

15.0 TRAFFIC AND TRANSPORTATION

15.1 INTRODUCTION

The objective of this chapter is to assess the impact of the proposed substation on the existing road network. This report will calculate the expected volume of traffic that will be generated by the proposed development to connect the nearby and recently approved Gas Fired Peaker Power Plant to the existing electricity transmission system (Reg. Ref.:SD21A/0167) and assesses the impact that this traffic will have on the operational capacity of the local road network. This chapter is summary of a more comprehensive Traffic and Transportation Assessment (TTA) which is included in Appendix 15-1.

The proposed development will comprise of:

- EirGrid/ ESNB Control Room building
- Associated Internal 15kV and 110kV Underground Cabling
- Installation of a 15/110kV Transformer (TRAFO) with associated equipment including:
 - Cable Sealing End
 - Surge Arrestor
 - Earth Disconnect
 - Current /Voltage Transformer
 - Circuit Breaker
- 110kV underground cable to Barnakyle 110kV substation 3 No Power Ducts and 2 No Telecoms Ducts
- Diesel Generator
- Security Fencing, Security Cameras, and Poles
- Lights/Lamp Poles
- Lightning Masts
- Temporary Construction Compound
- And all other associated site development plant and equipment and other works including surface water and foul wastewater drainage, within an overall redline boundary measuring approximately 2.6 hectares.

15.2 METHODOLOGY

15.2.1 POLICY AND GUIDELINES CONTEXT

In preparing the TTA, the following reference tools were consulted:

- South Dublin County Development Plan 2022-2028;
- TII PE-PDV-02045 Traffic and Transport Assessment Guidelines (May 2014); and
- TII PE-PAG-02017 Project Appraisal Guidelines for National Roads Unit 5.3: Travel Demand Projections (October 2021)

15.2.2 CONSULTATION

In order to ensure the scope of this report was to the satisfaction of South Dublin County Council, a scoping document was issued on the 20th of February 2023 to South Dublin County Council Roads Department. This document outlined the proposed approach that the Traffic and Transportation Assessment would take and identified the junctions which would be included in the analysis.

15.2.2.1 Scope of Assessment

The junctions to be analysed as part of this report are the following:

- Junction 1: The roundabout R134/profile Park/Kilcarbery Park
- Junction 2: Internal Roundabout Profile Park
- Junction 3: Existing Site Access T-Junction



Figure 15-1: Junction Locations

15.2.3 JUNCTION ANALYSIS

The proposed site access T-junction (Junction 3), the internal Profile Park roundabout junction to the Northeast of the Proposed Site Access (Junction 2) and the R134 New Nangor Road / Kilcarbery Park / Profile Park Roundabout to the northeast of the proposed development (Junction 1) have been analysed using the Transport Research Laboratory (TRL) computer program JUNCTION 10 PICADY and ARCADY, widely accepted tools used for the analysis of priority junctions and roundabouts.

The key parameters examined in the results of the analysis are the Ratio of Flow to Capacity Value (RFC value – desirable value for PICADY and ARCADY should be no greater than 0.85 – values over 1.00 indicate the approach arm is over capacity), the maximum queue length on any

approach to the junctions and the average delay for each vehicle passing through the junction during the modelled period.

PICADY and ARCADY requires the following input data:

- Basic modelling parameters (usually peak hour traffic counts synthesised over a 90-minute model period)
- Geometric parameters (including lane numbers & widths, visibility, storage provision etc)
- Traffic demand data (usually peak hour origin/destination table with composition of heavy goods vehicles input*)

For the purpose of the TTA, the varying vehicle types have been segregated into light vehicles (LV) and Heavy Vehicles (HV) prior to input. Traffic volumes input into PICADY and ARCADY were in vehicles and, accordingly, commercial vehicle composition was set to the percentage of that arm.

The performance of the junction has been analysed for the critical AM peak and PM peak hours. This analysis was carried out for the year of construction commencing coinciding with peak construction volumes, 2023 and for the completion of the Construction Phase 2024.

15.2.4 ASSESSMENT TIME AND YEARS

The performance of the junction has been analysed for the critical AM peak and PM peak hours. This analysis was carried out for the year of construction commencing coinciding with peak construction volumes, 2023 and for the completion of the Construction Phase 2024.

15.3 BASELINE ENVIRONMENT

15.3.1 EXISTING ROAD NETWORK

The proposed substation is located within Profile Park Business Park which is to be accessed from the R134 New Nangor Road. The access to Profile Park situated within an 60km/h default urban speed zone. The R134 New Nangor Road has a carriageway width of approximately 7.3m in the vicinity of the access to Profile Park. The R134 also provides a fully segregated two-way cycle facility on the EB side along 2.25m width footpath. Tactile paving crossing points and street lighting are present at the junction along with roadside bus stops.

15.3.2 PROPOSED NETWORK IMPROVEMENTS

Currently, there are no proposed improvements to the road network in the region.

15.3.3 PROPOSED SITE ACCESS JUNCTION

The existing site access from one of the main arteries within Profile Park will be used, this is a T-junction.

15.3.4 TRAFFIC SURVEY

In order to determine the magnitude of the existing traffic flows, the results of a manual classified junction turning count was carried out by Nationwide Data Collection on Tuesday 23rd March 2021 between the hours 07:00 and 19:00. As shown in Figure 15-2 the count information was obtained for the following junctions:

- Site 1: R134 New Nangor Road – Kilcarbery Park – Profile Park Roundabout
- Site 2: Profile Park Internal Roundabout

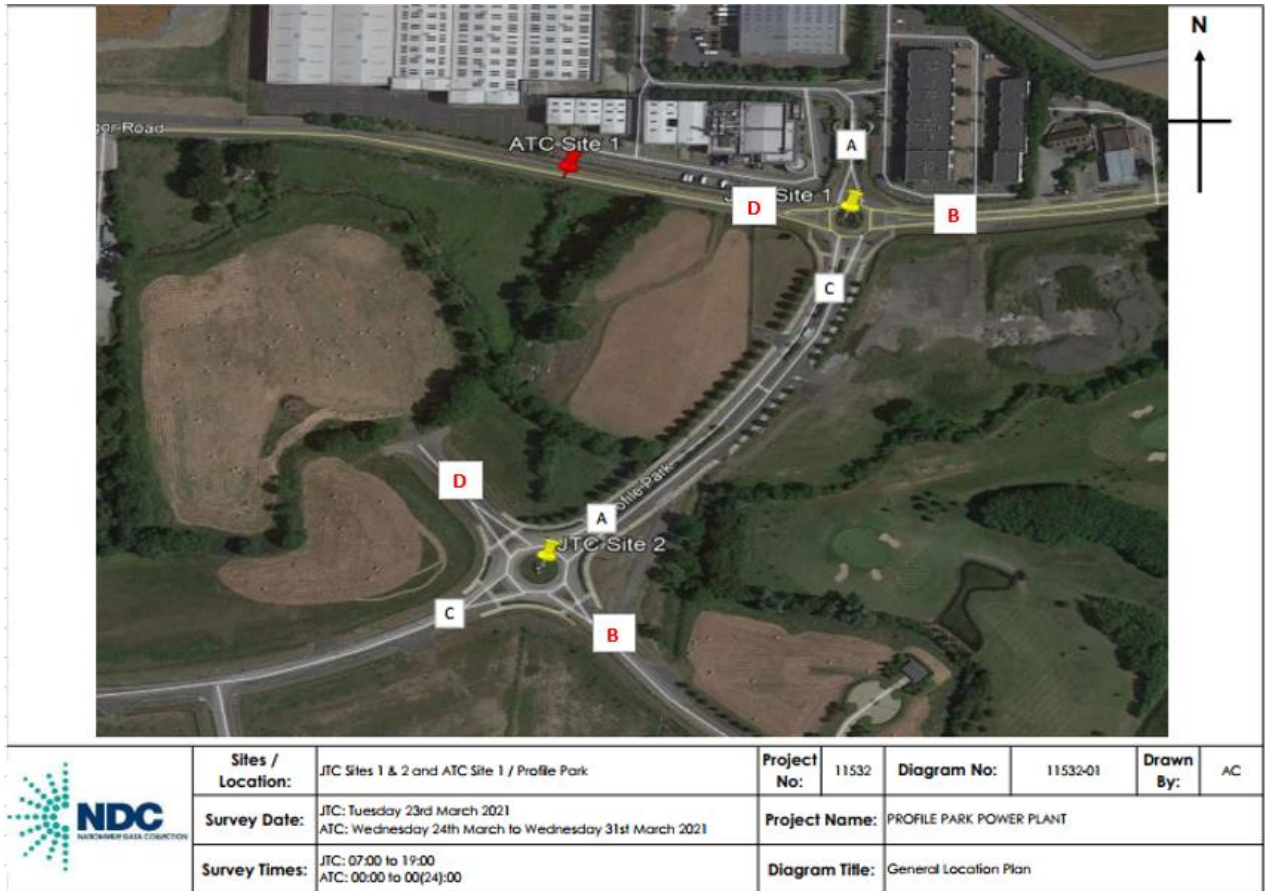


Figure 15-2: Traffic Count Locations

This survey distinguished between light good vehicles and heavy good vehicles. The results of this survey indicated that the peak traffic levels through these junctions occurred between the hours of 08:30 and 09:30, and between three various PM peaks (17:00 and 18:00).

Link-based growth rates (high sensitivity growth rates) were applied to the 2021 traffic flows to determine background traffic flows for the future assessment years.

In addition to the manual traffic counts, Nationwide Data Collection also carried out Automated Traffic Counts Eastbound and Westbound along the R134. In connection with historical traffic count data purchased from IDASO Ltd, TOBIN obtained this ATC data to generate COVID-19 adjusted traffic flows by establishing a base traffic flow and applying an adjustment factor accordingly.

15.4 ASSESSMENT OF SIGNIFICANT EFFECTS

15.4.1 DO NOTHING SCENARIO

The assessment of the existing environment/Do Nothing Scenario, without the Proposed development, has been included for the Construction Phase assessments for the design years, as summarised in Section 5.1.3 in the TTA in Appendix A15-1.

15.4.2 DO SOMETHING SCENARIO

15.4.2.1 Construction Phase

The Construction Phase of the proposed development is currently planned to commence in 2023, (subject to planning approval) and would be expected to last for an estimated duration of 12 months.

The traffic generated by the Construction Phase would result in increases in traffic flow on all surrounding road network leading to and servicing the proposed development. Consequently, a Traffic and Transportation Assessment (TTA) has been undertaken for the traffic generated during the Construction Phase and its distribution across the road network. This is reported in Appendix A15-1.

Traffic generated by the Construction Phase of the Proposed Project primarily consists of traffic related to either delivery of construction materials, or removal of excavated material from the site for disposal. Construction Phase staff would also generate trips to and from the construction sites.

15.4.2.1.1 Trip Generation

Trip Rates for the various uses within the development have been determined for weekdays, Monday to Friday, to coincide with the maximum levels of existing traffic on the adjacent road network. The volume of traffic expected to be generated by the proposed construction phase of the development during the AM and PM peak hours are shown below in Table 15-1 and Table 15-2.

It is expected a total of 59 no. vehicles per day during the peak construction period and 5 no. vehicles per day expected during the average construction period over the 12-month Construction programme.

Table 15-1: Expected Peak Trip Generation for Proposed Development for AM Peak Hour

EXPECTED TRIP GENERATION FOR PROPOSED DEVELOPMENT (AM PEAK HOUR)		
	Arrivals	Departures
Light Goods Vehicles (LGV)	10	
Daily Delivery Heavy Goods Vehicles (HGVs)	5	5
Total	15	5

Table 15-2: Expected Peak Trip Generation for Proposed Development for PM Peak Hour

EXPECTED TRIP GENERATION FOR PROPOSED DEVELOPMENT (AM PEAK HOUR)		
	Arrivals	Departures
Light Goods Vehicles (LGV)		10
Daily Delivery Heavy Goods Vehicles (HGVs)	5	5
Total	5	15

Table 15-1 and Table 15-2 show the expected total of vehicles during the busiest time of the construction phase. It is expected 10 no. people on site and 59 no. HGVs over the 12-hours construction time, which results in 10 LGVs and 5 HGVs arriving, and 5 HGVs departing in the AM peak and, 10 LGVs and 5 HGVs departing, and 5 HGVs arriving in the PM peak.

15.4.2.1.2 Traffic Assessment

The analysis of the junctions for the Construction Phase of the proposed development in the AM and PM peaks showed they do not have capacity issues at present and would operate within capacity during the Construction Phase of the proposed development.

The junction assessments indicate that none of the junctions assessed are currently exceeding desirable capacity of 0.85. This will remain the case during the construction period. The maximum RFC of 0.49 was shown at the New Nangor Road / R134 Roundabout Junction of those assessed with a maximum RFC of 0.06 on the internal Profile Park Roundabout and 0.04 at the entrance to the proposed development. This is presented in Section 5.1.3 in the TTA, as contained in Appendix A15-1.

15.4.2.2 Operational Phase Effects

The traffic generated by the Operation Phase has also been considered in the TTA (Appendix 15-1). The operational traffic for the proposed development is expected to be less than 5 vehicle movements per day. The potential effects of the Operation Phase on the capacity and operation of the receiving road network are considered to be negligible.

15.4.2.3 Decommissioning Effects

Decommissioning phase impacts are predicted to be comparable to construction phase impact albeit traffic volumes will be lower. In the event that at the time of decommissioning baseline traffic is comparable to construction phase baseline, then it is predicted that effects would be short term, negative and not significant.

15.5 CUMULATIVE EFFECTS

A planning search was carried out which revealed some committed development in the area over the period of 2017 to 2021. These other developments are primarily related to ongoing data centre construction and expansion works in the adjacent business parks. These developments are considered to be accounted for in the yearly growth figures, including the construction of the adjacent power plant, hence the use of the high sensitivity growth rates (TII PE-PAG-02017).

15.6 MITIGATION AND MONITORING MEASURES

15.6.1 CONSTRUCTION PHASE

The following are measures that will be implemented to mitigate the traffic and transportation effects of the proposed development:

- Photographic survey of haul roads again, immediately prior to commencement of construction; and
- Continuous monitoring of haul roads throughout the construction phase

15.6.2 OPERATION PHASE

The following are measures that will be implemented to mitigate the impact associated with the facility:

- Maintenance of warning signage on the approach to the entrance;
- Monitoring of parking requirements during the operational phase with additional spaces to be provided if required; and;
- Maintenance of site entrance ensuring visibility splays remain unobstructed.

15.6.3 DECOMMISSIONING PHASE

The potential effects of decommissioning the site on the capacity and operation of the receiving road network are not considered to be potentially significant effects. No specific mitigation is considered necessary.

15.7 RESIDUAL IMPACTS

This section assesses potential significant environmental impacts which remain after mitigation measures are implemented.

15.7.1 CONSTRUCTION PHASE

There will be no residual impact arising.

15.7.2 OPERATIONAL PHASE

Any residual impacts on traffic capacity on the receiving road network can be categorised as imperceptible.

15.7.3 DECOMMISSIONING PHASE

There will be no residual impact arising.

15.8 REFERENCES

- European Commission (2017). Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report.
- National Roads Authority (2014). TII Library. Retrieved from TII Library Website: <http://www.tii.ie/tii-library/land-use-planning/Transport-Assessment-GuidelinesMay2014.pdf>
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- South Dublin County Development Plan 2022–2028