	9854	0.579
23:00-24:00									
Daily Trip Rates:			69.197			68.852			138.049

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TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: CARS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.284	1	9854	0.112	1	9854	0.396
07:00-08:0	2	7677	1.309	2	7677	0.996	2	7677	2.305
08:00-09:0	2	7677	2.006	2	7677	1.524	2	7677	3.53
09:00-10:0	2	7677	2.455	2	7677	2.149	2	7677	4.604
10:00-11:0	2	7677	2.507	2	7677	2.208	2	7677	4.715
11:00-12:0	2	7677	2.54	2	7677	2.521	2	7677	5.061
12:00-13:0	2	7677	2.983	2	7677	2.449	2	7677	5.432
13:00-14:0	2	7677	2.358	2	7677	2.755	2	7677	5.113
14:00-15:0	2	7677	2.716	2	7677	2.788	2	7677	5.504
15:00-16:0	2	7677	2.28	2	7677	2.566	2	7677	4.846
16:00-17:0	2	7677	2.332	2	7677	2.592	2	7677	4.924
17:00-18:0	2	7677	2.846	2	7677	2.683	2	7677	5.529
18:00-19:0	2	7677	2.566	2	7677	2.703	2	7677	5.269
19:00-20:0	2	7677	1.869	2	7677	2.397	2	7677	4.266
20:00-21:0	2	7677	1.986	2	7677	2.253	2	7677	4.239
21:00-22:0	1	9854	0.213	1	9854	0.396	1	9854	0.609
22:00-23:0	1	9854	0.01	1	9854	0.091	1	9854	0.101
23:00-24:00									
Daily Trip Rates:			33.26			33.183			66.443

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: LGVS

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.041	1	9854	0.01	1	9854	0.051
07:00-08:0	2	7677	0.104	2	7677	0.065	2	7677	0.169
08:00-09:0	2	7677	0.143	2	7677	0.091	2	7677	0.234
09:00-10:0	2	7677	0.098	2	7677	0.085	2	7677	0.183
10:00-11:0	2	7677	0.111	2	7677	0.085	2	7677	0.196
11:00-12:0	2	7677	0.163	2	7677	0.176	2	7677	0.339
12:00-13:0	2	7677	0.202	2	7677	0.169	2	7677	0.371
13:00-14:0	2	7677	0.117	2	7677	0.15	2	7677	0.267
14:00-15:0	2	7677	0.072	2	7677	0.13	2	7677	0.202
15:00-16:0	2	7677	0.091	2	7677	0.111	2	7677	0.202
16:00-17:0	2	7677	0.137	2	7677	0.124	2	7677	0.261
17:00-18:0	2	7677	0.091	2	7677	0.124	2	7677	0.215
18:00-19:0	2	7677	0.065	2	7677	0.098	2	7677	0.163
19:00-20:0	2	7677	0.033	2	7677	0.046	2	7677	0.079
20:00-21:0	2	7677	0.026	2	7677	0.033	2	7677	0.059
21:00-22:0	1	9854	0.01	1	9854	0.041	1	9854	0.051

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22:00-23:0	1	9854	0	1	9854	0.02	1	9854	0.02
23:00-24:00									
Daily Trip Rates:			1.504			1.558			3.062

TRIP RATE for Land Use 01 - RETAIL/A - FOOD SUPERSTORE
Calculation Factor: 100 sqm
Count Type: MOTOR CYCLES

	ARRIVALS			DEPARTURES			TOTALS		
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:0	1	9854	0.01	1	9854	0	1	9854	0.01
07:00-08:0	2	7677	0.02	2	7677	0.007	2	7677	0.027
08:00-09:0	2	7677	0.059	2	7677	0.013	2	7677	0.072
09:00-10:0	2	7677	0.026	2	7677	0.052	2	7677	0.078
10:00-11:0	2	7677	0.033	2	7677	0.026	2	7677	0.059
11:00-12:0	2	7677	0.02	2	7677	0.046	2	7677	0.066
12:00-13:0	2	7677	0.013	2	7677	0.02	2	7677	0.033
13:00-14:0	2	7677	0.026	2	7677	0.013	2	7677	0.039
14:00-15:0	2	7677	0.026	2	7677	0.02	2	7677	0.046
15:00-16:0	2	7677	0.052	2	7677	0.026	2	7677	0.078
16:00-17:0	2	7677	0.033	2	7677	0.026	2	7677	0.059
17:00-18:0	2	7677	0.039	2	7677	0.039	2	7677	0.078
18:00-19:0	2	7677	0.046	2	7677	0.046	2	7677	0.092
19:00-20:0	2	7677	0	2	7677	0.02	2	7677	0.02
20:00-21:0	2	7677	0	2	7677	0.02	2	7677	0.02
21:00-22:0	1	9854	0	1	9854	0.02	1	9854	0.02
22:00-23:0	1	9854	0	1	9854	0.01	1	9854	0.01
23:00-24:00									
Daily Trip Rates:			0.403			0.404			0.807

Parameter summary

Trip rate pa	5500 - 9854 (units: sqm)
Survey date	01/01/16 - 17/05/23
Number of	2
Number of	0
Number of	0
Surveys aut	0
Surveys ma	0

This sectior followed b the total nu the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRICS 7.11.3
Trip Rate P Gross floor area

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Filtering Summary
Land Use 02/A EMPLOYMENT/OFFICE

Selected Tr 170-120000 sqm GFA

Actual Trip 170-6186 sqm GFA

Date Range Minimum: (Maximum: 23/11/22

Parking Spa All Surveys Included

Days of the Tuesday 1
Wednesda 1
Friday 1

Main Locati Edge of Tov 2
Edge of Tov 1

Inclusion o Servicing ve 32 - Selected
Servicing ve 13 - Selected

Population All Surveys Included

Population 1 001 to 5 000 1
5 001 to 10 000 2

Population 5 001 to 25 000 1
25 001 to 50 000 1
50 001 to 75 000 1

Car Owners 0.6 to 1.0 2
1.1 to 1.5 1

PTAL Rating No PTAL Pr 3

Filter by Sit All Surveys Included

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use 02 - EMPLOYMENT
Category A - OFFICE
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:
07 YORKSHIRE & NORTH LINCOLNSHIRE
NY NORTH YO 1 days
10 WALES
CO CONWY 1 days
16 ULSTER (REPUBLIC OF IRELAND)
CV CAVAN 1 days
This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.
Parameter: Gross floor area
Actual Ran 170 to 6186 (units: sqm)
Range Sele 170 to 120000 (units: sqm)

Public Transport Provision:
Selection b Include all surveys

Date Range 01/01/16 to 23/11/22

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.
Selected survey days:
Tuesday 1 days
Wednesday 1 days
Friday 1 days
This data displays the number of selected surveys by day of the week.

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Selected survey types:
Manual cou 3 days
Directional 0 days
This data di the total ac whilst ATC surveys are undertaking using machines.

Selected Locations:
Town Centr 0
Edge of Tov 2
Suburban A 0
Edge of Tov 1
Neighbourh 0
Free Standi 0
Not Known 0
This data di Edge of To Suburban A Neighbourh Edge of To Town Centre and Not Known.

Selected Location Sub Categories:
Industrial Z 0
Commercia 1
Developme 0
Residential 1
Retail Zone 0
Built-Up Zo 0
Village 0
Out of Towr 0
High Street 0
No Sub Cat 1
This data di Industrial Z Developme Residentia Retail Zone Built-Up Zc Village Out of Tow High Street and No Sub Category.

Secondary Filtering selection:

Use Class:
Not Known 3 days
This data di which can be found within the Library module of TRICS®.

Filter by Site Operations Breakdown:
All Surveys Included

Population within 500m Range:
All Surveys Included

Population within 1 mile:
1,001 to 5,(1 days
5,001 to 10 2 days
This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
5,001 to 2! 1 days
25,001 to 5 1 days
50,001 to 7 1 days
This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 2 days
1.1 to 1.5 1 days
This data di within a radius of 5-miles of selected survey sites.

Travel Plan:
No 3 days
This data di and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:
No PTAL Pr 3 days
This data displays the number of selected surveys with PTAL Ratings.

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LIST OF SITES relevant to selection parameters

Site(1):	CO-02-A-0:	Gross floor	6186 sqm
Developme	GOVERNMENT OFFICE		
Location:	LLANDUDNO JUNCTIO		
Postcode:	LL31 9RZ	No of Empl	500
Main Locati	Edge of Tov	Survey Date	########
Sub-Locati	Commerci	Survey Day	Wednesday
PTAL:	n/a	Parking Spa	320
Site(2):	CV-02-A-0:	Gross floor	170 sqm
Developme	SOLICITORS		
Location:	BALLYJAMESDUFF		
Postcode:	A82 KN26	No of Empl	3
Main Locati	Edge of Tov	Survey Date	########
Sub-Locati	Residential	Survey Day	Tuesday
PTAL:	n/a	Parking Spa	3
Site(3):	NY-02-A-0:	Gross floor	1590 sqm
Developme	DISTRICT COUNCIL OF		
Location:	RICHMOND		
Postcode:	DL10 4JX	No of Empl	155
Main Locati	Edge of Tov	Survey Date	########
Sub-Locati	No Sub Cat	Survey Day	Friday
PTAL:	n/a	Parking Spa	83

This sectior it displays the selecte the day of t and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: TOTAL VEHICLES

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.277	3	2649	0.038	3	2649	0.315
08:00-09:0	3	2649	1.623	3	2649	0.05	3	2649	1.673
09:00-10:0	3	2649	1.145	3	2649	0.138	3	2649	1.283
10:00-11:0	3	2649	0.591	3	2649	0.189	3	2649	0.78
11:00-12:0	3	2649	0.315	3	2649	0.138	3	2649	0.453
12:00-13:0	3	2649	0.352	3	2649	0.403	3	2649	0.755
13:00-14:0	3	2649	0.503	3	2649	0.428	3	2649	0.931
14:00-15:0	3	2649	0.289	3	2649	0.453	3	2649	0.742
15:00-16:0	3	2649	0.239	3	2649	0.415	3	2649	0.654
16:00-17:0	3	2649	0.252	3	2649	0.617	3	2649	0.869
17:00-18:0	3	2649	0.126	3	2649	1.737	3	2649	1.863
18:00-19:0	3	2649	0.013	3	2649	1.019	3	2649	1.032
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			5.725			5.625			11.35

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: TAXIS

	ARRIVALS	DEPARTURES	TOTALS

RECEIVED: 08/09/2025

Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0	3	2649	0	3	2649	0
08:00-09:0	3	2649	0.013	3	2649	0	3	2649	0.013
09:00-10:0	3	2649	0.025	3	2649	0.025	3	2649	0.05
10:00-11:0	3	2649	0.013	3	2649	0.025	3	2649	0.038
11:00-12:0	3	2649	0.025	3	2649	0.025	3	2649	0.05
12:00-13:0	3	2649	0.013	3	2649	0.013	3	2649	0.026
13:00-14:0	3	2649	0.013	3	2649	0.013	3	2649	0.026
14:00-15:0	3	2649	0.025	3	2649	0.025	3	2649	0.05
15:00-16:0	3	2649	0	3	2649	0	3	2649	0
16:00-17:0	3	2649	0.013	3	2649	0.013	3	2649	0.026
17:00-18:0	3	2649	0.038	3	2649	0.038	3	2649	0.076
18:00-19:0	3	2649	0.013	3	2649	0.013	3	2649	0.026
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.191			0.19			0.381

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: OGVS

			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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0	3	2649	0	3	2649	0
08:00-09:0	3	2649	0	3	2649	0	3	2649	0
09:00-10:0	3	2649	0.013	3	2649	0	3	2649	0.013
10:00-11:0	3	2649	0	3	2649	0	3	2649	0
11:00-12:0	3	2649	0.013	3	2649	0.013	3	2649	0.026
12:00-13:0	3	2649	0	3	2649	0	3	2649	0
13:00-14:0	3	2649	0	3	2649	0.013	3	2649	0.013
14:00-15:0	3	2649	0	3	2649	0	3	2649	0
15:00-16:0	3	2649	0.013	3	2649	0	3	2649	0.013
16:00-17:0	3	2649	0	3	2649	0	3	2649	0
17:00-18:0	3	2649	0	3	2649	0.013	3	2649	0.013
18:00-19:0	3	2649	0	3	2649	0	3	2649	0
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.039			0.039			0.078

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: CYCLISTS

			ARRIVALS			DEPARTURES			TOTALS
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate

RECEIVED: 08/09/2025

00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.013	3	2649	0	3	2649	0.013
08:00-09:0	3	2649	0.227	3	2649	0	3	2649	0.227
09:00-10:0	3	2649	0.076	3	2649	0	3	2649	0.076
10:00-11:0	3	2649	0.038	3	2649	0.013	3	2649	0.051
11:00-12:0	3	2649	0.013	3	2649	0	3	2649	0.013
12:00-13:0	3	2649	0	3	2649	0.025	3	2649	0.025
13:00-14:0	3	2649	0	3	2649	0	3	2649	0
14:00-15:0	3	2649	0.025	3	2649	0.063	3	2649	0.088
15:00-16:0	3	2649	0.025	3	2649	0.025	3	2649	0.05
16:00-17:0	3	2649	0.025	3	2649	0.113	3	2649	0.138
17:00-18:0	3	2649	0	3	2649	0.151	3	2649	0.151
18:00-19:0	3	2649	0.013	3	2649	0.063	3	2649	0.076
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.455			0.453			0.908

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: VEHICLE OCCUPANTS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.302	3	2649	0.05	3	2649	0.352
08:00-09:0	3	2649	1.825	3	2649	0.05	3	2649	1.875
09:00-10:0	3	2649	1.372	3	2649	0.138	3	2649	1.51
10:00-11:0	3	2649	0.692	3	2649	0.214	3	2649	0.906
11:00-12:0	3	2649	0.453	3	2649	0.189	3	2649	0.642
12:00-13:0	3	2649	0.428	3	2649	0.579	3	2649	1.007
13:00-14:0	3	2649	0.654	3	2649	0.529	3	2649	1.183
14:00-15:0	3	2649	0.34	3	2649	0.529	3	2649	0.869
15:00-16:0	3	2649	0.277	3	2649	0.466	3	2649	0.743
16:00-17:0	3	2649	0.365	3	2649	0.78	3	2649	1.145
17:00-18:0	3	2649	0.138	3	2649	2.102	3	2649	2.24
18:00-19:0	3	2649	0.013	3	2649	1.183	3	2649	1.196
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			6.859			6.809			13.668

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: PEDESTRIANS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									

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02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.138	3	2649	0	3	2649	0.138
08:00-09:0	3	2649	0.894	3	2649	0.025	3	2649	0.919
09:00-10:0	3	2649	0.654	3	2649	0.138	3	2649	0.792
10:00-11:0	3	2649	0.453	3	2649	0.113	3	2649	0.566
11:00-12:0	3	2649	0.239	3	2649	0.126	3	2649	0.365
12:00-13:0	3	2649	0.151	3	2649	0.831	3	2649	0.982
13:00-14:0	3	2649	0.453	3	2649	0.277	3	2649	0.73
14:00-15:0	3	2649	0.101	3	2649	0.113	3	2649	0.214
15:00-16:0	3	2649	0.076	3	2649	0.126	3	2649	0.202
16:00-17:0	3	2649	0.101	3	2649	0.239	3	2649	0.34
17:00-18:0	3	2649	0.05	3	2649	1.057	3	2649	1.107
18:00-19:0	3	2649	0.013	3	2649	0.277	3	2649	0.29
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			3.323			3.322			6.645

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: BUS/TRAM PASSENGERS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.164	3	2649	0	3	2649	0.164
08:00-09:0	3	2649	1.485	3	2649	0	3	2649	1.485
09:00-10:0	3	2649	1.082	3	2649	0.063	3	2649	1.145
10:00-11:0	3	2649	0.44	3	2649	0.113	3	2649	0.553
11:00-12:0	3	2649	0.189	3	2649	0.101	3	2649	0.29
12:00-13:0	3	2649	0.113	3	2649	0.541	3	2649	0.654
13:00-14:0	3	2649	0.415	3	2649	0.201	3	2649	0.616
14:00-15:0	3	2649	0.025	3	2649	0.038	3	2649	0.063
15:00-16:0	3	2649	0.038	3	2649	0.076	3	2649	0.114
16:00-17:0	3	2649	0.038	3	2649	0.289	3	2649	0.327
17:00-18:0	3	2649	0	3	2649	0.956	3	2649	0.956
18:00-19:0	3	2649	0.013	3	2649	0.239	3	2649	0.252
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			4.002			2.617			6.619

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: TOTAL RAIL PASSENGERS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									

RECEIVED: 08/09/2025

04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.126	3	2649	0	3	2649	0.126
08:00-09:0	3	2649	0.768	3	2649	0	3	2649	0.768
09:00-10:0	3	2649	0.44	3	2649	0	3	2649	0.44
10:00-11:0	3	2649	0.164	3	2649	0.013	3	2649	0.177
11:00-12:0	3	2649	0.013	3	2649	0.013	3	2649	0.026
12:00-13:0	3	2649	0	3	2649	0.126	3	2649	0.126
13:00-14:0	3	2649	0.025	3	2649	0.076	3	2649	0.101
14:00-15:0	3	2649	0	3	2649	0.025	3	2649	0.025
15:00-16:0	3	2649	0	3	2649	0.088	3	2649	0.088
16:00-17:0	3	2649	0	3	2649	0.327	3	2649	0.327
17:00-18:0	3	2649	0	3	2649	0.68	3	2649	0.68
18:00-19:0	3	2649	0	3	2649	0.138	3	2649	0.138
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			1.536			1.486			3.022

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: PUBLIC TRANSPORT USERS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.289	3	2649	0	3	2649	0.289
08:00-09:0	3	2649	2.253	3	2649	0	3	2649	2.253
09:00-10:0	3	2649	1.523	3	2649	0.063	3	2649	1.586
10:00-11:0	3	2649	0.604	3	2649	0.126	3	2649	0.73
11:00-12:0	3	2649	0.201	3	2649	0.113	3	2649	0.314
12:00-13:0	3	2649	0.113	3	2649	0.667	3	2649	0.78
13:00-14:0	3	2649	0.44	3	2649	0.277	3	2649	0.717
14:00-15:0	3	2649	0.025	3	2649	0.063	3	2649	0.088
15:00-16:0	3	2649	0.038	3	2649	0.164	3	2649	0.202
16:00-17:0	3	2649	0.038	3	2649	0.617	3	2649	0.655
17:00-18:0	3	2649	0	3	2649	1.636	3	2649	1.636
18:00-19:0	3	2649	0.013	3	2649	0.378	3	2649	0.391
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			5.537			4.104			9.641

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: TOTAL PEOPLE

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									

06:00-07:00									
07:00-08:0	3	2649	0.743	3	2649	0.05	3	2649	0.793
08:00-09:0	3	2649	5.198	3	2649	0.076	3	2649	5.274
09:00-10:0	3	2649	3.624	3	2649	0.34	3	2649	3.964
10:00-11:0	3	2649	1.787	3	2649	0.466	3	2649	2.253
11:00-12:0	3	2649	0.906	3	2649	0.428	3	2649	1.334
12:00-13:0	3	2649	0.692	3	2649	2.102	3	2649	2.794
13:00-14:0	3	2649	1.548	3	2649	1.082	3	2649	2.63
14:00-15:0	3	2649	0.491	3	2649	0.768	3	2649	1.259
15:00-16:0	3	2649	0.415	3	2649	0.78	3	2649	1.195
16:00-17:0	3	2649	0.529	3	2649	1.749	3	2649	2.278
17:00-18:0	3	2649	0.189	3	2649	4.946	3	2649	5.135
18:00-19:0	3	2649	0.05	3	2649	1.9	3	2649	1.95
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			16.172			14.687			30.859

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TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: CARS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.239	3	2649	0.013	3	2649	0.252
08:00-09:0	3	2649	1.51	3	2649	0.038	3	2649	1.548
09:00-10:0	3	2649	1.019	3	2649	0.113	3	2649	1.132
10:00-11:0	3	2649	0.516	3	2649	0.151	3	2649	0.667
11:00-12:0	3	2649	0.214	3	2649	0.088	3	2649	0.302
12:00-13:0	3	2649	0.315	3	2649	0.34	3	2649	0.655
13:00-14:0	3	2649	0.415	3	2649	0.352	3	2649	0.767
14:00-15:0	3	2649	0.227	3	2649	0.39	3	2649	0.617
15:00-16:0	3	2649	0.189	3	2649	0.39	3	2649	0.579
16:00-17:0	3	2649	0.189	3	2649	0.541	3	2649	0.73
17:00-18:0	3	2649	0.063	3	2649	1.498	3	2649	1.561
18:00-19:0	3	2649	0	3	2649	0.919	3	2649	0.919
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			4.896			4.833			9.729

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: LGVS

			ARRIVALS			DEPARTURES			TOTALS
	No.	Ave.	Trip	No.	Ave.	Trip	No.	Ave.	Trip
Time Range	Days	GFA	Rate	Days	GFA	Rate	Days	GFA	Rate
00:00-01:00									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.025	3	2649	0.025	3	2649	0.05

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08:00-09:0	3	2649	0.063	3	2649	0.013	3	2649	0.076
09:00-10:0	3	2649	0.076	3	2649	0	3	2649	0.076
10:00-11:0	3	2649	0.038	3	2649	0.013	3	2649	0.051
11:00-12:0	3	2649	0.038	3	2649	0.013	3	2649	0.051
12:00-13:0	3	2649	0.025	3	2649	0.038	3	2649	0.063
13:00-14:0	3	2649	0.076	3	2649	0.05	3	2649	0.126
14:00-15:0	3	2649	0.038	3	2649	0.038	3	2649	0.076
15:00-16:0	3	2649	0.025	3	2649	0.025	3	2649	0.05
16:00-17:0	3	2649	0.025	3	2649	0.05	3	2649	0.075
17:00-18:0	3	2649	0	3	2649	0.063	3	2649	0.063
18:00-19:0	3	2649	0	3	2649	0.063	3	2649	0.063
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.429			0.391			0.82

TRIP RATE for Land Use 02 - EMPLOYMENT/A - OFFICE
Calculation Factor: 100 sqm
Count Type: MOTOR CYCLES

	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									
01:00-02:00									
02:00-03:00									
03:00-04:00									
04:00-05:00									
05:00-06:00									
06:00-07:00									
07:00-08:0	3	2649	0.013	3	2649	0	3	2649	0.013
08:00-09:0	3	2649	0.038	3	2649	0	3	2649	0.038
09:00-10:0	3	2649	0.013	3	2649	0	3	2649	0.013
10:00-11:0	3	2649	0.025	3	2649	0	3	2649	0.025
11:00-12:0	3	2649	0.025	3	2649	0	3	2649	0.025
12:00-13:0	3	2649	0	3	2649	0.013	3	2649	0.013
13:00-14:0	3	2649	0	3	2649	0	3	2649	0
14:00-15:0	3	2649	0	3	2649	0	3	2649	0
15:00-16:0	3	2649	0.013	3	2649	0	3	2649	0.013
16:00-17:0	3	2649	0.025	3	2649	0.013	3	2649	0.038
17:00-18:0	3	2649	0.025	3	2649	0.126	3	2649	0.151
18:00-19:0	3	2649	0	3	2649	0.025	3	2649	0.025
19:00-20:00									
20:00-21:00									
21:00-22:00									
22:00-23:00									
23:00-24:00									
Daily Trip Rates:			0.177			0.177			0.354

Parameter summary

Trip rate pa	170 - 6186 (units: sqm)
Survey date	01/01/16 - 23/11/22
Number of	3
Number of	0
Number of	0
Surveys aut	1
Surveys ma	0

This sectior followed b the total nu the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Atkins Airside Swords Licence No: 332901

Filtering Summary

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Land Use	02/F	EMPLOYMENT/WAREHOUSING (COMMERCIAL)
Selected Trip Rate Calculation Parameter Range	950-105335 sqm GFA	
Actual Trip Rate Calculation Parameter Range	950-105335 sqm GFA	
Date Range	Minimum: 01/01/16	Maximum: 19/06/24
Parking Spaces Range	All Surveys Included	
Days of the week selected	Monday	1
	Wednesday	2
Main Location Types selected	Edge of Town	2
	Neighbourhood Centre (PPS6 Local Centre)	1
Inclusion of Servicing Vehicles Counts	Servicing vehicles Included	6 - Selected
	Servicing vehicles Excluded	3 - Selected
Population within 500m	All Surveys Included	
Population <1 Mile ranges selected	1,000 or Less	1
	1,001 to 5,000	2
Population <5 Mile ranges selected	5,001 to 25,000	2
	25,001 to 50,000	1
Car Ownership <5 Mile ranges selected	1.1 to 1.5	3
PTAL Rating	No PTAL Present	3
Filter by Site Operations Breakdown	All Surveys Included	

Calculation Reference: AUDIT-332901-250403-0455

TRIP RATE CALCULATION SELECTION PARAMETERS:

RECEIVED: 08/09/2025

Land Use : 02 - EMPLOYMENT
Category : F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:

05	EAST MIDLANDS		
	NT	NOTTINGHAMSHIRE	1 days
09	NORTH		
	CU	CUMBERLAND	1 days
10	WALES		
	PE	PEMBROKESHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

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Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter:	Gross floor area
Actual Range:	950 to 105335 (units: sqm)
Range Selected by User:	950 to 105335 (units: sqm)

Parking Spaces Range: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/16 to 19/06/24

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	1 days
Wednesday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	3 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town	2
Neighbourhood Centre (PPS6 Local Centre)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Industrial Zone	1
Development Zone	1
Village	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Inclusion of Servicing Vehicles Counts:

Servicing vehicles Included	6 days - Selected
Servicing vehicles Excluded	3 days - Selected

Secondary Filtering selection:

Use Class:

B8	3 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order (England) 2020 has been used for this purpose, which can be found within the Library module of TRICS®.

Filter by Site Operations Breakdown:
All Surveys Included

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

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Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	2 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

1.1 to 1.5	3 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	1 days
No	2 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	3 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

Site(1):	CU-02-F-01	Gross floor area:	4007 sqm
Development Name:	WAREHOUSING & DISTRIBUTION		
Location:	BRAMPTON	Parking spaces:	79
Postcode:	CA8 1SW	No of Employees:	65
Main Location Type:	Edge of Town	Survey Date:	19/06/24
Sub-Location Type:	Industrial Zone	Survey Day:	Wednesday
PTAL:	n/a		
Site(2):	NT-02-F-01	Gross floor area:	105335 sqm
Development Name:	LOGISTICS WAREHOUSING PARK		
Location:	NEAR WORKSOP	Parking spaces:	1192
Postcode:	S81 8GN	No of Employees:	70
Main Location Type:	Edge of Town	Survey Date:	18/10/23
Sub-Location Type:	Development Zone	Survey Day:	Wednesday
PTAL:	n/a		
Site(3):	PE-02-F-01	Gross floor area:	950 sqm
Development Name:	WAREHOUSING & DISTRIBUTION		
Location:	NEAR NARBERTH	Parking spaces:	20
Postcode:	SA67 8SD	No of Employees:	11
Main Location Type:	Neighbourhood Centre (PPS6 Local Centre)	Survey Date:	20/11/23
Sub-Location Type:	Village	Survey Day:	Monday
PTAL:	n/a		

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TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.20

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.022	3	36764	0.018	3	36764	0.040
06:00 - 07:00	3	36764	0.022	3	36764	0.013	3	36764	0.035
07:00 - 08:00	3	36764	0.048	3	36764	0.025	3	36764	0.073
08:00 - 09:00	3	36764	0.021	3	36764	0.021	3	36764	0.042
09:00 - 10:00	3	36764	0.021	3	36764	0.013	3	36764	0.034
10:00 - 11:00	3	36764	0.020	3	36764	0.024	3	36764	0.044
11:00 - 12:00	3	36764	0.018	3	36764	0.011	3	36764	0.029
12:00 - 13:00	3	36764	0.015	3	36764	0.012	3	36764	0.027
13:00 - 14:00	3	36764	0.012	3	36764	0.015	3	36764	0.027
14:00 - 15:00	3	36764	0.027	3	36764	0.030	3	36764	0.057
15:00 - 16:00	3	36764	0.017	3	36764	0.022	3	36764	0.039
16:00 - 17:00	3	36764	0.018	3	36764	0.037	3	36764	0.055
17:00 - 18:00	3	36764	0.017	3	36764	0.029	3	36764	0.046
18:00 - 19:00	3	36764	0.007	3	36764	0.012	3	36764	0.019
19:00 - 20:00	2	54671	0.005	2	54671	0.006	2	54671	0.011
20:00 - 21:00	2	54671	0.000	2	54671	0.002	2	54671	0.002
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.290			0.290			0.580

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

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Parameter summary

Trip rate parameter range selected:	950 - 105335 (units: sqm)
Survey date date range:	01/01/16 - 19/06/24
Number of weekdays (Monday-Friday):	3
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL OGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.005	3	36764	0.012	3	36764	0.017
06:00 - 07:00	3	36764	0.008	3	36764	0.011	3	36764	0.019
07:00 - 08:00	3	36764	0.005	3	36764	0.008	3	36764	0.013
08:00 - 09:00	3	36764	0.009	3	36764	0.010	3	36764	0.019
09:00 - 10:00	3	36764	0.013	3	36764	0.010	3	36764	0.023
10:00 - 11:00	3	36764	0.008	3	36764	0.011	3	36764	0.019
11:00 - 12:00	3	36764	0.010	3	36764	0.006	3	36764	0.016
12:00 - 13:00	3	36764	0.008	3	36764	0.007	3	36764	0.015
13:00 - 14:00	3	36764	0.007	3	36764	0.009	3	36764	0.016
14:00 - 15:00	3	36764	0.017	3	36764	0.013	3	36764	0.030
15:00 - 16:00	3	36764	0.012	3	36764	0.010	3	36764	0.022
16:00 - 17:00	3	36764	0.006	3	36764	0.011	3	36764	0.017
17:00 - 18:00	3	36764	0.008	3	36764	0.003	3	36764	0.011
18:00 - 19:00	3	36764	0.004	3	36764	0.003	3	36764	0.007
19:00 - 20:00	2	54671	0.002	2	54671	0.000	2	54671	0.002
20:00 - 21:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.122			0.124			0.246

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL PSVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
06:00 - 07:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
07:00 - 08:00	3	36764	0.000	3	36764	0.003	3	36764	0.003
08:00 - 09:00	3	36764	0.002	3	36764	0.000	3	36764	0.002
09:00 - 10:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
10:00 - 11:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
11:00 - 12:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
12:00 - 13:00	3	36764	0.001	3	36764	0.000	3	36764	0.001
13:00 - 14:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
14:00 - 15:00	3	36764	0.000	3	36764	0.002	3	36764	0.002
15:00 - 16:00	3	36764	0.001	3	36764	0.001	3	36764	0.002
16:00 - 17:00	3	36764	0.002	3	36764	0.000	3	36764	0.002
17:00 - 18:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
18:00 - 19:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
19:00 - 20:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
20:00 - 21:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.006			0.006			0.012

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL CYCLISTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

	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									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.000	3	36764	0.002	3	36764	0.002
06:00 - 07:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
07:00 - 08:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
08:00 - 09:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
09:00 - 10:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
10:00 - 11:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
11:00 - 12:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
12:00 - 13:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
13:00 - 14:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
14:00 - 15:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
15:00 - 16:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
16:00 - 17:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
17:00 - 18:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
18:00 - 19:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
19:00 - 20:00	2	54671	0.002	2	54671	0.000	2	54671	0.002
20:00 - 21:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.002			0.002			0.004

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

	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									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.024	3	36764	0.021	3	36764	0.045
06:00 - 07:00	3	36764	0.025	3	36764	0.016	3	36764	0.041
07:00 - 08:00	3	36764	0.059	3	36764	0.034	3	36764	0.093
08:00 - 09:00	3	36764	0.024	3	36764	0.022	3	36764	0.046
09:00 - 10:00	3	36764	0.027	3	36764	0.015	3	36764	0.042
10:00 - 11:00	3	36764	0.021	3	36764	0.026	3	36764	0.047
11:00 - 12:00	3	36764	0.021	3	36764	0.013	3	36764	0.034
12:00 - 13:00	3	36764	0.018	3	36764	0.014	3	36764	0.032
13:00 - 14:00	3	36764	0.014	3	36764	0.017	3	36764	0.031
14:00 - 15:00	3	36764	0.033	3	36764	0.035	3	36764	0.068
15:00 - 16:00	3	36764	0.023	3	36764	0.025	3	36764	0.048
16:00 - 17:00	3	36764	0.020	3	36764	0.048	3	36764	0.068
17:00 - 18:00	3	36764	0.020	3	36764	0.034	3	36764	0.054
18:00 - 19:00	3	36764	0.008	3	36764	0.014	3	36764	0.022
19:00 - 20:00	2	54671	0.005	2	54671	0.007	2	54671	0.012
20:00 - 21:00	2	54671	0.000	2	54671	0.002	2	54671	0.002
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.342			0.343			0.685

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL PEDESTRIANS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

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	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									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
06:00 - 07:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
07:00 - 08:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
08:00 - 09:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
09:00 - 10:00	3	36764	0.000	3	36764	0.001	3	36764	0.001
10:00 - 11:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
11:00 - 12:00	3	36764	0.002	3	36764	0.001	3	36764	0.003
12:00 - 13:00	3	36764	0.000	3	36764	0.001	3	36764	0.001
13:00 - 14:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
14:00 - 15:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
15:00 - 16:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
16:00 - 17:00	3	36764	0.001	3	36764	0.001	3	36764	0.002
17:00 - 18:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
18:00 - 19:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
19:00 - 20:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
20:00 - 21:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.003			0.004			0.007

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period
Total People to Total Vehicles ratio (all time periods and directions): 1.20

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.024	3	36764	0.023	3	36764	0.047
06:00 - 07:00	3	36764	0.025	3	36764	0.016	3	36764	0.041
07:00 - 08:00	3	36764	0.059	3	36764	0.034	3	36764	0.093
08:00 - 09:00	3	36764	0.024	3	36764	0.022	3	36764	0.046
09:00 - 10:00	3	36764	0.027	3	36764	0.016	3	36764	0.043
10:00 - 11:00	3	36764	0.021	3	36764	0.026	3	36764	0.047
11:00 - 12:00	3	36764	0.023	3	36764	0.014	3	36764	0.037
12:00 - 13:00	3	36764	0.018	3	36764	0.015	3	36764	0.033
13:00 - 14:00	3	36764	0.014	3	36764	0.017	3	36764	0.031
14:00 - 15:00	3	36764	0.033	3	36764	0.035	3	36764	0.068
15:00 - 16:00	3	36764	0.023	3	36764	0.025	3	36764	0.048
16:00 - 17:00	3	36764	0.021	3	36764	0.049	3	36764	0.070
17:00 - 18:00	3	36764	0.020	3	36764	0.034	3	36764	0.054
18:00 - 19:00	3	36764	0.008	3	36764	0.014	3	36764	0.022
19:00 - 20:00	2	54671	0.007	2	54671	0.007	2	54671	0.014
20:00 - 21:00	2	54671	0.000	2	54671	0.002	2	54671	0.002
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.347			0.349			0.696

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL CARS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.015	3	36764	0.004	3	36764	0.019
06:00 - 07:00	3	36764	0.012	3	36764	0.001	3	36764	0.013
07:00 - 08:00	3	36764	0.035	3	36764	0.004	3	36764	0.039
08:00 - 09:00	3	36764	0.008	3	36764	0.007	3	36764	0.015
09:00 - 10:00	3	36764	0.005	3	36764	0.002	3	36764	0.007
10:00 - 11:00	3	36764	0.006	3	36764	0.004	3	36764	0.010
11:00 - 12:00	3	36764	0.005	3	36764	0.003	3	36764	0.008
12:00 - 13:00	3	36764	0.005	3	36764	0.002	3	36764	0.007
13:00 - 14:00	3	36764	0.002	3	36764	0.005	3	36764	0.007
14:00 - 15:00	3	36764	0.004	3	36764	0.012	3	36764	0.016
15:00 - 16:00	3	36764	0.004	3	36764	0.009	3	36764	0.013
16:00 - 17:00	3	36764	0.006	3	36764	0.024	3	36764	0.030
17:00 - 18:00	3	36764	0.004	3	36764	0.024	3	36764	0.028
18:00 - 19:00	3	36764	0.003	3	36764	0.009	3	36764	0.012
19:00 - 20:00	2	54671	0.002	2	54671	0.005	2	54671	0.007
20:00 - 21:00	2	54671	0.000	2	54671	0.002	2	54671	0.002
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.116			0.117			0.233

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL LGVS
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.002	3	36764	0.003	3	36764	0.005
06:00 - 07:00	3	36764	0.002	3	36764	0.001	3	36764	0.003
07:00 - 08:00	3	36764	0.007	3	36764	0.011	3	36764	0.018
08:00 - 09:00	3	36764	0.002	3	36764	0.004	3	36764	0.006
09:00 - 10:00	3	36764	0.002	3	36764	0.001	3	36764	0.003
10:00 - 11:00	3	36764	0.005	3	36764	0.008	3	36764	0.013
11:00 - 12:00	3	36764	0.003	3	36764	0.002	3	36764	0.005
12:00 - 13:00	3	36764	0.001	3	36764	0.003	3	36764	0.004
13:00 - 14:00	3	36764	0.003	3	36764	0.001	3	36764	0.004
14:00 - 15:00	3	36764	0.006	3	36764	0.004	3	36764	0.010
15:00 - 16:00	3	36764	0.001	3	36764	0.002	3	36764	0.003
16:00 - 17:00	3	36764	0.004	3	36764	0.003	3	36764	0.007
17:00 - 18:00	3	36764	0.005	3	36764	0.002	3	36764	0.007
18:00 - 19:00	3	36764	0.001	3	36764	0.000	3	36764	0.001
19:00 - 20:00	2	54671	0.001	2	54671	0.002	2	54671	0.003
20:00 - 21:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.045			0.047			0.092

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)
MULTI-MODAL MOTOR CYCLES
Calculation factor: 100 sqm
BOLD print indicates peak (busiest) period

RECEIVED: 08/09/2025

	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									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
06:00 - 07:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
07:00 - 08:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
08:00 - 09:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
09:00 - 10:00	3	36764	0.001	3	36764	0.000	3	36764	0.001
10:00 - 11:00	3	36764	0.000	3	36764	0.001	3	36764	0.001
11:00 - 12:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
12:00 - 13:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
13:00 - 14:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
14:00 - 15:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
15:00 - 16:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
16:00 - 17:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
17:00 - 18:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
18:00 - 19:00	3	36764	0.000	3	36764	0.000	3	36764	0.000
19:00 - 20:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
20:00 - 21:00	2	54671	0.000	2	54671	0.000	2	54671	0.000
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.001			0.001			0.002

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

APPENDIX 13.3

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LINSIG Junction Analysis and Outputs

Atkins Réalis, 2025

Basic Input Data and Results

User and Project Details

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Project:	
Title:	
Location:	
Additional detail:	
File name:	J4 R680_Amber Hill Junction (Do So Scenario).lsg3x
Author:	
Company:	
Address:	
Linsig Version:	3, 3, 0, 6

Scenarios

Number	Scenario Name	Flow Group	Network Control Plan	Time	Cycle Time (s)	PRC (%)	Delay (pcuHr)
1	OY AM With Ped	OY AM (All Dev)	Do So Scenario	08:00 - 09:00	120	38.0	8.01
2	OY PM With Ped	OY PM (All Dev)	Do So Scenario	17:00 - 18:00	120	40.8	6.77
3	OY+5 AM With Ped	OY+5 AM (All Dev)	Do So Scenario	08:00 - 09:00	120	30.9	8.69
4	OY+5 PM With Ped	OY+5 PM (All Dev)	Do So Scenario	17:00 - 18:00	120	40.8	7.16
5	OY+15 AM With Ped	OY+15 AM (All Dev)	Do So Scenario	08:00 - 09:00	120	20.1	10.19
6	OY+15 PM With Ped	OY+15 PM (All Dev)	Do So Scenario	17:00 - 18:00	120	37.3	7.94
7	OY AM (With Comm Dev)	OY AM (With Comm Dev)	Do So Scenario	08:00 - 09:00	120	42.7	6.29
8	OY PM (With Comm Dev)	OY PM (With Comm Dev)	Do So Scenario	17:00 - 18:00	120	69.0	4.55
9	OY+5 AM (With Comm Dev)	OY+5 AM (With Comm Dev)	Do So Scenario	08:00 - 09:00	120	35.2	6.88
10	OY+5 PM (With Comm Dev)	OY+5 PM (With Comm Dev)	Do So Scenario	17:00 - 18:00	120	60.6	4.91
11	OY+15 AM (With Comm Dev)	OY+15 AM (With Comm Dev)	Do So Scenario	08:00 - 09:00	120	23.9	8.13
12	OY+15 PM (With Comm Dev)	OY+15 PM (With Comm Dev)	Do So Scenario	17:00 - 18:00	120	48.5	5.57
13	OY AM (Only With Prop Dev)	OY AM (Only With Dev)	Do So Scenario	08:00 - 09:00	120	41.4	7.58
14	OY PM (Only With Prop Dev)	OY PM (Only With Dev)	Do So Scenario	17:00 - 18:00	120	56.4	6.46
15	OY+5 AM (Only With Prop Dev)	OY+5 AM (Only With Dev)	Do So Scenario	08:00 - 09:00	120	34.0	8.23
16	OY+5 PM (Only With Prop Dev)	OY+5 PM (Only With Dev)	Do So Scenario	17:00 - 18:00	120	40.8	6.87
17	OY+15 AM (Only With Prop Dev)	OY+15 AM (Only With Dev)	Do So Scenario	08:00 - 09:00	120	22.9	9.62
18	OY+15 PM (Only With Prop Dev)	OY+15 PM (Only With Dev)	Do So Scenario	17:00 - 18:00	120	37.3	7.61

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Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min (s)	Cont Min (s)
A	Traffic		7	7
B	Ind. Arrow	A	7	7
C	Traffic		7	7
D	Traffic		7	7
E	Pedestrian		10	10

Phase Intergreens Matrix

Terminating Phase	Starting Phase					
		A	B	C	D	E
	A		-	5	-	5
	B	-		5	5	5
	C	5	5		5	5
	D	-	5	5		5
	E	10	10	10	10	

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Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

From Stage	To Stage				
		1	2	3	4
	1		5	5	5
	2	5		5	5
	3	5	5		5
	4	10	10	10	

Phases in Stage

Stage No.	Phases in Stage
1	A D
2	A B
3	C
4	E

Lane Input Data

Junction: R680/Amber Hill Local Road Junction

Lane	Lane Type	Phases	Start Disp. (s)	End Disp. (s)	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient (%)	Nearside Lane	Turns	Turning Radius (m)
1/1 (R680 West Entry)	U	A	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Ahead	Inf
1/2 (R680 West Entry)	O	A B	2	3	5.0	Geom	-	3.00	0.00	Y	Arm 6 Right	15.00
2/1 (Amber Hil Local Road)	O	C	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 4 Right	18.00
											Arm 5 Left	8.00
3/1 (R680 East Entry)	U	D	2	3	60.0	Geom	-	3.00	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Left	12.00
4/1 (R680 East Exit)	U		2	3	60.0	Geom	-	3.00	0.00	Y		
5/1 (R680 West Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Amber Hill/Local Road)	U		2	3	60.0	Inf	-	-	-	-	-	-

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Give-Way Lane Input Data

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Junction: R680/Amber Hill Local Road Junction											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
1/2 (R680 West Entry)	6/1 (Right)	1439	0	3/1	1.09	All	1.00	-	0.50	1	1.00
2/1 (Amber Hil Local Road)	4/1 (Right)	1439	0	3/1	1.09	All	1.00	-	0.50	1	1.00
				1/1	1.09	All					
	5/1 (Left)	1439	0	3/1	1.09	All					

Scenario 1: 'OY AM With Ped' (FG1: 'OY AM (All Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	53.8 %	1692	1692
				Arm 5 Left	8.00	46.2 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	88.4 %	1888	1888
				Arm 6 Left	12.00	11.6 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

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Bonus Green Times

No Bonus Greens are defined For Scenario 1

Scenario 2: 'OY PM With Ped' (FG2: 'OY PM (All Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	51.9 %	1689	1689
				Arm 5 Left	8.00	48.1 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	94.1 %	1901	1901
				Arm 6 Left	12.00	5.9 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 2

Scenario 3: 'OY+5 AM With Ped' (FG3: 'OY+5 AM (All Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	53.7 %	1692	1692
				Arm 5 Left	8.00	46.3 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	89.0 %	1889	1889
				Arm 6 Left	12.00	11.0 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 3

Scenario 4: 'OY+5 PM With Ped' (FG4: 'OY+5 PM (All Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	51.9 %	1689	1689
				Arm 5 Left	8.00	48.1 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	94.4 %	1902	1902
				Arm 6 Left	12.00	5.6 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

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Bonus Green Times

No Bonus Greens are defined For Scenario 4

Scenario 5: 'OY+15 AM With Ped' (FG5: 'OY+15 AM (All Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	51.7 %	1689	1689
				Arm 5 Left	8.00	48.3 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	89.6 %	1890	1890
				Arm 6 Left	12.00	10.4 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 5

Scenario 6: 'OY+15 PM With Ped' (FG6: 'OY+15 PM (All Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	50.6 %	1688	1688
				Arm 5 Left	8.00	49.4 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	94.5 %	1902	1902
				Arm 6 Left	12.00	5.5 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

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Bonus Green Times

No Bonus Greens are defined For Scenario 6

Scenario 7: 'OY AM (With Comm Dev)' (FG7: 'OY AM (With Comm Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	39.5 %	1671	1671
				Arm 5 Left	8.00	60.5 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	97.0 %	1908	1908
				Arm 6 Left	12.00	3.0 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 7

Scenario 8: 'OY PM (With Comm Dev)' (FG8: 'OY PM (With Comm Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	20.0 %	1641	1641
				Arm 5 Left	8.00	80.0 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	97.4 %	1909	1909
				Arm 6 Left	12.00	2.6 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

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Bonus Green Times

No Bonus Greens are defined For Scenario 8

Scenario 9: 'OY+5 AM (With Comm Dev)' (FG9: 'OY+5 AM (With Comm Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	40.0 %	1671	1671
				Arm 5 Left	8.00	60.0 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	97.1 %	1908	1908
				Arm 6 Left	12.00	2.9 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 9

Scenario 10: 'OY+5 PM (With Comm Dev)' (FG10: 'OY+5 PM (With Comm Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	20.0 %	1641	1641
				Arm 5 Left	8.00	80.0 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	97.5 %	1909	1909
				Arm 6 Left	12.00	2.5 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

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Bonus Green Times

No Bonus Greens are defined For Scenario 10

Scenario 11: 'OY+15 AM (With Comm Dev)' (FG11: 'OY+15 AM (With Comm Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	38.0 %	1668	1668
				Arm 5 Left	8.00	62.0 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	97.2 %	1908	1908
				Arm 6 Left	12.00	2.8 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 11

Scenario 12: 'OY+15 PM (With Comm Dev)' (FG12: 'OY+15 PM (With Comm Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	17.6 %	1638	1638
				Arm 5 Left	8.00	82.4 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	97.4 %	1909	1909
				Arm 6 Left	12.00	2.6 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

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Bonus Green Times

No Bonus Greens are defined For Scenario 12

Scenario 13: 'OY AM (Only With Prop Dev)' (FG13: 'OY AM (Only With Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

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Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	53.2 %	1692	1692
				Arm 5 Left	8.00	46.8 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	87.8 %	1886	1886
				Arm 6 Left	12.00	12.2 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 13

Scenario 14: 'OY PM (Only With Prop Dev)' (FG14: 'OY PM (Only With Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	51.9 %	1689	1689
				Arm 5 Left	8.00	48.1 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	93.9 %	1901	1901
				Arm 6 Left	12.00	6.1 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 14

Scenario 15: 'OY+5 AM (Only With Prop Dev)' (FG15: 'OY+5 AM (Only With Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

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Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	53.1 %	1691	1691
				Arm 5 Left	8.00	46.9 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	88.4 %	1888	1888
				Arm 6 Left	12.00	11.6 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 15

Scenario 16: 'OY+5 PM (Only With Prop Dev)' (FG16: 'OY+5 PM (Only With Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	51.9 %	1689	1689
				Arm 5 Left	8.00	48.1 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	94.2 %	1901	1901
				Arm 6 Left	12.00	5.8 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 16

Scenario 17: 'OY+15 AM (Only With Prop Dev)' (FG17: 'OY+15 AM (Only With Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

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Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	51.2 %	1688	1688
				Arm 5 Left	8.00	48.8 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	89.1 %	1889	1889
				Arm 6 Left	12.00	10.9 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 17

Scenario 18: 'OY+15 PM (Only With Prop Dev)' (FG18: 'OY+15 PM (Only With Dev)', Plan 1: 'Do So Scenario')

Lane Saturation Flows

Junction: R680/Amber Hill Local Road Junction								
Lane	**Lane Width (m)**	**Gradient (%)**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (R680 West Entry)	3.00	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1915	1915
1/2 (R680 West Entry)	3.00	0.00	Y	Arm 6 Right	15.00	100.0 %	1741	1741
2/1 (Amber Hil Local Road)	3.00	0.00	Y	Arm 4 Right	18.00	50.6 %	1688	1688
				Arm 5 Left	8.00	49.4 %		
3/1 (R680 East Entry)	3.00	0.00	Y	Arm 5 Ahead	Inf	94.4 %	1902	1902
				Arm 6 Left	12.00	5.6 %		
4/1 (R680 East Exit)	3.00	0.00	Y				1915	1915
5/1 (R680 West Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Amber Hill/Local Road Lane 1)	Infinite Saturation Flow						Inf	Inf

Bonus Green Times

No Bonus Greens are defined For Scenario 18

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Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: 'OY AM (All Dev)'	08:00	09:00	01:00	
2: 'OY PM (All Dev)'	17:00	18:00	01:00	
3: 'OY+5 AM (All Dev)'	08:00	09:00	01:00	
4: 'OY+5 PM (All Dev)'	17:00	18:00	01:00	
5: 'OY+15 AM (All Dev)'	08:00	09:00	01:00	
6: 'OY+15 PM (All Dev)'	17:00	18:00	01:00	
7: 'OY AM (With Comm Dev)'	08:00	09:00	01:00	
8: 'OY PM (With Comm Dev)'	17:00	18:00	01:00	
9: 'OY+5 AM (With Comm Dev)'	08:00	09:00	01:00	
10: 'OY+5 PM (With Comm Dev)'	17:00	18:00	01:00	
11: 'OY+15 AM (With Comm Dev)'	08:00	09:00	01:00	
12: 'OY+15 PM (With Comm Dev)'	17:00	18:00	01:00	
13: 'OY AM (Only With Dev)'	08:00	09:00	01:00	
14: 'OY PM (Only With Dev)'	17:00	18:00	01:00	
15: 'OY+5 AM (Only With Dev)'	08:00	09:00	01:00	
16: 'OY+5 PM (Only With Dev)'	17:00	18:00	01:00	
17: 'OY+15 AM (Only With Dev)'	08:00	09:00	01:00	
18: 'OY+15 PM (Only With Dev)'	17:00	18:00	01:00	

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Traffic Flows, Desired

FG1: 'OY AM (All Dev)'

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	31	838	869
	B	37	0	43	80
	C	421	55	0	476
	Tot.	458	86	881	1425

FG2: 'OY PM (All Dev)'

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	19	444	463
	B	39	0	42	81
	C	594	37	0	631
	Tot.	633	56	486	1175

FG3: 'OY+5 AM (All Dev)'

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	34	882	916
	B	38	0	44	82
	C	443	55	0	498
	Tot.	481	89	926	1496

FG4: 'OY+5 PM (All Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	20	468	488
	B	39	0	42	81
	C	626	37	0	663
	Tot.	665	57	510	1232

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FG5: 'OY+15 AM (All Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	35	963	998
	B	42	0	45	87
	C	482	56	0	538
	Tot.	524	91	1008	1623

FG6: 'OY+15 PM (All Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	20	506	526
	B	41	0	42	83
	C	676	39	0	715
	Tot.	717	59	548	1324

FG7: 'OY AM (With Comm Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	12	838	850
	B	26	0	17	43
	C	421	13	0	434
	Tot.	447	25	855	1327

FG8: 'OY PM (With Comm Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	6	444	450
	B	12	0	3	15
	C	594	16	0	610
	Tot.	606	22	447	1075

FG9: 'OY+5 AM (With Comm Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	15	882	897
	B	27	0	18	45
	C	443	13	0	456
	Tot.	470	28	900	1398

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FG10: 'OY+5 PM (With Comm Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	7	468	475
	B	12	0	3	15
	C	626	16	0	642
	Tot.	638	23	471	1132

FG11: 'OY+15 AM (With Comm Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	16	963	979
	B	31	0	19	50
	C	482	14	0	496
	Tot.	513	30	982	1525

FG12: 'OY+15 PM (With Comm Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	7	506	513
	B	14	0	3	17
	C	676	18	0	694
	Tot.	690	25	509	1224

FG13: 'OY AM (Only With Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	31	817	848
	B	37	0	42	79
	C	390	54	0	444
	Tot.	427	85	859	1371

FG14: 'OY PM (Only With Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	19	420	439
	B	39	0	42	81
	C	573	37	0	610
	Tot.	612	56	462	1130

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FG15: 'OY+5 AM (Only With Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	34	861	895
	B	38	0	43	81
	C	412	54	0	466
	Tot.	450	88	904	1442

FG16: 'OY+5 PM (Only With Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	20	443	463
	B	39	0	42	81
	C	605	37	0	642
	Tot.	644	57	485	1186

FG17: 'OY+15 AM (Only With Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	35	941	976
	B	42	0	44	86
	C	451	55	0	506
	Tot.	493	90	985	1568

FG18: 'OY+15 PM (Only With Dev)'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	20	482	502
	B	41	0	42	83
	C	655	39	0	694
	Tot.	696	59	524	1279

Scenario 1: 'OY AM With Ped' (FG1: 'OY AM (All Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**65.2%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**65.2%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	869	1915+1741	1285+48	65.2 : 65.2%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	80	1692	127	63.0%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	476	1888	1117	42.6%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	881	1915	1915	46.0%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	458	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	86	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**28**	**82**	**1**	**5.4**	**2.6**	**0.0**	**8.0**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**28**	**82**	**1**	**5.4**	**2.6**	**0.0**	**8.0**	**-**	**-**	**-**	**-**	
1/1+1/2	869	869	28	3	0	2.5	0.9	0.0	3.4	14.2	15.7	0.9	16.7	
2/1	80	80	0	79	1	1.2	0.8	0.0	2.0	91.0	2.6	0.8	3.4	
3/1	476	476	-	-	-	1.8	0.4	-	2.1	16.2	8.6	0.4	9.0	
4/1	881	881	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4	
5/1	458	458	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	86	86	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	38.0	Total Delay for Signalled Lanes (pcuHr):	7.58	Cycle Time (s):	120
	PRC Over All Lanes (%):	38.0	Total Delay Over All Lanes(pcuHr):	8.01		

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Scenario 2: 'OY PM With Ped' (FG2: 'OY PM (All Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**63.9%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**63.9%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	463	1915+1741	1278+55	34.7 : 34.7%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	81	1689	127	63.9%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	631	1901	1125	56.1%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	486	1915	1915	25.4%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	633	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	56	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**17**	**82**	**1**	**4.8**	**1.9**	**0.1**	**6.8**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**17**	**82**	**1**	**4.8**	**1.9**	**0.1**	**6.8**	**-**	**-**	**-**	**-**	
1/1+1/2	463	463	17	2	0	0.9	0.3	0.1	1.3	9.9	5.9	0.3	6.2	
2/1	81	81	0	80	1	1.2	0.9	0.0	2.1	91.9	2.6	0.9	3.5	
3/1	631	631	-	-	-	2.6	0.6	-	3.3	18.6	12.8	0.6	13.4	
4/1	486	486	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2	
5/1	633	633	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	56	56	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	40.8	Total Delay for Signalled Lanes (pcuHr):	6.60	Cycle Time (s):	120
	PRC Over All Lanes (%):	40.8	Total Delay Over All Lanes(pcuHr):	6.77		

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Scenario 3: 'OY+5 AM With Ped' (FG3: 'OY+5 AM (All Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	-	**68.8%**
R680/Amber Hill Local Road Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	-	**68.8%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	916	1915+1741	1283+49	68.8 : 68.8%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	82	1692	127	64.6%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	498	1889	1118	44.6%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	926	1915	1915	48.4%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	481	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	89	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	-	-	**31**	**84**	**1**	**5.8**	**2.8**	**0.0**	**8.7**	-	-	-	-	
R680/Amber Hill Local Road Junction	-	-	**31**	**84**	**1**	**5.8**	**2.8**	**0.0**	**8.7**	-	-	-	-	
1/1+1/2	916	916	31	3	0	2.7	1.1	0.0	3.8	15.1	17.4	1.1	18.5	
2/1	82	82	0	81	1	1.2	0.9	0.0	2.1	92.5	2.6	0.9	3.5	
3/1	498	498	-	-	-	1.9	0.4	-	2.3	16.5	9.1	0.4	9.5	
4/1	926	926	-	-	-	0.0	0.5	-	0.5	1.8	0.0	0.5	0.5	
5/1	481	481	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	89	89	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	30.9	Total Delay for Signalled Lanes (pcuHr):	8.23	Cycle Time (s):	120
	PRC Over All Lanes (%):	30.9	Total Delay Over All Lanes(pcuHr):	8.69		

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Scenario 4: 'OY+5 PM With Ped' (FG4: 'OY+5 PM (All Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**63.9%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**63.9%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	488	1915+1741	1278+55	36.6 : 36.6%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	81	1689	127	63.9%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	663	1902	1125	58.9%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	510	1915	1915	26.6%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	665	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	57	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**18**	**82**	**1**	**5.1**	**2.0**	**0.1**	**7.2**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**18**	**82**	**1**	**5.1**	**2.0**	**0.1**	**7.2**	**-**	**-**	**-**	**-**	
1/1+1/2	488	488	18	2	0	1.0	0.3	0.1	1.4	10.1	6.3	0.3	6.6	
2/1	81	81	0	80	1	1.2	0.9	0.0	2.1	91.9	2.6	0.9	3.5	
3/1	663	663	-	-	-	2.8	0.7	-	3.5	19.2	13.8	0.7	14.5	
4/1	510	510	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2	
5/1	665	665	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	57	57	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	40.8	Total Delay for Signalled Lanes (pcuHr):	6.98	Cycle Time (s):	120
	PRC Over All Lanes (%):	40.8	Total Delay Over All Lanes(pcuHr):	7.16		

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Scenario 5: 'OY+15 AM With Ped' (FG5: 'OY+15 AM (All Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**74.9%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**74.9%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	998	1915+1741	1286+47	74.9 : 74.9%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	87	1689	127	68.7%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	538	1890	1118	48.1%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	1008	1915	1915	52.6%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	524	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	91	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**32**	**89**	**1**	**6.6**	**3.5**	**0.0**	**10.2**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**32**	**89**	**1**	**6.6**	**3.5**	**0.0**	**10.2**	**-**	**-**	**-**	**-**	
1/1+1/2	998	998	32	3	0	3.2	1.5	0.0	4.7	17.1	20.6	1.5	22.1	
2/1	87	87	0	86	1	1.3	1.0	0.0	2.3	97.2	2.8	1.0	3.9	
3/1	538	538	-	-	-	2.1	0.5	-	2.6	17.1	10.2	0.5	10.6	
4/1	1008	1008	-	-	-	0.0	0.6	-	0.6	2.0	0.0	0.6	0.6	
5/1	524	524	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	91	91	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	20.1	Total Delay for Signalled Lanes (pcuHr):	9.63	Cycle Time (s):	120
	PRC Over All Lanes (%):	20.1	Total Delay Over All Lanes(pcuHr):	10.19		

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Scenario 6: 'OY+15 PM With Ped' (FG6: 'OY+15 PM (All Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

RECEIVED: 08/09/2025

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**65.6%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**65.6%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	526	1915+1741	1282+51	39.5 : 39.5%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	83	1688	127	65.6%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	715	1902	1125	63.5%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	548	1915	1915	28.6%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	717	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	59	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**18**	**84**	**1**	**5.6**	**2.3**	**0.1**	**7.9**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**18**	**84**	**1**	**5.6**	**2.3**	**0.1**	**7.9**	**-**	**-**	**-**	**-**	
1/1+1/2	526	526	18	2	0	1.1	0.3	0.1	1.5	10.4	7.0	0.3	7.4	
2/1	83	83	0	82	1	1.2	0.9	0.0	2.2	93.6	2.7	0.9	3.6	
3/1	715	715	-	-	-	3.2	0.9	-	4.1	20.4	15.5	0.9	16.4	
4/1	548	548	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2	
5/1	717	717	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	59	59	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

Basic Input Data and Results

C1	PRC for Signalled Lanes (%):	37.3	Total Delay for Signalled Lanes (pcuHr):	7.74	Cycle Time (s):	120
	PRC Over All Lanes (%):	37.3	Total Delay Over All Lanes(pcuHr):	7.94		

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Scenario 7: 'OY AM (With Comm Dev)' (FG7: 'OY AM (With Comm Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	71	7	7	10
Change Point	0	81	93	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	83	10	93
B	R680 West Entry Right IGA	Ind. Arrow	7	86	93
C	Amber Hil Local Road Right Left	Traffic	7	98	105
D	R680 East Entry Ahead Left	Traffic	71	10	81
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**63.1%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**63.1%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	83	7	-	850	1915+1741	1328+19	63.1 : 63.1%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	7	-	-	43	1671	111	38.6%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	71	-	-	434	1908	1145	37.9%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	855	1915	1915	44.6%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	447	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	25	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**11**	**44**	**0**	**4.4**	**1.9**	**0.0**	**6.3**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**11**	**44**	**0**	**4.4**	**1.9**	**0.0**	**6.3**	**-**	**-**	**-**	**-**	
1/1+1/2	850	850	11	1	0	2.3	0.9	0.0	3.1	13.2	14.9	0.9	15.7	
2/1	43	43	0	43	0	0.6	0.3	0.0	1.0	79.7	1.4	0.3	1.7	
3/1	434	434	-	-	-	1.5	0.3	-	1.8	15.0	7.5	0.3	7.8	
4/1	855	855	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4	
5/1	447	447	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	25	25	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	42.7	Total Delay for Signalled Lanes (pcuHr):	5.88	Cycle Time (s):	120
	PRC Over All Lanes (%):	42.7	Total Delay Over All Lanes(pcuHr):	6.29		

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Scenario 8: 'OY PM (With Comm Dev)' (FG8: 'OY PM (With Comm Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	71	7	7	10
Change Point	0	81	93	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	83	10	93
B	R680 West Entry Right IGA	Ind. Arrow	7	86	93
C	Amber Hil Local Road Right Left	Traffic	7	98	105
D	R680 East Entry Ahead Left	Traffic	71	10	81
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**53.3%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**53.3%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	83	7	-	450	1915+1741	1329+18	33.4 : 33.4%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	7	-	-	15	1641	109	13.7%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	71	-	-	610	1909	1145	53.3%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	447	1915	1915	23.3%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	606	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	22	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**5**	**15**	**0**	**3.5**	**1.1**	**0.0**	**4.6**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**5**	**15**	**0**	**3.5**	**1.1**	**0.0**	**4.6**	**-**	**-**	**-**	**-**	
1/1+1/2	450	450	5	1	0	0.9	0.3	0.0	1.1	9.1	5.8	0.3	6.0	
2/1	15	15	0	15	0	0.2	0.1	0.0	0.3	71.8	0.5	0.1	0.6	
3/1	610	610	-	-	-	2.4	0.6	-	3.0	17.5	11.9	0.6	12.4	
4/1	447	447	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2	
5/1	606	606	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	22	22	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	69.0	Total Delay for Signalled Lanes (pcuHr):	4.40	Cycle Time (s):	120
	PRC Over All Lanes (%):	69.0	Total Delay Over All Lanes(pcuHr):	4.55		

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Scenario 9: 'OY+5 AM (With Comm Dev)' (FG9: 'OY+5 AM (With Comm Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	71	7	7	10
Change Point	0	81	93	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	83	10	93
B	R680 West Entry Right IGA	Ind. Arrow	7	86	93
C	Amber Hil Local Road Right Left	Traffic	7	98	105
D	R680 East Entry Ahead Left	Traffic	71	10	81
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**66.6%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**66.6%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	83	7	-	897	1915+1741	1325+23	66.6 : 66.6%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	7	-	-	45	1671	111	40.4%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	71	-	-	456	1908	1145	39.8%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	900	1915	1915	47.0%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	470	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	28	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**14**	**46**	**1**	**4.8**	**2.1**	**0.0**	**6.9**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**14**	**46**	**1**	**4.8**	**2.1**	**0.0**	**6.9**	**-**	**-**	**-**	**-**	
1/1+1/2	897	897	14	1	0	2.5	1.0	0.0	3.5	14.0	16.4	1.0	17.4	
2/1	45	45	0	45	0	0.7	0.3	0.0	1.0	80.6	1.4	0.3	1.8	
3/1	456	456	-	-	-	1.6	0.3	-	1.9	15.2	8.0	0.3	8.3	
4/1	900	900	-	-	-	0.0	0.4	-	0.4	1.8	0.0	0.4	0.4	
5/1	470	470	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	28	28	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

Basic Input Data and Results

C1	PRC for Signalled Lanes (%):	35.2	Total Delay for Signalled Lanes (pcuHr):	6.43	Cycle Time (s):	120
	PRC Over All Lanes (%):	35.2	Total Delay Over All Lanes(pcuHr):	6.88		

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Scenario 10: 'OY+5 PM (With Comm Dev)' (FG10: 'OY+5 PM (With Comm Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	71	7	7	10
Change Point	0	81	93	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	83	10	93
B	R680 West Entry Right IGA	Ind. Arrow	7	86	93
C	Amber Hil Local Road Right Left	Traffic	7	98	105
D	R680 East Entry Ahead Left	Traffic	71	10	81
E	Pedestrians across	Pedestrian	10	110	0

Network Results

RECEIVED: 08/09/2025

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**56.1%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**56.1%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	83	7	-	475	1915+1741	1328+20	35.3 : 35.3%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	7	-	-	15	1641	109	13.7%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	71	-	-	642	1909	1145	56.1%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	471	1915	1915	24.6%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	638	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	23	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**6**	**15**	**0**	**3.7**	**1.2**	**0.0**	**4.9**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**6**	**15**	**0**	**3.7**	**1.2**	**0.0**	**4.9**	**-**	**-**	**-**	**-**	
1/1+1/2	475	475	6	1	0	0.9	0.3	0.0	1.2	9.3	6.1	0.3	6.4	
2/1	15	15	0	15	0	0.2	0.1	0.0	0.3	71.8	0.5	0.1	0.6	
3/1	642	642	-	-	-	2.6	0.6	-	3.2	18.0	12.8	0.6	13.5	
4/1	471	471	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2	
5/1	638	638	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	23	23	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	60.6	Total Delay for Signalled Lanes (pcuHr):	4.75	Cycle Time (s):	120
	PRC Over All Lanes (%):	60.6	Total Delay Over All Lanes(pcuHr):	4.91		

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Scenario 11: 'OY+15 AM (With Comm Dev)' (FG11: 'OY+15 AM (With Comm Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	71	7	7	10
Change Point	0	81	93	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	83	10	93
B	R680 West Entry Right IGA	Ind. Arrow	7	86	93
C	Amber Hil Local Road Right Left	Traffic	7	98	105
D	R680 East Entry Ahead Left	Traffic	71	10	81
E	Pedestrians across	Pedestrian	10	110	0

Network Results

RECEIVED: 08/09/2025

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**72.7%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**72.7%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	83	7	-	979	1915+1741	1325+22	72.7 : 72.7%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	7	-	-	50	1668	111	45.0%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	71	-	-	496	1908	1145	43.3%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	982	1915	1915	51.3%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	513	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	30	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**15**	**51**	**1**	**5.5**	**2.6**	**0.0**	**8.1**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**15**	**51**	**1**	**5.5**	**2.6**	**0.0**	**8.1**	**-**	**-**	**-**	**-**	
1/1+1/2	979	979	15	1	0	3.0	1.3	0.0	4.3	15.8	19.5	1.3	20.8	
2/1	50	50	0	50	0	0.7	0.4	0.0	1.2	82.9	1.6	0.4	2.0	
3/1	496	496	-	-	-	1.8	0.4	-	2.2	15.7	8.8	0.4	9.2	
4/1	982	982	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5	
5/1	513	513	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	30	30	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	23.9	Total Delay for Signalled Lanes (pcuHr):	7.61	Cycle Time (s):	120
	PRC Over All Lanes (%):	23.9	Total Delay Over All Lanes(pcuHr):	8.13		

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Scenario 12: 'OY+15 PM (With Comm Dev)' (FG12: 'OY+15 PM (With Comm Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	71	7	7	10
Change Point	0	81	93	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	83	10	93
B	R680 West Entry Right IGA	Ind. Arrow	7	86	93
C	Amber Hil Local Road Right Left	Traffic	7	98	105
D	R680 East Entry Ahead Left	Traffic	71	10	81
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	-	**60.6%**
R680/Amber Hill Local Road Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	-	**60.6%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	83	7	-	513	1915+1741	1329+18	38.1 : 38.1%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	7	-	-	17	1638	109	15.6%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	71	-	-	694	1909	1145	60.6%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	509	1915	1915	26.6%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	690	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	25	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	-	-	**6**	**17**	**0**	**4.2**	**1.3**	**0.0**	**5.6**	-	-	-	-	
R680/Amber Hill Local Road Junction	-	-	**6**	**17**	**0**	**4.2**	**1.3**	**0.0**	**5.6**	-	-	-	-	
1/1+1/2	513	513	6	1	0	1.0	0.3	0.0	1.4	9.6	6.8	0.3	7.1	
2/1	17	17	0	17	0	0.2	0.1	0.0	0.3	72.4	0.5	0.1	0.6	
3/1	694	694	-	-	-	2.9	0.8	-	3.7	19.1	14.5	0.8	15.2	
4/1	509	509	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2	
5/1	690	690	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	25	25	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	48.5	Total Delay for Signalled Lanes (pcuHr):	5.39	Cycle Time (s):	120
	PRC Over All Lanes (%):	48.5	Total Delay Over All Lanes(pcuHr):	5.57		

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Scenario 13: 'OY AM (Only With Prop Dev)' (FG13: 'OY AM (Only With Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**63.6%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**63.6%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	848	1915+1741	1284+49	63.6 : 63.6%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	79	1692	127	62.3%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	444	1886	1116	39.8%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	859	1915	1915	44.9%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	427	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	85	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**28**	**81**	**1**	**5.1**	**2.4**	**0.0**	**7.6**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**28**	**81**	**1**	**5.1**	**2.4**	**0.0**	**7.6**	**-**	**-**	**-**	**-**	
1/1+1/2	848	848	28	3	0	2.3	0.9	0.0	3.2	13.8	15.1	0.9	16.0	
2/1	79	79	0	78	1	1.2	0.8	0.0	2.0	90.2	2.5	0.8	3.3	
3/1	444	444	-	-	-	1.6	0.3	-	1.9	15.8	7.9	0.3	8.2	
4/1	859	859	-	-	-	0.0	0.4	-	0.4	1.7	0.0	0.4	0.4	
5/1	427	427	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	85	85	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	41.4	Total Delay for Signalled Lanes (pcuHr):	7.17	Cycle Time (s):	120
	PRC Over All Lanes (%):	41.4	Total Delay Over All Lanes(pcuHr):	7.58		

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Scenario 14: 'OY PM (Only With Prop Dev)' (FG14: 'OY PM (Only With Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	69	7	9	10
Change Point	0	79	91	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	81	10	91
B	R680 West Entry Right IGA	Ind. Arrow	7	84	91
C	Amber Hil Local Road Right Left	Traffic	9	96	105
D	R680 East Entry Ahead Left	Traffic	69	10	79
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**57.5%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**57.5%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	81	7	-	439	1915+1741	1260+57	33.3 : 33.3%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	9	-	-	81	1689	141	57.5%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	69	-	-	610	1901	1109	55.0%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	462	1915	1915	24.1%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	612	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	56	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**17**	**82**	**1**	**4.7**	**1.7**	**0.1**	**6.5**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**17**	**82**	**1**	**4.7**	**1.7**	**0.1**	**6.5**	**-**	**-**	**-**	**-**	
1/1+1/2	439	439	17	2	0	0.9	0.2	0.1	1.2	10.2	5.7	0.2	6.0	
2/1	81	81	0	80	1	1.2	0.7	0.0	1.9	82.4	2.6	0.7	3.3	
3/1	610	610	-	-	-	2.6	0.6	-	3.2	18.9	12.4	0.6	13.0	
4/1	462	462	-	-	-	0.0	0.2	-	0.2	1.2	0.0	0.2	0.2	
5/1	612	612	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	56	56	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	56.4	Total Delay for Signalled Lanes (pcuHr):	6.30	Cycle Time (s):	120
	PRC Over All Lanes (%):	56.4	Total Delay Over All Lanes(pcuHr):	6.46		

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Scenario 15: 'OY+5 AM (Only With Prop Dev)' (FG15: 'OY+5 AM (Only With Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**67.2%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**67.2%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	895	1915+1741	1282+51	67.2 : 67.2%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	81	1691	127	63.9%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	466	1888	1117	41.7%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	904	1915	1915	47.2%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	450	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	88	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**31**	**83**	**1**	**5.5**	**2.7**	**0.0**	**8.2**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**31**	**83**	**1**	**5.5**	**2.7**	**0.0**	**8.2**	**-**	**-**	**-**	**-**	
1/1+1/2	895	895	31	3	0	2.6	1.0	0.0	3.6	14.6	16.7	1.0	17.7	
2/1	81	81	0	80	1	1.2	0.9	0.0	2.1	91.8	2.6	0.9	3.5	
3/1	466	466	-	-	-	1.7	0.4	-	2.1	16.0	8.4	0.4	8.8	
4/1	904	904	-	-	-	0.0	0.4	-	0.4	1.8	0.0	0.4	0.4	
5/1	450	450	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	88	88	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	34.0	Total Delay for Signalled Lanes (pcuHr):	7.78	Cycle Time (s):	120
	PRC Over All Lanes (%):	34.0	Total Delay Over All Lanes(pcuHr):	8.23		

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Scenario 16: 'OY+5 PM (Only With Prop Dev)' (FG16: 'OY+5 PM (Only With Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**63.9%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**63.9%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	463	1915+1741	1275+58	34.7 : 34.7%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	81	1689	127	63.9%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	642	1901	1125	57.1%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	485	1915	1915	25.3%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	644	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	57	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**18**	**82**	**1**	**4.9**	**2.0**	**0.1**	**6.9**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**18**	**82**	**1**	**4.9**	**2.0**	**0.1**	**6.9**	**-**	**-**	**-**	**-**	
1/1+1/2	463	463	18	2	0	0.9	0.3	0.1	1.3	9.9	5.9	0.3	6.2	
2/1	81	81	0	80	1	1.2	0.9	0.0	2.1	91.9	2.6	0.9	3.5	
3/1	642	642	-	-	-	2.7	0.7	-	3.4	18.8	13.0	0.7	13.7	
4/1	485	485	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2	
5/1	644	644	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	57	57	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	40.8	Total Delay for Signalled Lanes (pcuHr):	6.70	Cycle Time (s):	120
	PRC Over All Lanes (%):	40.8	Total Delay Over All Lanes(pcuHr):	6.87		

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Scenario 17: 'OY+15 AM (Only With Prop Dev)' (FG17: 'OY+15 AM (Only With Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

RECEIVED: 08/09/2025

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**		**-**	**-**	**73.3%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**73.3%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	976	1915+1741	1285+48	73.3 : 73.3%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	86	1688	127	67.9%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	506	1889	1118	45.3%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	985	1915	1915	51.4%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	493	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	90	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**32**	**88**	**1**	**6.3**	**3.3**	**0.0**	**9.6**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**32**	**88**	**1**	**6.3**	**3.3**	**0.0**	**9.6**	**-**	**-**	**-**	**-**	
1/1+1/2	976	976	32	3	0	3.1	1.4	0.0	4.5	16.5	19.9	1.4	21.2	
2/1	86	86	0	85	1	1.3	1.0	0.0	2.3	96.3	2.8	1.0	3.8	
3/1	506	506	-	-	-	1.9	0.4	-	2.3	16.6	9.3	0.4	9.7	
4/1	985	985	-	-	-	0.0	0.5	-	0.5	1.9	0.0	0.5	0.5	
5/1	493	493	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	90	90	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	22.9	Total Delay for Signalled Lanes (pcuHr):	9.10	Cycle Time (s):	120
	PRC Over All Lanes (%):	22.9	Total Delay Over All Lanes(pcuHr):	9.62		

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Scenario 18: 'OY+15 PM (Only With Prop Dev)' (FG18: 'OY+15 PM (Only With Dev)', Plan 1: 'Do So Scenario')

Stage Timings

Stage	1	2	3	4
Duration	70	7	8	10
Change Point	0	80	92	105

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Phase Timings

Phase Name	Description	Phase	Green Period 1		
			Total Green	Start Time	End Time
A	R680 West Entry Ahead Right	Traffic	82	10	92
B	R680 West Entry Right IGA	Ind. Arrow	7	85	92
C	Amber Hil Local Road Right Left	Traffic	8	97	105
D	R680 East Entry Ahead Left	Traffic	70	10	80
E	Pedestrians across	Pedestrian	10	110	0

Network Results

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Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Bonus Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**65.6%**
R680/Amber Hill Local Road Junction	**-**	**-**	**N/A**	**-**	**-**		**-**	**-**	**-**	**-**	**-**	**-**	**-**	**65.6%**
1/1+1/2	R680 West Entry Ahead Right	U+O	N/A	N/A	A	B	1	82	7	-	502	1915+1741	1279+53	37.7 : 37.7%
2/1	Amber Hil Local Road Right Left	O	N/A	N/A	C		1	8	-	-	83	1688	127	65.6%
3/1	R680 East Entry Ahead Left	U	N/A	N/A	D		1	70	-	-	694	1902	1125	61.7%
4/1	R680 East Exit	U	N/A	N/A	-		-	-	-	-	524	1915	1915	27.4%
5/1	R680 West Exit	U	N/A	N/A	-		-	-	-	-	696	Inf	Inf	0.0%
6/1	Amber Hill/Local Road	U	N/A	N/A	-		-	-	-	-	59	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)	
Network	**-**	**-**	**18**	**84**	**1**	**5.3**	**2.2**	**0.1**	**7.6**	**-**	**-**	**-**	**-**	
R680/Amber Hill Local Road Junction	**-**	**-**	**18**	**84**	**1**	**5.3**	**2.2**	**0.1**	**7.6**	**-**	**-**	**-**	**-**	
1/1+1/2	502	502	18	2	0	1.1	0.3	0.1	1.4	10.2	6.6	0.3	6.9	
2/1	83	83	0	82	1	1.2	0.9	0.0	2.2	93.6	2.7	0.9	3.6	
3/1	694	694	-	-	-	3.0	0.8	-	3.8	19.9	14.8	0.8	15.6	
4/1	524	524	-	-	-	0.0	0.2	-	0.2	1.3	0.0	0.2	0.2	
5/1	696	696	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	
6/1	59	59	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	

C1	PRC for Signalled Lanes (%):	37.3	Total Delay for Signalled Lanes (pcuHr):	7.42	Cycle Time (s):	120
	PRC Over All Lanes (%):	37.3	Total Delay Over All Lanes(pcuHr):	7.61		

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APPENDIX 15.1

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Preliminary Resource and Waste Management Plan

Coyle Environmental, 2025

COYLE ENVIRONMENTAL LTD.

Preliminary Resource Waste Management Plan for a Data Centre, Solar Farm and Village Centre located in Kilmeaden, Co. Waterford

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Coyle ENVIRONMENTAL

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About Coyle Environmental Ltd.

Coyle Environmental Ltd are a highly respected and progressive Environmental Monitoring & Consulting practice.

For over two decades, Coyle Environmental Ltd has been a trusted provider of professional Environmental Monitoring and Consulting Services throughout Ireland.

Our reputation is built on innovative work practices, cost-effective solutions, and unwavering client dedication.

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We deliver to our valued clients a consistently excellent quality of service.

We offer a specialist range of services comprising:

- Environmental Monitoring
- Environmental Consulting
- Environmental Project Management

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Document Control

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Issued By:	Coyle Environmental Ltd., 1st & 2nd Floor Kilmurry House, Castlerea, Co. Roscommon F45 DK58.

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Revision History

Rev	Status	Date
0	Draft	31/03/25
1	Draft	16/04/25

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1 Introduction

1.1 Background

This document sets out the Preliminary Construction Resource and Waste Management Plan (pCRWMP) that has been prepared by Coyle Environmental Limited as part of the planning application for the Proposed Development of a data centre and village centre located in Kilmeaden, Co Waterford.

The Proposed Development comprises four distinct but connected areas including a new village centre, a solar farm and rewilding area including grid scale battery storage, and a data centre with associated energy centre (hereafter referred to as the "proposed development").

1.2 Description of the Proposed Development

The proposed development location lies to the south of the R680, within the townlands of Ballyduff east, Amberhill and Blackknock, Co Waterford.

The proposed development covers an area of 108.64 hectares of which c. 27.187 hectares is the proposed Technology Park and Village Centre, and the remainder is the proposed Solar Panel Farm (overall c. 80 hectares).

The various development areas will be connected with landscaped areas, as well as pedestrian and cycling routes, to provide for an integrated and permeable form of development, which will enhance the economic prosperity and amenity of Kilmeaden.

A 220 kV substation development is also proposed for development within the red line boundary, which will act as the landfall point for an offshore windfarm off the coast of Waterford. Planning for the 220kv grid connection and gas connection will be undertaken under a separate SID planning application.

1.3 Receiving Environment

In 2022, the latest year for which there are published statistics available, 8.3 million tonnes of C&D waste were generated in Ireland, representing a decrease of 0.7 million tonnes from 2021 (EPA, 2025). Of this waste, approximately 6.7 million tonnes comprised soil and stones, making up approximately 82% of the material waste stream[1] (EPA, 2025).

A breakdown of the composition of C&D waste in Ireland in 2022 is set out in Table 1. These figures should be considered as a guide only as C&D waste can vary significantly from one project to another, depending on the nature of the development and the waste management practices employed on-site.

Table 1 – Breakdown of the composition of C&D waste in Ireland in 2022

C&D Waste Type	Tonnage	Percent of total
Soils, stones & dredging spoil	6,741,489	82%
Concrete, brick, tile, & gypsum	616,687	7%

[1] Construction & Demolition | Environmental Protection Agency

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C&D Waste Type	Tonnage	Percent of total
Mixed C&D waste	544,415	7%
Metal	206,851	3%
Bituminous mixtures	104,270	1%
Segregated wood, glass & plastic	54,101	>1%

Data issued by the EPA demonstrates that final treatment operations (backfilling, recycling, energy recovery, disposal) of C&D waste materials varied greatly between material streams. By far the largest quantity of C&D waste was used for backfilling (a recovery operation), which mainly reflects the dominance of soil and stones in the overall composition mix.

The EPA reports that Ireland achieved 82% material recovery of construction and demolition waste in 2022 (EPA, 2025). Under the Waste Framework Directive (2008/98/EC) Member States must achieve 70% of material recovery of non-hazardous, non-soil-and-stone C&D waste by 2020.

Article 27 of the European Union (Waste Directive) Regulations 2020 allows a material producer to declare, under prescribed circumstances, that a material is a by-product and not a waste and so can be reused onsite or offsite within the industry.

On receipt of Article 27 notifications at the EPA, materials can be determined as a waste or a by-product. In some cases, no determination is issued by the EPA, meaning the material has not been determined as a waste.

In 2022, the EPA assessed 114 by-product notifications. The EPA determined that 2,630,095 tonnes of soil and stone notified were by-product, and 203,851 tonnes were waste. Notifications for 9,900 tonnes were withdrawn (EPA, 2025).

The EPA reports that a total of 381,764 tonnes of hazardous waste was generated in Ireland in 2023, representing a decrease of 8,000 tonnes from 2022[2] (EPA, 2025). Hazardous waste types include wastes from dredging spoil, contaminated soils, waste treatment, solvents and hazardous elements of waste electrical and electronic equipment. In 2023, 50% of hazardous waste was treated in Ireland (189,298 tonnes) and 50% of hazardous waste was exported (192,467 tonnes). Hazardous waste treatment in Ireland takes place at EPA licensed industrial facilities that are licensed to treat the waste generated on their own site. Final treatment takes place at EPA licensed waste facilities.

A report entitled Essential Aggregates: Providing for Ireland's Needs to 2040 (Irish Concrete Federation, 2019) was published in 2019 which details and quantifies Ireland's natural aggregate reserves. At the time of publication of that report, Ireland had approximately 500 active large commercial quarries, approximately 220 ready mixed concrete plants, 20 large scale precast concrete plants and 40 plants producing bitumen bound road surfacing materials.

The Irish Concrete Federation quantifies the annual production of these materials in Ireland on their website (Irish Concrete Federation, 2023), with the 2019 figures (the most recent available) being as follows:

- Five million cubic metres of ready-mixed concrete;
- 135 million concrete blocks;

[2] Hazardous | Environmental Protection Agency

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- 38 million tonnes of aggregates;
- Two million tonnes of bituminous road surfacing materials; and
- Two million square metres of paving products.

1.4 Purpose and Scope

The content presented in this pCRWMP has regards to the guidance outlined in the following documents:

- Environmental Protection Agency Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects – (EPA, 2021) (Tier 2 development guidance applied)
- The EU Construction & Demolition Waste Management Protocol (European Commission, 2016). Waste management objectives, policy and legislation are outlined in this Section.

Following appointment, the Main Contractor will be responsible for detailing and maintaining this report and updating it as appropriate.

The purpose of this Resource Waste Management Plan (RWMP) is to ensure that all materials arising from all works associated with the proposed Kilmeaden Technology Park, Village Centre and Solar Panel Farm are managed so that the materials can be reused, recycled or disposed of in accordance with waste management hierarchy and current legislative and best practice requirements.

This plan details:

- Waste Management Roles and Responsibilities
- Waste handling and storage arrangements
- Waste Collection Permits required for the removal of waste from the works
- Waste materials generated as a result of the works
- Waste facilities and the associated regulatory documentation
- Waste inspection, management and auditing practices

2 Waste Management Objectives

The principal objective of sustainable resource and waste management is to use material resources more efficiently, to re-use, recycle and recover material and to reduce the amount of waste requiring final disposal. The value of products, material and resources should be maintained in the economy for as long as possible such that the generation of waste is minimised.

To achieve resource efficiency there is a need to move from a traditional linear economy to a circular economy as presented in Figure 1.

The Department of Environment, Climate and Communication's (DECC) A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020 – 2025 (DECC 2020) notes that:
"In a circular economy the value of products and materials is maintained for as long as possible; waste and resource use are minimised, and resources are kept within the economy when a product has reached the end of its life, to be used again and again to create further value."

The EU Circular Economy Action Plan (European Commission, 2020) notes that:
"The EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and

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therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade."

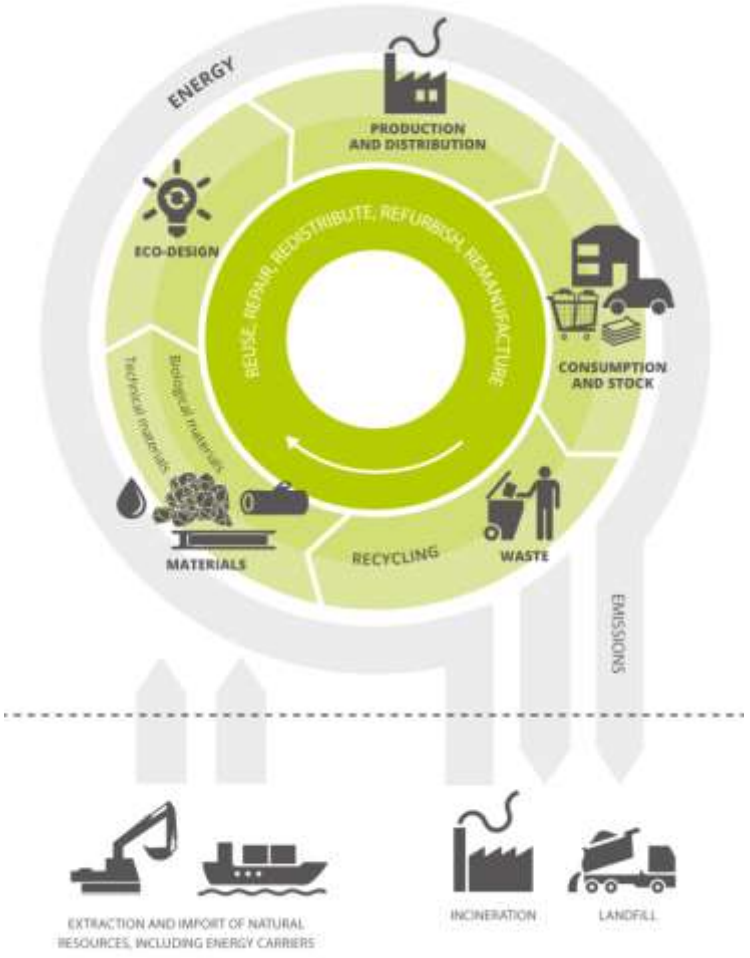


Figure 1 - Simplified model of a circular economy (EEA,2016)

Where residual waste generation is unavoidable, it will be dealt with in a way that follows the waste hierarchy (Figure 2) and set out in Directive 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste (hereafter referred to as the 'Waste Framework Directive').

The European Commission has adopted a new Circular Economy Action Plan (EC, 2020) - one of the main blocks of the European Green Deal, Europe's new agenda for sustainable growth. The Circular Economy Action Plan identifies buildings and construction as a key area where there are opportunities for resource efficiency and circularity.

The Department of the Environment, Climate and Communications published the Irish Waste Action Plan for a Circular Economy in September 2020 (DECC, 2020). The Plan outlines the commitment in the new Programme for Government to implement a new National Waste Action Plan providing new waste policy and giving direction to waste planning and management in Ireland. The policy document contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

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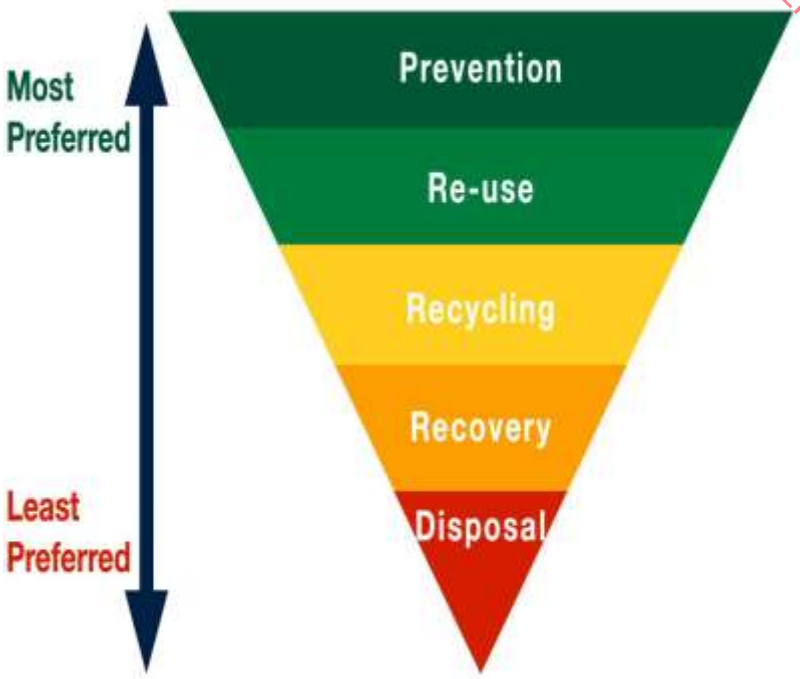


Figure 2 - Waste Hierarchy

The Department of Environment, Climate and Communications published the 'Whole-of-Government Circular Economy Strategy 2022-2023' (DECC, 2021a) in December 2021. The Strategy aims to support and implement measures that significantly reduce Ireland's circularity gap, so that Ireland's rate is above the EU average by 2030.

In July 2022, the Circular Economy and Miscellaneous Provisions Act 2022 was signed into law (Government of Ireland, 2022). This Act aims to place the Strategy, and the commitment to a circular economy, on a clear statutory footing. It underpins Ireland's shift from a "take-make-waste" linear model to a more sustainable pattern of production and consumption, which retains the value of resources in our economy for as long as possible and that will to significantly reduce our greenhouse gas emissions. The Act is a key step in the successful transition of Ireland's economy to a circular economy and is evidence of Government's commitment to the achievement of that goal.

It also aims to streamline the statutory mechanisms for construction and demolition material reuse which are known as 'Article 27' and 'Article 28'.

The objectives of this pCRWMP will facilitate reuse and recycling and divert waste from landfill.

2.1 Legislation, Policy and Guidance

Resource and waste management takes place in a legislative and policy framework. Applicable legislation, policy and best practice guidance was reviewed during preparation of this pCRWMP.
The key components of EU, national and local policy, legislation and guidance relevant to proposed site clearance and construction are summarised as follows:

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- prevention and minimisation of waste is the preferred option;
- where construction waste is generated, it should be source separated to facilitate reuse and recycling and to maximise diversion of waste from landfill;
- where waste may not be prevented or recycled it should be transported and disposed of in accordance with applicable legislation and without causing environmental pollution; and
- waste may only be transferred by a waste collection permit holder and delivered to an authorised waste facility.

2.1.1 Southern Region Waste Management Plan 2015-2021

The Waste Management Plan for the Southern Region is the framework for the prevention and management of wastes in a safe and sustainable manner. The scope of the waste plan is broad and ultimately it needs to provide policy direction, setting out what we want to achieve and a roadmap of actions to get us there. The waste management plan is a statutory document prepared by the local authorities of the region. The implementation of the Southern Region waste plan must ensure that European and national mandatory targets are achieved and, in doing so, that the health of communities in the region, its people and the environment are not compromised.

The purpose of this report is to provide an evaluation of the progress achieved under the three RWMPs to meet the requirements of Section 22(2)(d) of the Waste Management Act and to provide a recommendation to review or replace the current plans. The findings of the evaluation process concludes that the current regional waste plans are to be replaced with a single national plan for the purposes of waste management.

2.1.2 A Waste Action Plan for a Circular Economy – Ireland's National Waste Policy 2020 - 2025

'A Waste Action Plan for a Circular Economy' was published in 2020 (DECC, 2020) and fulfils the commitment in the Programme for Government to publish and start implementing a new National Waste Action Plan. The policy document shifts focus away from waste disposal and moves it back up the production chain. It contains over 200 measures across various waste areas including Circular Economy, Municipal Waste, Consumer Protection and Citizen Engagement, Plastics and Packaging, Construction and Demolition, Textiles, Green Public Procurement and Waste Enforcement.

The overarching objectives of this action plan are to:

Shift the focus away from waste disposal and treatment to ensure that materials and products remain in productive use for longer, thereby preventing waste and supporting reuse through a policy framework that discourages the wasting of resources and rewards circularity;

- Make producers who manufacture and sell disposable goods for profit environmentally accountable for the products they place on the market;
- Ensure that measures support sustainable economic models (for example by supporting the use of recycled over virgin materials);
- Harness the reach and influence of all sectors including the voluntary sector, R&D, producers / manufacturers, regulatory bodies, civic society; and
- Support clear and robust institutional arrangements for the waste sector, including through a strengthened role for local authorities.
- The plan identifies opportunities for the application of circular economy principles across a range of areas in Ireland, including C&D waste.

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2.1.3 Construction and Demolition Waste Soil and Stone Recovery/Disposal Capacity Update Report 2020

The Regional Waste Management Planning Offices (RWMPOs) quantified and analysed national capacity within the market for the management of soil and stone waste arisings, including hazardous material, based on 2018 data, and published this in 2020. This report (RWMPOs, 2020) updates the most recent previous Soil and Stone Recovery / Disposal Capacity report published in 2016.

The report shows that the Covid-19 crisis significantly impacted development and construction. The forecast for 2023 predicted a continued gradual return to normal economic activity. By the end of 2029, it is forecast that C&D waste will grow to a total of 10.1m tonnes per annum. The corresponding forecast data for soil and stone waste is 8.7m tonnes by end of 2029. The report indicates that there is sufficient capacity at licenced facilities. As per the report, there are seven soil recovery facilities in the EPA licensing system for the Southern Region (SR). The annual active licenced capacity for the SR, at end-2018, was 525,000 tonnes.

2.1.4 Waterford County Development Plan 2022 – 2028

Waterford City and County Council plays a fundamental role in the transition from a linear to a circular economy through key policies in public services that affect citizens' wellbeing, economic growth and environmental quality. This plan will foster the linkages to transition from a linear model to a circular model which keeps resources in use for as long as possible.

This will be assisted by:

- Promoting and facilitating high quality sustainable waste recovery and disposal infrastructure/ technology at appropriate locations in Waterford, subject to the protection of the amenities of the surrounding environment including European Sites, guidelines incorporated into the new Regional Waste Management Plan, the siting guidance 'Waste Management Infrastructure – Guidance for Siting Waste Management Facilities' that will be incorporated into the new National Waste Management Plan for a Circular Economy and in keeping with the EU waste hierarchy;
- Continuing to facilitate and promote the provision of civic amenity sites, including 'bring centres' for the purposes of providing a collection point for the recycling of domestic waste, subject to siting, location, compatibility with adjacent land uses and other relevant development management criteria.
- Requiring the facilitation of bring centres in larger retail developments.
- Requiring, where necessary, Project Construction and Demolition Waste Management Plans as part of applications for development in accordance with "Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects" (DoEHLG, 2006). Such plans should be submitted for developments above the thresholds stated in these guidelines, and as required by the Planning Authority.
- Ensuring all developments have adequate space to facilitate storage and segregation of waste arising from the development.

2.1.5 European Commission (2016) EU Construction & Demolition Waste Management Protocol

This protocol was published by the European Commission in September 2016 (European Commission, 2016). The overall aim of the protocol is to increase confidence in the Construction and Demolition (C&D) waste management process and the trust in the quality of C&D recycled materials. This will be achieved by:

- Improved waste identification, source separation and collection;

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- Improved waste logistics;
- Improved waste processing;
- Quality management; and
- Appropriate policy and framework conditions.

2.1.6 Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects (EPA, 2021)

These guidelines were published in 2021 (EPA, 2021) and supersede the guidelines published by the Government in 2006 (DEHLG, 2006).

The replacement guidelines reflect current waste legislation and policy including 'A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025' (DECC, 2020). Since the publication of the 2006 guidelines, waste management legislation and policy have evolved towards prioritising waste prevention and life-cycle thinking through an increased emphasis on waste prevention and the promotion of circular design and construction principles in line with the EU Circular Economy Action Plan under the EU Green Deal.

The guidelines address the best practice approach for the following phases of a project:

- Prior to Construction – including the stages of design, planning and procurement in advance of works on site; and
- During Construction – relating to the effective management of resources and wastes during construction or demolition operations.

2.2 Principals and Definitions

2.2.1 Waste Definitions

What is a Waste?
The Waste Management Acts 1996 and 2001 and subsequent amendments define waste as any substance that the holder discards or intends or is required to discard. Any material that is surplus to the immediate requirements of a particular operation is by definition a waste.

Waste Recovery
Is defined as any activity as listed on the Fourth Schedule of the Waste Management Acts 1996 & 2001 and subsequent amendments. This schedule describes the various recovery activities in technical terms for example, the recycling or reclamation of inorganic materials such as crushing of rubble and shredding of wood.

Waste Disposal
Is defined as any activity as listed in the Third Schedule of the Waste Management Act 1996 & 2001 and subsequent amendments. This schedule describes the various disposal activities in technical terms. Deposit on, in or under land, including landfill.

Hazardous Waste
Hazardous wastes are defined within current waste management legislation as "wastes that pose a substantial or potential threat to the environment or public health." These wastes marked with a * in the European Waste Catalogue.

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European Waste Catalogue (EWC)
EWC is an index that lists all waste types and assigns each a numerical code. Construction and Demolition codes are listed in Chapter 17 of the European Waste Catalogue.

2.2.2 Waste Prevention/Minimisation

Waste prevention and minimisation shall be achieved through the implementation of several guiding principles in accordance with the waste hierarchy, namely:

- Giving preference to the purchase of materials with minimum packaging.
- Storing materials in designated areas and separate from wastes to minimise damage.
- The volume of excavated material shall be kept to a minimum;
- Maximising the reuse of soils and stone on site during the works (Existing material on site which includes soil and stone, concrete and tar will be reused for the project in accordance with correct legal requirements. The methodology for this is outlined in the project resource management plan.
- Segregating waste materials into reusable, recyclable and non-recyclable materials.
- Reusing and recycling materials during works where practicable.
- Recycling other recyclable materials through appropriately permitted / licensed contractors and facilities; and
- Disposing of non-recyclable wastes to licensed, permitted or registered facilities.

Prevention and minimisation principles shall be given effect through the implementation of this waste management plan and appropriate waste management procedures (Section 5).

2.2.3 Waste Segregation and Recovery/Recycling

All waste shall be managed in accordance with the current waste management legal and regulatory requirements and the principles of the waste hierarchy. All activities shall be conducted so as to:

- Minimise the generation of waste materials
- Maximise the reuse of materials on site
- Maximise the recycling of all recyclable wastes
- Minimise the volume of waste sent to landfill

3 Works Specific Waste Management

3.1 General Waste Management

The contractor shall take the following measures to prevent waste, facilitate recycling and minimise waste disposal during the Construction Phase:

- Where waste generation cannot be avoided, waste disposal will be minimised;
- Opportunities for reuse of materials, by-products and wastes will be sought throughout the Construction Phase of the Proposed Development;

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- Possibilities for reuse of clean non-hazardous excavation material as fill on the site or in landscaping works will be considered following appropriate testing to ensure material is suitable for its proposed end use;
- Where non-hazardous excavation material cannot be reused within the Proposed Development works, material will be sent for recycling or recovery, where practicable;
- Excavations of made ground will be monitored by an appropriately qualified person to ensure that any hotspots of possible contamination are properly identified, with the contaminated material segregated and disposed of appropriately. Any potential contaminated material identified will be segregated and stored in an area where there is no possibility of runoff generation or infiltration to ground or surface water drainage. Care will be taken to ensure that the hotspot does not cross contaminate clean soils elsewhere throughout the site;
- If encountered, any potential asbestos during the Construction Phase will be managed using standard health and safety measures as outlined in 'Asbestos-containing Materials (ACMs) in Workplaces: Practical Guidelines on ACM Management and Abatement' (HSA, 2013). This document states that "removal of asbestos from contaminated soil will require a specialist asbestos contractor for any friable asbestos to be removed" and "a risk assessment by an independent competent person should determine the most appropriate control measures and remediation strategies" (HSA, 2013);
- Only a suitably experienced contractor shall be used to carry out the excavation works. During construction, they shall employ standard practices to manage risk from contaminated soils. These will be determined by the contractor depending on their construction practices but are likely to include the use of gloves, dust masks and potentially disposable overalls. These and other appropriate measures will minimise the exposure of site workers and members of the public;
- The site will be maintained to prevent litter and regular litter picking will take place throughout the site;
- 'Just-in-time' delivery will be used, where practicable, to minimise material wastage;
- Paints, sealants and hazardous chemicals will be stored in secure, bunded locations;
- All staff on-site will be trained on how to minimise waste (i.e., training, induction, inspections and meetings);
- Materials on-site will be correctly and securely stored;

Where possible, recyclable material will be segregated and removed off site to a permitted / licensed facility for recycling. Waste stream colour coding and photographs will be used to facilitate segregation;

- On-site municipal waste arising will be source separated at least into dry mixed recyclables, biodegradable and residual wastes;
- Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain, including photographs as appropriate;
- Segregated skips will be used within a designated waste segregation area to be located in the on-site construction compound (particularly for hazardous, inert waste and general waste);
- The appointed contractor will record the quantity in tonnes and types of waste and materials leaving the site during the Construction Phase. The name, address and authorisation details of all facilities and locations to which waste and materials are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility. Records will show material, which is recovered, which is recycled, and which is disposed of;
- Waste generated on-site will be removed as soon as practicable following generation for delivery to an authorised waste facility;
- The appointed contractor will ensure that any off-site interim storage facilities for excavation material have the appropriate waste licences or waste facility permits in place;
- Where Article 27 notifications are required in relation to the Proposed Development, the appointed contractor will complete and submit these Article 27 notifications to the EPA for by-product reuse; and
- The relevant appropriate waste authorisation will be in place for all facilities that wastes are delivered to (i.e., EPA Licence, Waste Facility Permit or Certificate of Registration).

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The appointed contractor will be required to produce a detailed pCRWMP prior to commencement of the proposed works. This will include the names, addresses and authorisation details of the facilities to which waste from the Proposed Development will be delivered.

- A named Resource Manager (RM) of the pCRWMP with responsibility for implementation at Construction Phase must be identified by the contractor;
- The pCRWMP must be included in the site induction training;
- Toolbox talks and all other training on the pCRWMP must be provided in line with EPA Guidance Section 5.4[3].
- There must be appropriate procedures for identifying suitably permitted waste collection operators and waste destination sites implemented – a resource for this task is included in Appendix F of the EPA Guidance;
- Resource efficient supply chains should be implemented as appropriate in line with EPA Guidance Section 5.5;
- There must be appropriate procedures for record keeping and reporting of all off-site export of resources implemented;
- There must be procedures for record keeping and reporting of all on site resource uses – this may include measures such as the use of an on-site mobile crusher for producing aggregate from suitable residual concrete (subject to the appropriate waste consent) – in line with EPA Guidance Section 5.7;
- There must be appropriate procedures for audits and inspections of resource management practices in line with EPA Guidance Section 5.6;
- There must be appropriate procedures for engagement with the Local authority and other stakeholders in line with EPA Guidance Section 5.8;
- There must be a final report prepared summarising the outcomes of resource management processes adopted and the final inventory and cost for the project in line with EPA Guidance Section 5.8;
- Procedures for audits and inspections of resource management practices;
- There should be appropriate site signage on resource management put in place;
- There should be appropriate resource storage implemented on site (i.e., dedicated skips, hazardous materials storage, stockpile management, etc.). Note there are specific requirements on stockpiling more than 50kg of certain persistent organic pollutants (from a construction perspective these may include some chlorinated hydrocarbon contaminants in ground contamination, EPS/XPS insulation building material containing brominated flame retardant (HBCDD) or polychlorinated biphenyls from removal of electrical equipment) under Article 5 of EU Regulation (EU) 2019/1021; and
- There must be appropriate procedures for handling and export of resources in line with EPA Guidance Section 5.3.

3.2 Hazardous Waste

Hazardous Waste materials shall be segregated as follows;

- Aerosols & spray cans
- Asbestos materials
- Contaminated soil (if encountered)
- Solvent based paints
- Batteries
- Fluorescent bulbs

[3] Environmental Protection Agency Best Practice Guidelines for the Preparation of Resource Management Plans for Construction and Demolition Projects

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- Fuels and greases

These materials shall be stored in pre-approved containers in the designated waste segregation area at the site compound. If contaminated soil or other unidentified hazardous material is found the following steps will be taken;

- Contamination notified to the Resource Manager for assessment and further action.
- Works will be stopped in the area.
- The nominated hazardous waste management contractor will be contacted to advise on the best and most efficient way of managing and transporting the material.
- This information will be added to the pCRWMP and communicated to the site team in the form of a Toolbox Talk.

If the pre-existing asbestos pipelines on site are decommissioned and removed, the work will be carried out by specialist waste contactors that deal specifically with asbestos.

Table 2 – Asbestos Waste Removal Specialists

Specialist	Location
Gravity Construction	Ballygoman, Co. Wexford
Asbestaway Ireland Ltd	Wilton, Co. Cork
Harrington Asbestos Removal	Baldoyle, Co. Dublin

3.3 Non-Hazardous Waste

Waste Materials shall be segregated as follows:

- Soil and Stone
- Demolition Material
- General Waste
- Mixed Dry Recyclables
- Wood
- Metal

These materials shall be stored in designated area or in labelled receptacles in a waste segregation area in the Site Compound. Waste segregation practices and the contents of the waste receptacles shall be checked on a weekly basis by the Resource Manager and on a regular basis during scheduled Environmental Inspections and Audits.

3.4 Onsite Waste Management

Construction and demolition (C&D) waste is defined as waste which arises from construction, renovation and demolition activities.

Also included within the definition are surplus and damaged products and materials arising in the course of construction work or used temporarily during the course of on-site activities.
Typical construction waste types which are likely to arise during the proposed site clearance, excavation and construction works are set out in Table 1.

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Greater levels of C&D waste prevention can be achieved by employing best practice circular construction activities. This includes designing out waste, increase application of By-products Regulation 27 and maximising the use of resources specified for projects in line with the EPA's revised Best Practice Guidelines for the Preparation of Resource Management Plans for Construction & Demolition Projects. Soil and stones (and similar material) made up the vast majority (82%) of C&D waste collected in 2022. The next largest C&D waste types generated in 2022 were concrete, brick, tile and gypsum[3] waste and mixed C&D waste (7%) followed by waste collected separately as single material streams (wood, glass, plastic or metal), at 4%.

The contractor will ensure that waste generation on site is minimised, and that waste removed from site for recovery or disposal is reduced where feasible.

3.4.1 Enabling Works

The first stage of the construction works will involve site preparation and clearance. Clearance of the site will include the removal of any vegetation, soil and stone or other materials. Organic materials, including vegetation from shrub, tree or grass clearance or deposits removed from within drainage ditches, will generate only minor quantities of waste material for treatment at organic waste facilities.

Some demolition is required within the former factory site comprising 24,100sq.m (approx.) assuming 0.5m deep across the area gives 12,050cu.m waste. Assuming 2.3t/cu.m (some is concrete some is asphalt) this will result in approx. 27,715t of waste for disposal.

3.4.2 Excavation Works

Excavation waste will arise from such activities as:

- Excavation for utility diversions;
- Excavation for footways / embankments;
- Excavation for piling works; and
- Excavation for foundations / piers.

In total, it is estimated that the construction of the Proposed Development will require the excavation of approximately c. 218,787 m^3 of material. The estimated fill is 79,653 m^3 with approximately 42,000 m^3 of material needing to be removed and transported off site and c. 83,500 m^3 being reused on site for landscaping and berms. The construction will require excavations down to a maximum depth of 4.5m BGL from existing ground levels. This material will comprise made ground, topsoil and subsoil.

3.4.3 Construction Wastes

A description of typical wastes from construction projects including their respective LoW Codes are outlined in Table 2.

Table 3 – Typical construction waste LoW Codes and corresponding waste descriptions (EPA, 2019)

LoW Code	Waste Categories
17 01*	Concrete, bricks, tiles and ceramics
17 02*	Wood, Glass and Plastic
17 03*	Bituminous mixtures, coal tar and tarred products
17 04*	Metals

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17 05*	Soil (incl. excavated soil from contaminated sites), stones and degrading spoil
17 08*	Gypsum-based construction materials
17 09*	Other Construction and Demolition Waste
16 02*	WEEE
16 06*	Batteries
LoW Code	Waste Categories
03 02*	Wood Preservatives
17 05 03**	Contaminated Soils
13 07*	Liquid Fuels

*May include hazardous wastes

**Hazardous

3.5 Imported Materials

Uncontaminated soil and stone is material that is certain to be used in construction at the same project site from where it was excavated is not regulated as waste.

Excess uncontaminated soil and stone material produced during construction projects may be a waste if it is discarded, is intended to be discarded or is required to be discarded.

Since the 1960's the number of invasive alien species in Ireland has steadily increased with a variety of species now widespread in Ireland with continued risk of spread. As more invasive alien species are poised to be introduced to Ireland from Great Britain and continental Europe, good awareness and implementation of biosecurity measures by all relevant stakeholders are required.

Plants, animals or pathogens can be unintentionally transported to new sites in habitat material such as soil and stone. For example, soil that is excavated from a development site and transported for reuse at another site may contain whole or viable parts (seeds, rhizomes, plant fragments, eggs) of invasive alien species that could establish at the new site. If the machinery has not been properly checked, cleaned and dried, and/or disinfected before being used in other locations, the invasive alien species may survive transport on the equipment and be introduced into another location.

This equipment could include auger drill rigs, earth-moving vehicles such as bucket loaders, bulldozers, and scrappers, agricultural machinery, as well as vehicles and trailers used for the transportation of soil and stone. This includes all parts of equipment that is in contact with substrate, such as digging apparatus, tyres, tracks and undercarriage.

3.6 Waste Streams Produced Onsite

Wastes likely to arise over the lifecycle of the project have been identified and documented in the table below. Other additional waste streams that may arise during the project shall be communicated to the Resource Manager for assessment, evaluation and inclusion in this Waste Management Plan.

All wastes shall be removed from the works by permitted contractors to licenced / permitted / registered facilities. All subcontractor waste management plans referenced in the table below will be available on file with all back up documentation, prior to their respective waste streams leaving site.

The site waste champion (TBC) will review subcontractor waste management plans to ensure all is in order.

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Table 4 – Waste Management

Waste Type	EWC Code	Source	Waste Management Technique	Waste Contractor & WCP No.	Facility/ Landfill & WFP ref.
Metal	17.04.07	TBC	Recycle	TBC	TBC
Dry Recyclables	17.02.03, 20.03.01	TBC	Recycle	TBC	TBC
Mixed C&D Materials	17.09.04	TBC	Recycle / Recovery	TBC	TBC
Waste Type	EWC Code	Source	Waste Management Technique	Waste Contractor & WCP No.	Facility/ Landfill & WFP ref.
Concrete	17.01.01	TBC	Recycle	TBC	TBC
Copper piping	17.04.01	TBC	Reuse	TBC	TBC
Blocks	17.01.02	TBC	Reuse	TBC	TBC
Timber & Studding	17.02.01	TBC	Reuse Recycle	TBC	TBC

Table 5 – Estimated quantities of major construction materials required (TBC)

Material	Estimated Quantity
Concrete	3,000 tonnes
Clause 804 Hardcore	32,400 tonnes
Reinforcing steel	187,000 kg
Structural steelwork	55 tonnes N25 span + 33 tonnes parapets
Precast concrete elements	930 tonnes

Table 6 - Estimated Construction and Excavation Waste and End Destination of an Energy Centre[4]

Waste Type	Estimated Quantities	Reuse		Recycle/Recovery		Disposal	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes
Mixed C&D Waste	775	0	0	90	697	10	78
Timber	658	0	0	90	592	10	66
Plasterboard	235	0	0	90	211	10	24
Metals	188	0	0	100	188	0	0
Concrete	141	100	141	0	0	0	0
Other (including cabling, ducting, conduits,	352	0	0	80	282	20	70

[4] Vantage Dublin Data Centre, Volume 1, Main EIAR, 2022

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packaging and plastic							
Topsoil	24,645	100	24,645	0	0	0	0
Excavated materials	17,830	100	17,830	0	0	0	0
Total	**44,472**	**-**	**42,616**	**-**	**1,970**	**-**	**232**

Table 7 - Estimated Demolition Waste and End Destination of an Energy Centre

Waste Type	Estimated Quantities	Reuse		Recycle/Recovery		Disposal	
	Tonnes	%	Tonnes	%	Tonnes	%	Tonnes
Glass	12	0	0	85	11	15	2
Concrete, bricks, tiles, ceramics	71	95	67	0	0	5	4
Plasterboard	6	0	0	85	5	15	1
Asphalts	114	0	0	95	108	5	6
Metals	21	0	0	95	20	5	1
Slate	11	0	0	85	9	15	2
Timber	17	0	0	90	15	10	2
Total	**251**	**-**	**67**	**-**	**168**	**-**	**16**

Table 8 – Estimated on and off-site reuse, recycle and disposal rates of construction waste for a village centre[5]

Waste Types	Tonnes	Reuse		Recycle/Recover		Disposal	
		%	Tonnes	%	Tonnes	%	Tonnes
Mixed Construction	14257.98	10	1425.80	80	11406.38	10	1425.80
Timber	12097.68	40	4839.07	55	6653.72	5	604.88
Plasterboard	4320.6	30	1296.18	60	2592.36	10	432.06
Metals	3456.48	5	172.82	90	3110.83	5	172.82
Concrete	2592.36	30	777.71	65	1685.03	5	129.62
Other	6480.9	20	1296.18	60	3888.54	20	1296.18
Total	**43206**		**10080.76**		**30153.47**		**4174.41**

Table 9 - Residential Waste Prediction (L/per week) for a village centre

Waste Types	Northern Portion	Southern Portion	Total
Organic Waste	345	315	660
Mixed Dry Recyclables	5060	4585	9645
Glass	345	315	660

[5] McGill Planning, Parkside 4 Residential Development EIAR, 2019

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Mixed Municipal Waste	5060	4585	9654
Total	10,810	9800	20,619

3.7 Waste Storage

All waste materials shall be placed in the designated waste receptacles/areas at the Site Compound to await collection by a permitted waste contractor for onward recycling/disposal. UN approved drums shall be used for the storage of hazardous materials, if required. Waste storage areas shall be clearly marked within the Site Compounds and maintained to an acceptable standard to avoid the attraction of rodents and vermin. Soil and stone retained for re-use shall be stored in accordance with the Resource Management Plan.

The waste storage area, within the compound will be kept safe and secure to avoid any vandalism and fly tipping. The waste storage area shall be maintained to an acceptable standard and free from litter.

The waste storage area shall be inspected as part of the routine environmental inspections and any issues communicated to the Resource Manager for investigation and initiation of appropriate actions.

3.8 Waste Transfer Off Site

All waste removed from the works shall be done so in accordance with current waste management legal and regulatory requirements and environmental best practice. General waste materials taken away in skips, shall be covered to prevent windblown litter, fallen debris and to minimise dust.

Documented proof of all waste movements (waste docket), receipt and final recovery or disposal of the material shall be obtained from the waste contractor(s) to form the waste management records for the works.

These waste management records shall be verified and validated by the Resource Manager (RM). They shall be retained on site for inspection for the duration of the project.

All hazardous waste moved off site must be accompanied by a Waste Transfer Form as per current waste management legal and regulatory requirements.

Waste management practices and the associated records shall be included within the scope of any environmental audits or inspections carried out. Actions identified shall be investigated by the RM and corrective actions initiated accordingly.

3.8.1 Waste Contractor and Facility Information

Waste from construction will be transported by authorised waste collectors in accordance with the Waste Management (Collection Permit) Regulations, 2007 as amended.

A list of currently authorised waste collectors is available on the following website: https://www.nwcpo.ie/permitsearch.aspx.

An up-to-date list of all waste collectors used to transport waste from site during the Proposed Development will be maintained on site and updated by the contractor. Copies of valid appropriate waste collection permits will be held on site by the contractor.

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When a waste contractor is first appointed the following information shall be verified and validated by the RM;

- That waste haulage contractor(s) hold(s) a valid waste collection permit to permit the carriage of waste material, in permitted trucks to a licensed / permitted / registered facility
- That waste is collected and delivered to an appropriately licensed / permitted / registered waste facility.
- That the licensed / permitted / registered waste facility has sufficient capacity to accept and deal with the waste stream in the correct manner
- That the facility's license / permit / registration certificate authorises it to accept the particular type of waste involved.

3.9 Litter

The construction company shall endeavour to ensure that all litter is disposed of in an environmentally responsible manner, and that it is not released to the environment. In order to fulfil this obligation, the following control measures shall be put in place;

- A high standard of housekeeping shall be maintained to ensure that materials are not left where they can be washed or blown away to become litter.
- Designated waste receptacles shall be provided at welfare facilities.
- Rubbish shall be removed at frequent intervals and the works areas shall be kept clean and tidy.
- Ongoing housekeeping, waste management and litter awareness toolbox talks shall be provided at scheduled intervals throughout the works.
- Litter management shall also be included in the scope of the environmental inspections, with corrective actions being initiated as required.
- There will be a designated duty holder assigned to ensure litter is well managed on and around the site.

4 Role and Responsibilities

Copies of the pCRWMP will be made available to all relevant personnel on site. All site personnel and subcontractors will be instructed about the objectives of the pCRWMP and informed of their responsibilities.

The nominated Resource Manager (RM) responsible for implementation of this pCRWMP will be identified prior to construction commencement. The RM will be responsible for informing contractor staff and subcontractors of content of the pCRWMP and for maintaining and keeping the Records set out in Section 5. In the event of the RM leaving the project team the contractor will nominate a suitable replacement.

The RM will be responsible for conducting ongoing resource audits at the site during construction. The RM shall ensure that where training is required regarding the handling and management of wastes on site that this is provided to staff as required.

Table 10 - Roles and Responsibilities

Resource Manager	• Documents and implements the waste management plan on site, daily – observes that the plan is being implemented • Oversees and ensures the implementation of the Waste Management Plan.

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	• Identifies and oversees the provision of all required waste management training to site staff, including sub-contractors as necessary. • Inspects waste storage and handling arrangements in accordance with the RWMP. • Checks waste segregation practices including the contents of the waste receptacles on a regular basis. • Ensures all waste is being tracked and recorded • Ensure that materials are ordered so that the quantity delivered the timing of the delivery, and the storage is not conducive to the creation of unnecessary waste. Ensures all waste dockets / receipts are retained on site for inspection. • Provides site waste management toolbox talks on a scheduled basis.
Site Personnel and Subcontractors	• Adherence to the requirements of this WMP. Submittal of subcontractor WMP (SWMP) where subcontractors are contracted to remove their own waste. • Segregation of all wastes (non-hazardous / hazardous) and ensuring that the waste storage area is kept clean and tidy. • Preventing litter and “cleaning as you go”. • Takes part in any training, toolbox talks or communication sessions that are required.

5 Legal and Regulatory Requirements

Current waste management legal and regulatory requirements shall be complied with throughout the project. The register of Environmental Legal and Regulatory requirements details the relevant legislation, which will be considered and complied with by the Construction team. This register will be updated as legal and regulatory requirements change.

5.1 Non-Hazardous Waste

Regarding materials that will not be reused on site during the construction and landscaping process the following statutory restrictions apply with regard to the collection and treatment of waste in Ireland and shall be with complied with during the project.

- All types of waste shall only be collected and transported from site by a contractor who holds a Waste Collection Permit for the vehicle used to collect the waste and the type of waste being collected, in accordance with the Waste Management (Collection Permit) (amendment) Regulations 2007 / 2008 & 2016.
- Waste shall only be disposed of or recovered at a site which holds a Certificate of Registration, Waste Facility Permit or Waste Licence as per current waste management legal and regulatory requirements.
- Waste Management legal and regulatory requirements state that the construction company are responsible for their waste material from the “cradle to the grave” and therefore a copy of the ‘end

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disposal site' docket, certificate of destruction or disposal certificate shall be obtained for all waste materials removed from these works.
- All waste management documentation shall be verified and validated by the RM prior to any material being removed from the works and thereafter on an ongoing basis.
- All waste returns submitted shall be verified and signed off by the RM.
- Copies of all relevant statutory licenses and permits shall be kept on file at the Site Office for the duration of the project.
- The construction company shall consider and evaluate the use of an Article 27 Notification to the EPA in accordance with the European Communities (Waste Directive) Regulations 2011 (S.I No. 126 of 2011) in relation to the removal of the excess soil and stone from the works areas for re-use elsewhere.

5.2 Hazardous Waste

The following statutory restrictions apply with regard to the collection and handling of hazardous waste in Ireland and shall be complied with during the project;

- Hazardous wastes, as defined by the EWC Codes, shall only be collected and transported from the works by a contractor who holds a current Waste Collection Permit for the vehicle used to collect the waste, the type of waste being collected and permitted permission to take the material to the designated facility, in accordance with the Waste Management (Collection Permit) (amend) Regulations 2007 / 2008 & 2016.
- Hazardous waste shall only be taken to a permitted or licensed facility as per current waste management legal and regulatory requirements.
- All waste management documentation shall be verified and validated by the RM prior to any material being removed from the works and thereafter on an ongoing basis.
- Hazardous waste removed from the works shall be accompanied by a Waste Transfer Form (WTF). A copy of the WTF will be obtained from the Waste Contractor. A copy shall be made of the WTF and it shall be forwarded to the RM.
- Records of all hazardous waste movements shall be retained for a minimum period of ten years.
- Hazardous waste to be removed from the State (The Republic of Ireland) for treatment elsewhere must be accompanied by a Transfrontier Shipment Form (TFS) in accordance with the current waste management legal and regulatory requirements. This document is only generated when the material is ready for shipment out of Ireland and a fully completed copy is returned to the consignee when the material has been disposed.

6 Site Infrastructure

The following infrastructure requirements must be adopted by the contractor at construction stage:

- While earthworks are underway, sufficient space will be made available for wastes, by-products and material storage, as necessary. It will be the responsibility of the contractor to ensure all necessary relevant waste authorisations are in place for any such storage in accordance with the Waste Management Act, 1996 as amended;
- Waste storage areas may include stockpiles (for soil and stone, aggregates, etc.), skips (for metals, etc.) or secure containers for hazardous materials. All waste storage areas should be assessed as fit for purpose and should be suitably contained, bunded or defined as required;
- The waste storage areas should be set out to reduce any potential for impact on sensitive human (e.g., residential) or natural (e.g., water courses) receptors and a suitable buffer should be applied to mitigate any impact;
- Labelling and signage shall be used on site to inform personnel of key waste storage area requirements and restrictions with clear signage provided;

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- Signage is also required to provide information to assist good resource practice across the site;
- In relation to resource storage, the Waste Management Act 1996, as amended, allows for the temporary storage of resources defined as 'waste' at the site where it was produced. The Act defines the phrase 'the temporary storage of waste' limiting it to having a six-month duration. As such, it is acceptable to store waste on the site of generation for up to six months without the need for any further waste permit / licence.

7 Training

All persons working for or on behalf of the construction company on this project shall be made aware of the waste management requirements, controls and mitigation measures at induction and thereafter using toolbox talks and communication sessions.
All persons working for or on behalf of the construction company on this project shall be instructed in relation to the objectives and requirements of this Waste Management Plan and informed of their responsibilities in relation to its provisions.

Copies of the pCRWMP will be made available to all persons involved in the works and the RM shall be available to communicate with all persons during routine responsibilities.

Where source segregation and material reuse techniques apply, the relevant persons will be given instruction on how to comply with the pCRWMP.

Training will be provided to the Site Management Team in relation to the requirements of the waste management plan, waste management legal and regulatory requirements as well as the waste management control and mitigation measures prior to commencement of works.

Environmental Awareness Training shall be provided to all works staff at induction by the RM prior to the commencement of works. Additional environmental awareness training shall be provided thereafter on a scheduled basis or as required in the form of toolbox talks and environmental communication sessions.

The environmental topics for the toolbox talks and/or communication sessions shall be relative to the works being carried out and may originate as a result of; changes in mitigation or control measures, amendments in general work practices, environmental legislative changes, documentation updates or changes as a result of corrective actions or Client requests.

Sub-Contractors carrying out works on this site will be subject to the same level of environmental awareness training as the construction company staff.

8 Auditing and Reporting

8.1 Record Keeping

The main contractor shall retain all waste records and associated waste documentation for all material taken away from the works. In accordance with environmental legal and regulatory requirements the following waste records will be retained as a minimum:

- Copy of Waste Collection Permits
- Copy of the Facility Permit / Licence / Certificate of Registration
- Waste Dockets for all waste consignments
- Waste Transfer Form for all consignments of Hazardous waste
- Registers maintained of all loads removed from site

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Waste Collection Permits and Waste facility Permit / Licence / Certificate of Registration shall be verified and validated by the Resource Manager (RM). The waste management documentation shall be retained for the duration of the works and archived thereafter.

8.2 Waste Inspections and Auditing

The appointed Resource Manager (RM) will arrange for audits to be completed on the Proposed Development prior to any construction works commencing and during the construction works. Audits will be of all existing structures and hard surfaces within the Proposed Development site which will be impacted by the works. The audits will identify and quantify the key materials associated with the Proposed Development, outline potential reuse and recycling applications for these materials, identify reuse, recycling and landfill diversion targets for these materials and identify potential local recovery and recycling facilities to which these materials may be delivered.

The contractor will record the quantity in tonnes and types of waste and materials leaving the development site during site clearance, excavation and construction of the Proposed Development. Quantities will be regularly reviewed and compared with targets set during initial audits (including the pre-demolition audit).

The name, address and authorisation details of all facilities and locations to which waste and materials from the Proposed Development are delivered will be recorded along with the quantity of waste in tonnes delivered to each facility and the date of the waste movement. Records will show material which is recovered and disposed of.

A sample resource and waste inventory as included is presented in Appendix 15.1

An audit report shall be documented following all audit activities to detail current waste management activities as well as areas for improvement. Areas for improvement shall be documented as corrective action and tracked in order to monitor their effectiveness. All non-conformances, areas for improvement and corrective actions shall be documented to facilitate environmental performance monitoring.

Spot inspections of Waste Contractors will be carried out by the RM to ensure compliance with the Waste Contractors Waste Collection Permit.

Any failing of the waste management practices shall be identified and reported through the Main Contractors Non-Conformance Reporting system and corrective actions shall be raised and closed out in a timely manner as per the Non-Conformity & Corrective Action Procedures.

9 Review and Update of the Plan

The pCRWMP shall be updated on a scheduled basis. Waste management control measures and information detailed within this plan, shall be reviewed during internal audits and inspections, as the waste management requirements of the works may change, or as legislative / Client requirements may change. Regardless of change, the plan shall be reviewed on at least a quarterly basis, any changes made shall be communicated to the management team.

Following an update of the waste management plan or control measures, the relevant documentation shall be updated accordingly, and the plan shall be approved and re-circulated. The revised control measures or waste management updates shall be communicated to all persons working for or on behalf of the construction company in the form of a toolbox talk or communication session.

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This revision (0) is a preliminary plan and contains details of anticipated waste streams that could arise during the life of this project. As subcontractors are appointed and waste arrangement arrangements agreed, the specifics will require updating both pre and during construction works.