

13 TRAFFIC AND TRANSPORTATION

13.1 Introduction

This chapter assesses the traffic and transportation aspects of the existing development in order to establish the potential significant impact the proposed development may have on the operational capacity of the local road network if the planning and licensing consents are granted. The analysis includes a comprehensive description of the transportation characteristics of the receiving environment, a first principle assessment of the level of trips associated with the development and an analysis on the impact the trips could have on the capacity of the LP-1080 local road and R132 Regional Road.

13.2 Methodology

The scope of this TTA is consistent with Transport Infrastructure Ireland's (TII) 'Traffic and Transport Assessment Guidelines', May 2014.

13.3 Assessment Criteria

Traffic surveys were undertaken in January 2020 (pre-Covid) and repeated in May 2022 for validation, where two-way traffic flows were recorded on the LP-1080 that bounds the site to the south.

In addition, a peak period (three hours in morning and three hours in the evening) traffic counts were undertaken at the junction of the LP-1080/LP-1090 local roads and the junctions off the R132.

This data is used to assess the scale of traffic impact generated by the proposed development. Recorded data on the average daily loads per month currently visiting the site will be used to estimate future vehicle projections in line with material importation allowances, which are currently permitted, and which will continue under this application.

13.4 Baseline Conditions

13.4.1 Road Network

The site is located in Hollywood Great, Nag's Head, Naul, Co. Dublin, approximately 3km west of the M1 and approximately 14km north of Dublin Airport. The site is currently accessed via the LP-1090 local road which bounds the west of the site. The LP-1080 local road bounds the south of the site and links the R108, R122 with the R132.

13.4.1.1 LP-1090 Local Road

The existing access to the site is located on the LP-1090 along the western boundary of the site, approximately 300 metres north of the junction with the LP-1080. The road rises in a south to north direction along the western boundary of the site. The LP-1090 intersects the LP-1080 via a three armed priority junction as shown in **Figure 13-1** and **Figure 13-2**.

Under the most recent planning permission (F19A/0077), the current access will cease to be the principal access to the site and it will be retained only as an emergency entrance and exit. A new access to the site is permitted off the LP-1080 as shown in **Figure 5-4**.

With the new access relocating to the LP-1080 the junction of the LP-1080/LP-1090 will not be on the future haul route for the site so future waste material importation works will not have any future impact on this junction.



Figure 13-1 LP-1090/ LP-1080 junction looking east



Figure 13-2 LP-1090/ LP-1080 junction looking west

13.4.1.2 LP-1080 Local Road

Planning permission F19A/0077, includes for the construction of a new site access from the LP-1080 local road at the southern boundary of the site. The new access will cater for all site related traffic which includes both material import/export and staff travel. The LP-1080 local road is an east to west directional local road that connects the R132 (and M1) to the R108/R122 Regional Roads. There are areas of dispersed dwellings and farmyards located along the LP-1080.

The LP-1080 is a two-lane single carriageway with a road width between 6.0m – 6.2m in the vicinity of the permitted new site entrance. The LP-1080 has a predominately straight horizontal alignment and a vertical alignment that rises in an east to west direction. **Figure 13-3** and **Figure 13-4** show the characteristics of the LP-1080 local road in the vicinity of where the permitted new access to the site will be located.

There are two pronounced bends in the horizontal alignment of the LP-1080, approximately 2.4km east of the new access to the site. However, these bends do not cause obstructions as currently HGVs serving the subject site and other locations pass each other without incident and HGVs do not need to give way to oncoming traffic flow.



Figure 13-3 Location of new site entrance on LP-1080 looking east



Figure 13-4 Location of new site entrance on LP-1080 looking west

13.4.1.3 R132

The R132 is the former N1 National Primary Road and provides a connection from the LP-1080 junction to the M1 Motorway (distance approx. 1.6km). The R132 is a dual carriageway at the point where the LP-1080 intersects the road but changes characteristics to revert to a wide single carriageway (which formerly served inter urban traffic flow until the opening of the M1). The junction between the R132 and LP-1080 is an at-grade left in /left out junction but there is an adjacent overpass which provides full accessibility to the R132.

13.4.1.4 M1

The M1 is a motorway that links Dublin to Belfast and provides accessibility to large urban areas such as Drogheda and Dundalk. It is a critical route on the national road network and it is a wide dual carriageway in the vicinity of the junction with the LP-1080, with hard shoulders on each side of the road and low grass verges.

13.4.2 Existing Traffic

An Automatic Traffic Counter (ATC) was placed on the LP-1080 Road between Monday the 27th January and Sunday the 2nd of February 2020 to record the volume, type and speeds of vehicles over a week long period. The location of the traffic counter on the LP-1080 is shown in **Figure 13-5** and the results of the survey are provided in **Table 13-1**.

The results of the 2020 survey show a weekly average daily survey of 918 vehicles with 694 (76%) consisting of light vehicles and 218 (24%) consisting of heavy vehicles. The fraction of heavy vehicles at 24% is significantly higher than the national average (refer to the M1 traffic data in **Table 13-2**) given the number of vehicles operating at the existing Hollywood operation, local farming and other operations in the area that require heavy vehicle movements.



Figure 13-5 Traffic Counter Location

Table 13-1 2020 Traffic Survey – LP-1080 Road (east of the proposed site entrance)

Time Period (24 Hour)	Westbound		Eastbound	
	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles
Monday 27 th January 2020	377	120	403	140
Tuesday 28 th January 2020	395	133	403	128
Wednesday 29 th January 2020	369	157	389	150
Thursday 30 th January 2020	377	185	401	169
Friday 31 st January 2020	383	158	408	156
Saturday 1 st February 2020	272	7	286	15
Sunday 2 nd February 2020	204	3	191	4
Weekly Average Daily Flow	340	109	354	109

The latest data from the TII traffic counter at the M1 between Junction 4 (Donabate) and Junction 5 (Balbriggan South) which is directly east of the site is shown in **Table 13-2**. This data shows the average heavy vehicles on the M1 at 6-9% which is more typical of Irish roads than the 24% observed on the LP-1080.

In addition, this data also shows that the 2022 levels on the M1 are at circa 98% of the 2019 levels (pre-Covid) suggesting that current traffic on the national network has largely returned to those recorded pre-Covid. This data suggests that 2022 traffic levels in the region are largely in line with those recorded pre-Covid (such as the January 2020 data on the LP-1080 in **Table 13-1**). This would imply that the 2020 baseline data remains valid for the purposes of this assessment.

Table 13-2 TII Traffic Count on the M1 between Junction 4 and 5

Year	Average Daily Traffic	% HGV
2022	60,391	6.7%
2021	50,419	7.8%
2020	45,074	8.5%
2019	61,800	6.6%
2018	59,930	6.7%

To validate the local traffic volumes and to address the request by FCC in consultation, the site specific traffic survey was repeated for a 24 hour period on Tuesday the 31st May 2022 on the LP-1080 road (east of the proposed site entrance). The results of this survey are shown in **Table 13-3** and indicate that the daily traffic volumes on the road increased from 918 in 2020 to 1,174 in 2022. Note that this data has been corrected for the weekday factor in line with the procedures in Transport Infrastructure Ireland's (TII) Project Appraisal Guidelines for National Roads Unit 16.1 — Expansion Factors for Short Period Traffic Counts, October 2016. As such, the data presented represents a typical average daily traffic volume over a typical week to allow for comparison with the 2020 data. The results indicate that the HGV volumes on the road are largely unchanged from those recorded in the 2020 survey but the volumes of light vehicles have increased by circa 40%.

Table 13-3 2022 Traffic Survey – LP-1080 Road (east of the proposed site entrance)

Time Period (24 Hour)	Westbound		Eastbound	
	Light Vehicles	Heavy Vehicles	Light Vehicles	Heavy Vehicles
Tuesday 31 st May 2022	496	108	492	78

13.4.3 Annual Average Daily Traffic (AADT)

Annual Average Daily Traffic (AADT) is the term used to show the average traffic volume in both directions on a section of road, adjusted for seasonal variation and it is a recognised parameter for assessing traffic volumes. The traffic survey data set out in **Table 13-1** and **Table 13-3** provide the Weekly Average Daily Traffic (WADT). This baseline traffic data will include the background traffic and the existing operation at the site.

This data was subsequently expanded in accordance with Transport Infrastructure Ireland's (TII) Project Appraisal Guidelines for National Roads Unit 16.1 — Expansion Factors for Short Period Traffic Counts, October 2016, to derive the AADT on the LP-1080 local road. As the surveys were undertaken in January 2020 and May 2022 and the site is located in the Dublin region, an index factor is applied to the WADT to estimate the AADT. The resulting AADT figures for 2020 and 2022 are presented in **Table 13-4**. The figures generated are largely aligned for the two years establishing that traffic volumes in the road are 1,000-1,150 AADT on the LP-1080. The updated 2022 baseline has been employed in the analysis of impact in this chapter.

Table 13-4 AADT Calculation – LP-1080 Road

Value	2020 Two-Way Traffic LP-1080	2022 Two-Way Traffic LP-1080
Weekly Average Daily Traffic (WADT)	912	1,174
Monthly Index Factor (from TII PAG Unit 16.1 Annex C)	1.10	0.98
Annual Average Daily Traffic (AADT)	1,003	1,150

13.4.4 Existing Traffic to the Site

The existing operation at the site is licenced to accept up to 500,000 tonnes per annum of waste for infilling the former quarry. When operating at full capacity this equates to circa 120 HGV deliveries per day (240 HGV movements) on the LP-1080.

The weighbridge records provided the total volumes of trucks that are currently accessing the site. During the period of Monday 27th January to Sunday the 2nd February 2020, when the 2020 traffic survey was undertaken, the site was operating at full capacity. As above, this equates to circa 120 HGV deliveries per day and these are clearly recorded in the traffic surveys for Monday to Friday in **Table 13-1** which show an average of 150 HGVs east bound and similar west bound on the LP-1080 on weekdays when the site is fully operational. It is estimated that circa 80% of these HGVs (120) are those transporting material to and from the site while the remaining 20% (30) is other background HGV traffic in the area unrelated to the existing operation.

During the 2022 survey (31st May 2022) the site records show 79 HGVs deliveries to the site which accounts for the majority of the HGVs detected on the road network in this survey (refer **Table 13-3**). The 2022 survey recorded 108 east bound and 78 west bound HGVs on this data. At full capacity, the site would generate a further 41 HGV deliveries per day to the site as observed in 2020.

In summary, the 1,150 AADT recorded in 2022 with an additional 82 AADT (to account for a further 41 deliveries to and from the site) to a revised AADT of 1,232 represents the updated baseline traffic on the LP-1080.

13.4.5 Collision Data

A review of the Road Safety Authority's (RSA's) Road Collision Database for the period 2005 to 2014 inclusive has been undertaken. The database contains information on all reported collisions by severity of injury and year of collision during this period. The review concluded that no accidents occurred in the vicinity of Hollywood Landfill between the period 2005 to 2014.

13.4.6 Existing Access to the Site

The existing entrance to the site is located on the LP-1090 along the western boundary of the site. As stated, it is permitted to close this access to regular traffic as part of the most recent permission (Reg. Ref. F19A/0077) and it will only be retained for emergency access purposes.

13.5 Impact Assessment

13.5.1 Future Growth in Traffic Flows on the LP-1080

Background future traffic volumes on the LP-1080 are determined using growth factors from TII's *Project Appraisal Guidelines for National Roads Unit 5.3, Travel Demand Projections, May 2019*. Information within these guidelines is provided for Region 1 (Dublin) from 2016-2030, 2030-2040 and from 2040-2050 for low, central and high sensitivity scenarios. Growth factors are provided for heavy and light vehicles and these have been applied to the expanded AADT data for the LP-1080 to derive future year background traffic flows adjacent to the site. Medium growth factors are set out in **Table 13-5** for light vehicles (LVs) and heavy vehicles (HVs).

Table 13-5 TII Traffic Growth Factors (Central) — Region 1 (Dublin)

Year	Annual Growth Factor — LV	Annual Growth Factor - HV
2016-2030	1.0180	1.0317
2030-2040	1.0062	1.0139

13.5.2 Assessment Periods

Forecast background traffic levels were derived for each of the following assessment years in accordance with the principles of the TII's Traffic and Transport Assessment Guidelines (2014):

- Year of commencement of this planning application (Yo0), assumed to be 2023
- Year of commencement of this planning application +5 years (Yo0 + 5), i.e. 2028
- Year of commencement of this planning application +15 years (Yo0 + 15), i.e. 2038

The forecast background traffic levels on the LP-1080, for these years are shown in **Table 13-6** but as noted, this includes a baseline traffic level that incorporates existing traffic to the site for an infilling rate of 500,000 tonnes per annum.

Table 13-6 Background Future Year Traffic on the LP-1080

Year	LP-1080 Local Road AADT
2022 (Base Year)	1,232
2023 (Opening Year)	1,257
2028 (Opening Year +5 Years)	1,389
2038 (Opening Year + 15 Years)	1,536

13.5.3 Future Traffic Projections

13.5.3.1 Imported Construction Material

Given the volume of site won material to be used in construction, the volume of expected construction traffic is very low (less than 1% of existing AADT) and not considered to pose a significant impact for the local road network. Importation of materials is limited to specialist materials and all aggregates will be site won.

13.5.3.2 Imported Waste Material

The existing operation has consent to import up to 500,000 tonnes of waste material per annum and the proposed development will retain that limit of annual input. Therefore, for the purpose of this assessment the scale of traffic for the site when operating at full capacity is the relevant scenario to be assessed.

As stated in **Section 13.4**, the site was operating at full capacity during the period of the 2020 traffic surveys and the baseline has been corrected to account for full capacity operations in 2022. Therefore, the recorded existing baseline traffic volumes include for the development specific generated total daily movement of circa 240 trucks.

All trucks arriving with waste material will use the R132 and LP-1080 as the haul route to the site.

As the proposed development will retain the 500,000 tonnes per annum limit, the additional impact over the baseline levels will be negligible.

13.5.3.3 Leachate Tankering

There will be up to a maximum of 102m³ per day of leachate liquid generated at the site as a worst case. This leachate will be stored in an on-site storage tank and then transported via road tankers to a suitably licensed waste water treatment plant under agreement with Irish Water. Based on a capacity of 23m³ per truck, this equates to an additional four to five trucks to the site per day as a maximum (total of 10 movements on the LP-1080). These additional leachate movements represent less than 1% of the current traffic on the roads and are predicted to have a negligible impact on the road network.

13.5.3.4 Material Export

Potentially, there will be a requirement to export processed aggregate from the site that is not required for cell construction or capping. The predicted maximum volume of excess material generated is circa 299,420m³ or 568,898 tonnes (refer **Section 5.6.6**). This material will be exported through the lifetime of the development over 25 years equating to circa 22,756 tonnes per annum on average.

In addition, IMS has consent from the EPA to use recovered aggregates from waste concrete as Article 28 end of waste for use as engineering fill at locations off site. In 2020, IMS processes 54,531 tonnes of concrete at the site through this process. This includes concrete but also brick and gypsum. IMS are not limited on the volume of concrete that may be recovered but an estimated 50,000 tonnes per annum has been applied for the purposes of this assessment.

It should be noted that for operational and environmental efficiencies, where possible the above material will be exported in the same haulage vehicles to those employed for material import resulting in no net increase in vehicle numbers. Once the waste material has been deposited at the site the empty vehicles will be used to transport aggregates or by-products as required from the site.

13.5.4 'Do Nothing' Impacts

Under such a scenario, the existing operation would remain unchanged and the baseline levels of traffic in the area would continue in the short to medium term until the existing permissions expire in 2035. This equates to the continuation of the existing 240 HGV movements per day on the local road network.

13.6 Predicted Impact

13.6.1 Percentage Impact on the LP-1080

As the site is currently operating at full capacity and these volumes are included in the 2020 and 2022 baseline traffic surveys it is concluded that there will be 0% additional traffic impact on the LP-1080 over existing traffic levels as the site will remain working in line with its permitted consent levels of waste importation.

13.6.2 Impact on the Theoretical Capacity of the LP-1080

The TII publication '*Rural Road Link Design*' DN-GEO-03031 provides guidance on theoretical capacity for different types of single and dual carriageway roads. Although the LP-1080 is a local road not under the jurisdiction of TII this document will provide guidance on the potential daily capacity of the LP-1080. In the '*Rural Road Link Design*' document a Type 3 single carriageway (6.0m wide carriageway) is the lowest standard of road of which there is a stated daily capacity. The road width of LP-1080 is between 6.2-6.4m so a Type 3 single carriageway would be an appropriate reference for establishing the theoretical capacity of the road.

As the site is assessed as operating at full capacity and these volumes are included in the baseline traffic surveys it is concluded that there will be 0% additional traffic impact on the LP-1080 over existing traffic levels as the site will remain working in line with its permitted consent levels of waste importation. The outcome of this assessment is shown in **Table 13-7**.

Table 13-7 Comparison of Daily Traffic Flow and Link Capacity on the LP-1080

Road	Daily Peak Total Traffic Flow 2036 (Background and Development)	Theoretical Capacity
LP-1080 at the location of the permitted site entrance	1,536	5,000

13.6.3 Characteristics of the LP-1080

The road width of the LP-1080 is between 6.2 and 6.4m at the new site entrance, which is a sufficient width to allow two trucks to pass simultaneously without causing an obstruction to two-way traffic flow. The horizontal alignment of the LP-1080 is predominately straight between the site and the junction with the R132. However, there are two bends in the alignment of the LP-1080, approximately 800m west of the junction with the R132. The road width is still consistently above 6.0m through the bends but there is a reduction in forward visibility due to the high verges and vegetation growth. The bends do cause a reduction in vehicle speed which has a direct impact that allows trucks to manoeuvre safely through this section of the road. The traffic surveys showed that on average 100-150 heavy goods vehicles travel each weekday on the LP-1080 and there have been no reported collisions on this section of the road where there are bends in the alignment.

13.6.4 Junction between the R132/LP-1080

The at-grade junction between the R132/LP-1080 is a left-in and left-out junction. Currently trucks utilise the short merge lane to accelerate up to the appropriate speed. Due to the straight alignment of the R132 at this location, the sight visibility distances for vehicles accessing the R132 northbound carriageway are circa 215m. In addition, the existing forward visibility for other road users of vehicles entering the R132 is in excess of 215m.

There is a roundabout junction located adjacent to the left in-left out junction with the R132 (where there is a link road between the LP-1080 and an overpass of the R132) that provides accessibility to the R132 southbound carriageway and the local road network. Therefore, this roundabout controls all traffic movement between the R132 and the LP-1080.

A capacity assessment was undertaken to establish the impact that could be generated by an increase in truck movements along the LP-1080. The assessment was carried out using JUNCTIONS modelling software, where the geometric parameters and peak hour traffic flows (based on various scenarios) were inputted into the model and the Ratio of Flow to Capacity (RFC) was established. The results of each of the scenarios are discussed in the following analysis.

A RFC of 0.85 would indicate that a junction is operating at practical capacity. It represents the point at which queuing and delays would occur on the approach arms to a junction.

The capacity analysis was undertaken for the 2038 AM peak hour (8:00am - 9:00am) and 2038 PM peak hour (5:00pm - 6:00pm), based on the predicted traffic flows and the geometric parameters of the roundabout.

Table 13-8 shows the results of the junction capacity assessment for the 2038 AM and PM peak hour assessments. Ratio of Flow to Capacity (RFC), Queue Lengths and Delays are presented for the year 2038 ‘Current Levels of Importation’ versus ‘Importing at Full Capacity’ scenarios.

Table 13-8 2038 AM and PM Peak Hour Capacity Assessment Results

Road	2038 AM Peak Hour (08:00am-09:00am)			2038 PM Peak Hour (05:00pm-06:00pm)		
	RFC	Queue (PCU)	Delays (Secs)	RFC	Queue (V)	Delays (Secs)
R132	0.02	0.02	2.24	0.02	0.02	2.22
Overpass	0.06	0.06	3.18	0.02	0.02	3.05
LP-1080 (west)	0.11	0.12	3.58	0.04	0.04	3.33
Farm Access	0.00	0.00	0.00	0.01	0.01	3.33

The junction assessment shows that the site importing at full capacity will have a negligible impact on the operating performance of the R132/LP-1080 roundabout in the 2038 AM and PM peak hour.

13.7 Mitigation Measures

13.7.1 Construction Phase

No proposed traffic mitigation as impacts are negligible.

13.7.2 Operating Traffic Management Plan (TMP) Development and Implementation

IMS will prepare a full Traffic Management Plan for the operation stage of the development. The characteristics of the Traffic Management Plan will be agreed with the Local Authority in advance and shall be fully implemented within the site EMS.

The plan will include measures for emergency access in the event of a road traffic accident or similar incident that hinders site access and egress along the LP-1080. In such a scenario, the alternate site access will be provided via the M1, R122, R108 with the existing site access point on the LP-1090 acting as the emergency access. For such an event all customers and hauliers will be immediately notified via phone/email to advise of the following:

- The nature of the emergency;
- The expected duration (if known);
- Direction on the appropriate alternative route to be taken for committed vehicles; and
- Direction to halt all deliveries yet to leave the source site until the safe site access is restored.

13.8 Residual Impact

With the proposed mitigation measures implemented there are no predicted residual impacts for traffic and transportation.

13.9 Monitoring

No monitoring is proposed as environmental mitigation. During the operation stage, all traffic delivering material to the site is fully logged on site and a record of all waste delivered is maintained as a requirement of the IE Licence.

13.10 References

1. Traffic and Transport Assessment Guidelines, Transport Infrastructure Ireland's (TII) (2014).
2. Project Appraisal Guidelines for National Roads Unit 16.1 — Expansion Factors for Short Period Traffic Counts, Transport Infrastructure Ireland (2016).
3. Project Appraisal Guidelines for National Roads Unit 5.3, Travel Demand Projections, Transport Infrastructure Ireland (2019).
4. Project Appraisal Guidance, Transport Infrastructure Ireland's (TII) (2017).
5. Road Collision Database, Road Safety Authority (RSA).
6. Rural Road Link Design DN-GEO-03031, Transport Infrastructure Ireland's (TII).