

# Marina Parking Ltd

Ocean Spa Plaza, Gibraltar

**Transport Study**

**June 2015**

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# 1 INTRODUCTION

1.1 Vectos has been appointed by Marina Parking Ltd. to provide transport advice relating to the proposed development at Ocean Spa Plaza, Gibraltar comprising of:

- 120 residential units; and
- 591 car parking spaces within a multi-storey car park.

1.2 The proposed development site currently accommodates a car park accommodating 76 car parking spaces with vehicular and pedestrian access gained from Bayside Road.

1.3 This report considers the proposed development site location, the current activity that occurs on site in terms of parking and vehicular movements and the proposed development and its forecast impact on the highway network.

1.4 Vectos is a leading transport planning and design consultancy, with offices in the UK and Perugia. We have a proven track record in dealing with large scale redevelopments and contribute to sustainable transport planning initiatives across the UK and wider Europe.

1.5 This report is formed of 5 sections, of which this first section forms the Introduction. The remainder of the report is structured as follows:

- **Section 2:** Site Location and Existing Conditions;
- **Section 3:** Proposed Development;
- **Section 4:** Assessment of Impact; and
- **Section 5:** Summary and Conclusion.

## 2 SITE LOCATION AND EXISTING CONDITIONS

### Site Location

- 2.1 The site is located to the northwest of Gibraltar and south of Gibraltar International Airport. The site currently accommodates a car park known as the Former Med Rowing Club car park or Bayside Road car park with capacity to accommodate 76 vehicles.
- 2.2 Access to the site is from Bayside Road. The existing layout of the site is included at **Appendix A**.

### Public Transport

There is a northbound bus stop located approximately 100m to the east of the site, it is served by a number of bus routes including Routes 2 and 4. A summary of all the services from this stop, Glacis Kiosk, is shown at **Table 2.1**. A southbound bus stop is also located at the corner of the site. A further stop at Ocean Pharmacy, Ocean Village, is located approximately 200m to the southwest of the site also serves a number of bus routes; these have also been included at **Table 2.1**.

**Table 2.1: Local Bus Services**

Service	Route	Frequency (Peak Hour)		
		Monday – Friday	Saturday	Sunday
2	Market Place Terminus – Europe Point Terminus	Every 15mins	Every 150mins	Every 15mins
3	South Pavilion Steps Terminus (Circular)	Every 20mins	Every 30mins	Every 30mins
4	Both Worlds Terminus – Rosia Terminus	Hourly	Hourly	Hourly
8	Both Worlds Terminus – Reclamation Road Terminus	Every 30mins	Every 30mins	Every 30mins
9	Rosia Terminus – Market Place Terminus	Every 30mins	Every 30mins	Every 30mins

## **Pedestrian Facilities**

- 2.3 There are two pedestrian zebra crossings located in close proximity to the site. One is located to the south east corner of the site on Glacis Road, approximately 50m east of the junction with Bayside Road.
- 2.4 The second crossing point is located to the west of the site on Bayside Road, approximately 20m north of the junction with Glacis Road. This crossing allows access to the western side of Bayside Road, linking further to Ocean Village and the marina.
- 2.5 The site is situated within walking distance of many facilities. Footways link the site to Ocean Village in the west which has a 5\* hotel, casinos, bars, restaurants, shops, offices and apartments. To the east of the site a footway connects the site with the North District Post Office, a petrol filling station (PFS) and a bank.
- 2.6 Due to the densely built nature of Gibraltar the site is well situated within walking and cycling distance of several key amenities. As previously mentioned, to the north west of the development there is the Bayside Boys Comprehensive School and St Anne's Middle School.
- 2.7 Main Street, which is a largely retail based street, is located approximately 400m, or 5 minutes' walk from the site.

## **Highway Network**

- 2.8 Bayside Road is an access road that travels approximately north/south from its junction with Winston Churchill Avenue in the north to its junction with Glacis Road in the south. Bayside Road accommodates two-way traffic near Glacis Road but is one way nearer Winston Churchill Avenue. Glacis Road is a two-way road that travels from the north east, where it shares a junction with Winston Churchill Avenue, to the south west where it joins a roundabout junction with Waterport Road. The route is a busy primary route providing access into the different areas of Gibraltar.
- 2.9 In the past the Bayside Road/Glacis Road junction has been a priority junction. However, a temporary mini roundabout has recently been implemented and is proving to operate very well. The Government of Gibraltar has confirmed that this temporary mini roundabout will shortly be replaced with a permanent mini roundabout.

## Traffic Surveys

2.10 Three traffic surveys were undertaken by the Client on the 17<sup>th</sup> and 18<sup>th</sup> June 2015, to ascertain the existing level of site use and to identify vehicular activity in the immediate vicinity and at a car park very similar to that proposed at Ocean Spa Plaza.

2.11 The three sites surveyed are:

- The former Med rowing club (Bayside Road car park);
- Ocean Village Basement Car Park; and
- Bayside Road.

2.12 In addition, the Government of Gibraltar has also kindly provided traffic survey data for the junction of Glacis Road with Bayside Road.

### Bayside Road

2.13 The survey of Bayside Road, undertaken by the Client, recorded the total number of vehicle movements travelling northbound and southbound along Bayside Road in the vicinity of the site (north of the junction with Glacis Road) over a 12 hour period. The results are shown at **Table 2.2**.

**Table 2.2 – Traffic Movements on Bayside Road (12 hour)**

TIME	Vehicles Southbound (towards Glacis Road)	Vehicles Northbound (away from Glacis Road)	Total Two-Way
09:00-10:00	233	26	259
10:00-11:00	190	23	213
11:00-12:00	212	18	230
12:00-13:00	176	31	207
13:00-14:00	143	20	163
14:00-15:00	110	12	122
15:00-16:00	123	19	142
16:00-17:00	98	16	114
17:00-18:00	205	35	240
18:00-19:00	137	14	151
19:00-20:00	157	24	181
20:00-21:00	151	18	169
Total	1935	256	2191

- 2.14 The survey results show that there are many more southbound movements along Bayside Road (towards Glacis Road) than there are northbound movements. A total of 1935 southbound movements were recorded between 09:00-21:00 and a total of 256 northbound movements were recorded over the same period.
- 2.15 Looking at any hour during the surveyed period the split of traffic northbound and southbound is approximately 85-90% southbound and 10-15% northbound. This is shown at **Table 2.3**.

**Table 2.3: Split of Traffic by Direction on Bayside Road**

TIME	Vehicles Southbound (towards Glacis Road)	Vehicles Northbound (away from Glacis Road)
09:00-10:00	90%	10%
10:00-11:00	89%	11%
11:00-12:00	92%	8%
12:00-13:00	85%	15%
13:00-14:00	88%	12%
14:00-15:00	90%	10%
15:00-16:00	87%	13%
16:00-17:00	86%	14%
17:00-18:00	85%	15%
18:00-19:00	91%	9%
19:00-20:00	87%	13%
20:00-21:00	89%	11%

**Former Med Rowing Club/Bayside Road Car Park**

- 2.16 The Bayside Road car park currently occupies the site to be developed and includes 76 car parking spaces available for public use. The survey data is provided at **Table 2.4**.

**Table 2.4: Entry/Exit Movements Bayside Road Car Park**

TIME	All vehicles entering car park	All vehicles exiting car park
09:00-10:00	11	7
10:00-11:00	2	9
11:00-12:00	5	30
12:00-13:00	14	4
13:00-14:00	10	10
14:00-15:00	12	6
15:00-16:00	16	17
16:00-17:00	13	13
17:00-18:00	45	24
18:00-19:00	1	6
19:00-20:00	6	33
20:00-21:00	4	11
Total 12 hour	139	170

2.17 The data indicates that over the 12 hour period from 09:00-21:00 a total of 139 inbound (entry) and 170 outbound (exit) movements occurred. The busiest hour was from 17:00-18:00 when a total of 69 movements occurred, 45 inbound and 24 outbound.

### **Ocean Village Car Park**

2.18 The Ocean Village car park is located very close to the proposed development site and is considered to be the most similar car park in the area to the proposed residential element of the scheme (the private parking element). Data collected for the Ocean Village Car Park is shown at **Table 2.5**.



**Table 2.5: Ocean Village Basement Car Park Entry/Exit Movements**

TIME	Residents entering Car Park	Residents Exiting Car Park*
09:00-10:00	11	4
10:00-11:00	7	6
11:00-12:00	4	1
12:00-13:00	3	3
13:00-14:00	3	2
14:00-15:00	3	6
15:00-16:00	6	3
16:00-17:00	2	3
17:00-18:00	3	3
18:00-19:00	1	4
19:00-20:00	6	7
20:00-21:00	4	11
Total 12 hour	53	53

\*Note: exit movements were not recorded and for the purposes of assessment have been derived by applying the entry movements in a reverse profile.

- 2.19 A total of 53 inbound (entry) movements were recorded and a total of 53 outbound (exit) movements have been estimated over the 12 hour period from 09:00-21:00.
- 2.20 Using the reverse profile of entry movements as an estimate of exit movements the busiest hours are 09:00-10:00 and 20:00-21:00 when 15 movements occurred.

**Glacis Road**

- 2.21 The Government of Gibraltar has kindly provided traffic survey data for the junction of Glacis Road with Bayside Road, which is included in detail at **Appendix B**.
- 2.22 We would like to acknowledge and thank the assistance given by Gibraltar Department of Transport in providing statistics on traffic movements in Glacis Road and Bayside Road.
- 2.23 This data shows that the temporary mini roundabout junction of Glacis Road with Bayside Road is operating well.
- 2.24 From the data provided it is possible to determine the overall volume of traffic travelling northbound and southbound along Glacis Road. The results are shown at table 2.6, recorded to the east of the Glacis Road/ Bayside Road junction.

**Table 2.6: Traffic Flows on Glacis Road to the East of Bayside Road (12 Hour)**

	Total Vehicles	
	Southbound	Northbound
09:00-10:00	468	340
10:00-11:00	487	482
11:00-12:00	456	415
12:00-13:00	493	442
13:00-14:00	519	446
14:00-15:00	506	470
15:00-16:00	527	479
16:00-17:00	459	512
17:00-18:00	574	528
18:00-19:00	466	487
19:00-20:00	454	461
20:00-21:00	319	420
<b>Total 12 hour</b>	<b>5728</b>	<b>5482</b>

2.25 The data shows that Glacis Road accommodates a two-way flow in the region of 800-900 vehicles per hour across much of the day. The busiest hour recorded was between 17:00 and 18:00 when a total of 1,102 movements were recorded.

### **3 PROPOSED DEVELOPMENT**

#### **Quantum**

- 3.1 The proposed development comprises 120 residential units and provision of 591 car parking spaces, 200 of which will be designated for public use.
- 3.2 The remainder of parking spaces are proposed to be provided for residents of the proposed Ocean Spa Village development, residents of the permitted Ocean Village development, residents of the permitted Waterside development and local Government of Gibraltar residents in the locality.
- 3.3 It is considered that the development will provide the benefit of improved parking to future residents of this development and other permitted developments, existing Government of Gibraltar local residents and the local general public.

#### **Access**

- 3.4 Access to the proposed development will be via Bayside Road. Bayside Road leads north off Glacis Road via a temporary mini roundabout junction.
- 3.5 As stated within Section 2, in the past the Bayside Road/Glacis Road junction has been a priority junction. However, a temporary mini roundabout has recently been implemented and is proving to operate very well. The Government of Gibraltar has confirmed that this temporary mini roundabout will shortly be replaced with a permanent mini roundabout.
- 3.6 The proposed access to Ocean Spa Plaza is located approximately 15m north of the junction of Bayside Road with Glacis Road.
- 3.7 The proposed access will potentially require the relocation of a pedestrian zebra crossing on Bayside Road, which is currently located approximately 20m north of the Glacis Road junction. It is considered that a potential relocation of this crossing could be facilitated by relocating it further to the north by approximately 5-10m and it is considered that this will not lead to any detrimental effect on the use of the crossing.

- 3.8 In addition, as noted within Section 2, there is a southbound bus stop located at the corner of the site which currently conflicts with the existing pedestrian crossing. Marina Parking Ltd propose temporarily relocating this bus stop during construction works approximately 20 metres east along Glacis Road to be located directly opposite St Martins School, to avoid disruption to services.
- 3.9 Since the existing bus stop location conflicts with the existing pedestrian crossing on Glacis Road, it is considered that there may be some benefit in making the temporary location of this bus stop approximately 20m further to the east, permanent, should the Government of Gibraltar agree.

## 4 ASSESSMENT OF IMPACT

### Traffic Impact

- 4.1 In order to assess the likely impact of the proposed car park development on the highway network a forecasting exercise has been undertaken. The methodology adopted has been to uplift the survey data for the existing Bayside Road car park to reflect the level of proposed public car parking (200 spaces) and to uplift the survey data for the existing Ocean Village car park for the proposed private car parking (391 spaces).
- 4.2 In order to do this a factor has been applied to each type of parking.

### Public Parking

- 4.3 For the public parking element of the scheme a factor of 2.63 has been applied, derived by dividing the proposed number of spaces (200) by the existing number of spaces within the Bayside Road car park (76).
- 4.4 Application of this factor to the survey data collected for Bayside Road provides an estimated forecast of the number of inbound and outbound traffic movements that will occur for the proposed public car parking at Ocean Spa Village. The forecast is shown at **Table 4.1**.

**Table 4.1: Forecast Entry/Exit Movement OSP Public Parking**

TIME	All vehicles entering car park	All vehicles exiting car park
09:00-10:00	29	18
10:00-11:00	5	24
11:00-12:00	13	79
12:00-13:00	37	11
13:00-14:00	26	26
14:00-15:00	32	16
15:00-16:00	42	45
16:00-17:00	34	34
17:00-18:00	118	63
18:00-19:00	3	16
19:00-20:00	16	87
20:00-21:00	11	29
Total 12 hour	366	447

4.5 In terms of movements by direction along Bayside Road, the existing proportions for the surveyed northbound and southbound traffic movements on Bayside Road each hour have been applied (as described in Section 2). The resultant forecast number of movements by direction for the public element of the scheme are shown at **Table 4.2**.

**Table 4.2: Vehicle Movements by Direction by Time of Day – Public Parking**

TIME	Vehicles Entering From South	Vehicles Entering From North	Vehicles Exiting to South	Vehicles Exiting to North
09:00-10:00	3	26	17	1
10:00-11:00	0	5	21	3
11:00-12:00	1	12	73	6
12:00-13:00	6	31	9	2
13:00-14:00	3	23	23	3
14:00-15:00	4	28	14	2
15:00-16:00	6	38	39	6
16:00-17:00	5	29	29	5
17:00-18:00	17	101	54	9
18:00-19:00	1	2	14	2
19:00-20:00	2	14	75	12
20:00-21:00	2	9	26	3
<b>Total 12 hour</b>	<b>48</b>	<b>318</b>	<b>394</b>	<b>53</b>

### Private Parking

4.6 For the private parking element of the scheme a factor of 1.498 has been applied, derived by dividing the proposed number of private spaces (391) by the existing number of spaces within the basement level of the Ocean Village car park (261).

4.7 Application of this factor the survey data collected for Ocean Village car park provides an estimate of the likely inbound and outbound traffic movements that will occur for the proposed private car parking at Ocean Spa Plaza. This forecast is shown at **Table 4.3**.

**Table 4.3: Forecast Entry/Exit Movement OSP Private Parking**

TIME	Residents entering Car Park	Residents Exiting Car Park*
09:00-10:00	16	6
10:00-11:00	10	9
11:00-12:00	6	1
12:00-13:00	4	4
13:00-14:00	4	3
14:00-15:00	4	9
15:00-16:00	9	4
16:00-17:00	3	4
17:00-18:00	4	4
18:00-19:00	1	6
19:00-20:00	9	10
20:00-21:00	6	16
<b>Total 12 hour</b>	<b>79</b>	<b>79</b>

- 4.8 The data indicates that a total of 79 inbound and 79 outbound movements are likely to occur across the 12 hour period from 09:00-21:00, based on an uplift of the survey data recorded by the Client at nearby Ocean Village.
- 4.9 In terms of movements by direction along Bayside Road, the existing surveyed proportions for northbound and southbound movements on Bayside Road each hour have again been applied. The resultant forecast number of movements by direction for the private element of the scheme are shown at **Table 4.4**.

**Table 4.4 Vehicle Movements by Direction by Time of Day – Private Parking**

TIME	Vehicles Entering From South	Vehicles Entering From North	Vehicles Exiting to South	Vehicles Exiting to North
09:00-10:00	2	15	5	1
10:00-11:00	1	9	8	1
11:00-12:00	0	6	1	0
12:00-13:00	1	4	4	1
13:00-14:00	1	4	3	0
14:00-15:00	0	4	8	1
15:00-16:00	1	8	4	0
16:00-17:00	0	3	4	1
17:00-18:00	1	4	4	1
18:00-19:00	0	1	6	0
19:00-20:00	1	8	9	1
20:00-21:00	1	5	15	2
<b>Total 12 hour</b>	<b>9</b>	<b>70</b>	<b>70</b>	<b>9</b>

## **Net Increase in Vehicular Movements**

- 4.10 In order to assess the highway impact of the proposed development accurately it is important to consider the parking allocation within the proposed car park.
- 4.11 The public element of the parking will have 200 spaces, however, there is already a total of 76 public spaces located on the development site which will be replaced. Therefore, no new vehicular movements will be associated with the first 76 of the 200 public car parking allocation.
- 4.12 Furthermore, the remaining 124 public car parking spaces are being provided to accommodate public car parking that already occurs in the locality but at present in locations that are less convenient. Therefore, these vehicular movements already occur on the local highway network albeit in a slightly different location within the vicinity.
- 4.13 Therefore, it is only the private element of car parking that has the potential to attract new vehicular movements to the highway network. The private element of the car parking comprises 391 car parking spaces, of which 150 spaces will be provided for the new Ocean Spa Plaza development.
- 4.14 The remainder of the private parking provision is allocated to developments which already have planning consent (Ocean Village and Waterside) or that are already built and occupied (local Government of Gibraltar residences).
- 4.15 Therefore, the only aspect of this development which has the potential to attract new trips to the highway network which do not already occur in the vicinity or have not already been considered as part of the planning process for other new developments is the Ocean Spa Plaza parking provision of 150 spaces.
- 4.16 In order to establish the likely vehicular movements associated with this element of the scheme, a factor has been applied to the total private parking vehicular movements derived at Table 4.3. This factor is 0.383 (The number of Ocean Spa Village Spaces 150 divided by the total number of new private spaces 391). The results are shown at Table 4.5.



**Table 4.5: New Vehicular Movements Associated with Ocean Spa Plaza Development**

TIME	Residents entering Car Park	Residents Exiting Car Park*
09:00-10:00	6	2
10:00-11:00	4	3
11:00-12:00	2	1
12:00-13:00	2	2
13:00-14:00	2	1
14:00-15:00	2	3
15:00-16:00	3	2
16:00-17:00	1	2
17:00-18:00	2	2
18:00-19:00	1	2
19:00-20:00	3	4
20:00-21:00	2	6
Total 12 hour	30	30

- 4.17 The analysis demonstrates that a total of 60 vehicular inbound (entry) and outbound (exit) movements are forecast to be generated by the Ocean Spa Plaza element of the scheme across a 12 hour period.
- 4.18 The busiest single hour is forecast to be 09:00-10:00 and between 20:00-21:00 when 8 vehicular movements would occur. This is equivalent to less than one vehicle every 6 minutes.
- 4.19 In terms of the directional split of vehicular movements, the same proportions have been applied again, derived from the traffic survey. The results are shown at **Table 4.6**.

**Table 4.6: Ocean Spa Plaza Directional Vehicular Movements – 12 hours**

<b>TIME</b>	<b>Vehicles Entering From South</b>	<b>Vehicles Entering From North</b>	<b>Vehicles Exiting to South</b>	<b>Vehicles Exiting to North</b>
09:00-10:00	0	6	2	0
10:00-11:00	0	4	3	0
11:00-12:00	0	2	1	0
12:00-13:00	1	1	1	1
13:00-14:00	1	1	1	0
14:00-15:00	0	2	3	0
15:00-16:00	0	3	2	0
16:00-17:00	0	1	1	1
17:00-18:00	1	1	1	1
18:00-19:00	0	1	2	0
19:00-20:00	0	3	4	0
20:00-21:00	0	2	6	0
<b>Total 12 hour</b>	<b>3</b>	<b>27</b>	<b>27</b>	<b>3</b>

## Development Impact

4.20 **Table 4.7** shows the total forecast vehicular movements for the whole development, by direction (the sum of data presented in Tables 4.2 and 4.4).

**Table 4.7: Total Development Vehicular Movements by Direction by Time of Day**

<b>TIME</b>	<b>Vehicles Entering From South</b>	<b>Vehicles Entering From North</b>	<b>Vehicles Exiting to South</b>	<b>Vehicles Exiting to North</b>
09:00-10:00	5	41	22	2
10:00-11:00	2	14	29	4
11:00-12:00	1	18	74	6
12:00-13:00	6	35	13	2
13:00-14:00	4	27	26	4
14:00-15:00	4	33	22	2
15:00-16:00	7	44	43	7
16:00-17:00	5	32	33	5
17:00-18:00	18	105	58	10
18:00-19:00	0	4	20	2
19:00-20:00	3	21	84	13
20:00-21:00	2	15	41	5
<b>Total 12 hour</b>	<b>57</b>	<b>388</b>	<b>465</b>	<b>62</b>

- 4.21 It is considered reasonable to assume that those movements that are identified as vehicles entering from the south and vehicles exiting to the south are all likely to pass through the Glacis Road/ Bayside Road temporary mini roundabout junction.
- 4.22 The existing traffic flows along Glacis Road immediately east of this junction, described within Section 2 and kindly provided by the Government of Gibraltar, demonstrate that the typical flow per hour along Glacis Road in this location is approximately 400-500 vehicles in each direction.
- 4.23 The greatest number of movements associated with the proposed development that are likely to pass through the Glacis Road/ Bayside Road junction within any single hour is 87 movements (the sum of those entering from the south, 3, and those exiting to the south, 84), which would further be split between those turning eastbound and westbound at the junction.
- 4.24 It is considered reasonable to assume that traffic associated with the Ocean Spa Plaza development would be split approximately 50:50 in each direction at the junction of Bayside Road and Glacis Road. Therefore, approximately 44 vehicles could potentially be added to the flows to the east and west of this junction across the hour (less than one vehicle every 1.5 minutes).
- 4.25 This level of traffic is considered minimal in comparison to that which already passes along Glacis Road and as such, is not considered likely to have any discernible impact on the operation of this junction.

## 5 SUMMARY AND CONCLUSIONS

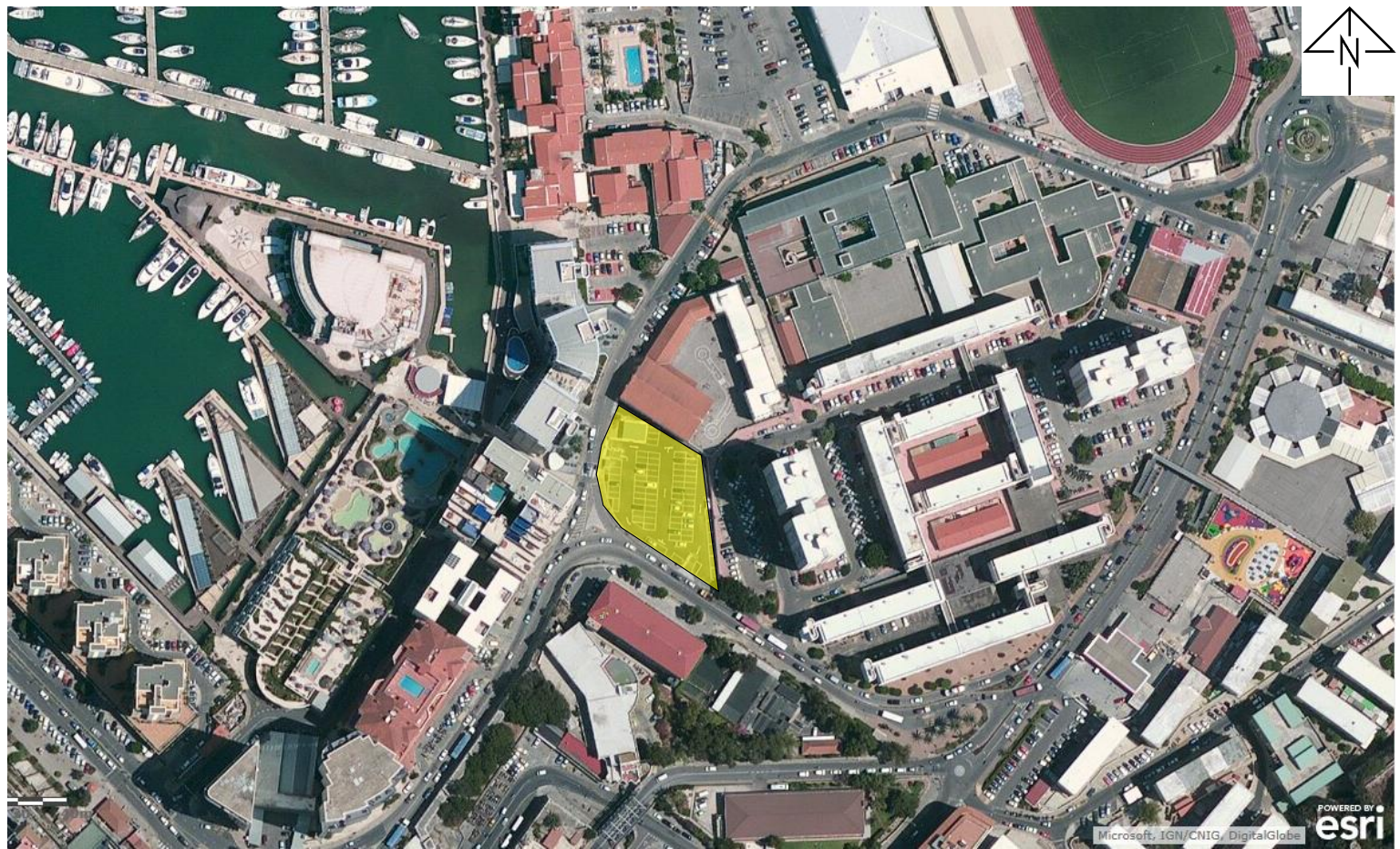
- 5.1 In summary, Vectos has been appointed by Marina Parking Ltd to provide transport advice in relation to their proposed application to construct 120 residential units and 591 car parking spaces at Ocean Spa Plaza, Gibraltar.
- 5.2 We would like to acknowledge and thank the assistance given by Gibraltar Department of Transport in providing statistics on traffic movements in Glacis Road and Bayside Road.
- 5.3 This report has considered the transport aspects of the proposed scheme as concludes the following:
- The site is located in a residential mixed use area and is close to schools, many restaurants, pubs and leisure facilities including a casino and sports stadium.
  - The site is accessible by both walking, cycling, public transport and car.
  - The development will provide parking for residents of the proposed Ocean Spa Plaza development, residents of the nearby Ocean Village development, and residents of the nearby Waterside development and a total of 200 public parking spaces.
  - The provision of public parking spaces will provide a much needed facility for those seeking to use nearby retail and leisure facilities and the nearby Sunborn Yacht hotel
  - The provision of 200 public parking spaces will reduce the amount of illegal parking in the locality such as double parking which occurs at present causing an obstruction to the highway.
  - The analysis suggests that a total of 60 new vehicular inbound (entry) and outbound (exit) movements are forecast to be generated by the Ocean Spa Plaza element of the scheme across a 12 hour period.
  - The busiest single hour is forecast to be 09:00-10:00 and between 20:00-21:00 when 9 new vehicular movements would occur. This is equivalent to less than one vehicle every six minutes.
  - The new temporary mini roundabout junction of Bayside Road with Glacis Road has provided a great improvement to highway operation in this location and will shortly be replaced with a permanent mini roundabout junction; and


- The likely number of new vehicle trips associated with the new car park is not considered likely to cause an adverse impact to the operation of the highway network in this location and is forecast to be less than 8-10% of the flows already passing through the Glacis Road/ Bayside Road junction
- The majority of vehicular movements associated with the proposed car park will be diverted from elsewhere on the local highway network since the facility is providing improved car parking for the local area.

5.4 In conclusion, there are no reasons on transport grounds why the proposed development should not be permitted since it will provide the benefit of improved parking to future residents of this development and other permitted developments, existing Government of Gibraltar local residents and the local general public.

# **APPENDIX A**

## **Site Location**



Key:  
 Site Location

Client: Marina Parking Ltd

Location: Gibraltar

**Ocean Spa Plaza – Site Location**



Network Building, 97 Tottenham Court Road, London W1T 4TP  
 Tel: 020 7580 7373 Email: london@vectos.co.uk www.vectos.co.uk

DRAWN: H.J	CHECKED: V.P	DATE: 23/06/2015	SCALES:
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DRAWING REFERENCE: **Figure 1**

## **Appendix B**

### **Government of Gibraltar Survey Data**



## Author

Institution Government Of Gibraltar  
 Department Technical Services Department  
 Street Secretary's Lane  
 Postal code GX11 1AA  
 City Gibraltar  
 Country United Kingdom  
 Contact Highways Section  
 Phone  
 Email



Generated with **DataCollect Webreporter** version 1.0 at 22/06/2015 09:51:08

## Site

Name GLACIS RD 1.sdr  
 Dir. Oncoming (name) southbound  
 Dir. Outgoing (name) northbound  
 Posted Speed Limit **50**  
 Comment  
 Device type **SDR**

## Time Range

Start date 14/04/2015 13:00  
 End date 25/04/2015 10:59  
 Days Mo, Tu, We, Th, Fr, Sa, Su  
 Time Interval 60 minutes  
 Time / Day 00:00 - 23:59

## Length Classes

[L in m]

southbound					
Time	Σ	M/C	Car	LGV	HGV
00:00-06:00	3379	232	2625	513	9
06:00-09:00	10049	1441	6777	1643	188
15:00-19:00	20432	5971	12027	2161	273
06:00-22:00	70392	17274	43002	8952	1164
00:00-24:00	78321	17816	49254	10064	1187

## Calculated speeds

[V in km/h]

	Vmin	Vmax	Vavg	V15	V50	V85	Vexc %
southbound	5	76	25	14	26	34	<b>0.4</b>

## Descriptions

Vmin: Minimal velocity

Vmax: Maximal velocity

Vavg: Average velocity

V15: Critical velocity for the first 15% of vehicles

V50: Critical velocity for the first 50% of vehicles

V85: Critical velocity for the first 85% of vehicles

Vexc %: Speeding in %


## Author

Institution Government Of Gibraltar  
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Generated with **DataCollect Webreporter** version 1.0 at 22/06/2015 09:51:08

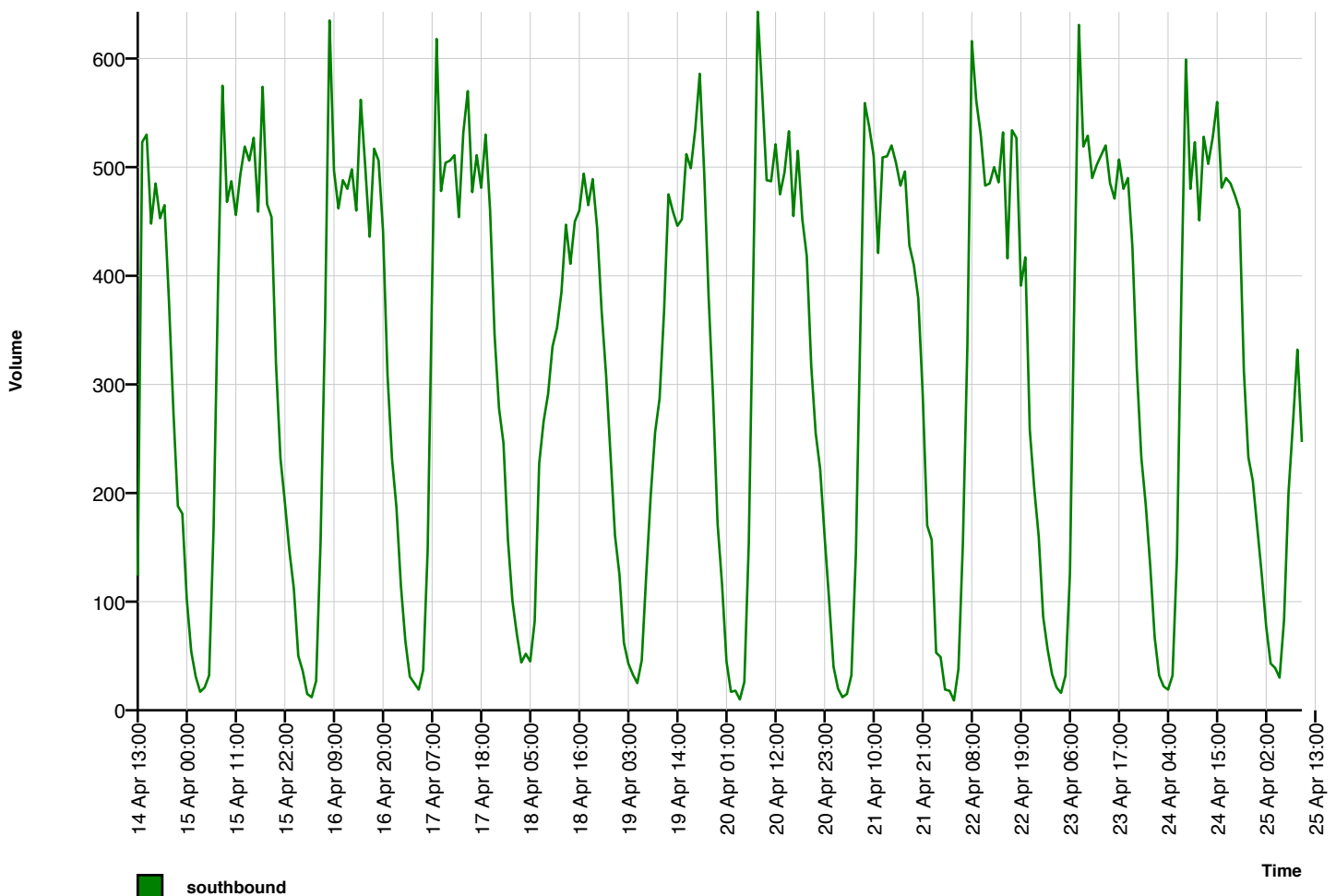
## Site

Name GLACIS RD 1.sdr  
 Dir. Oncoming (name) southbound  
 Dir. Outgoing (name) northbound  
 Posted Speed Limit   
 Comment  
 Device type **SDR**

## Time Range

Start date 14/04/2015 13:00  
 End date 25/04/2015 10:59  
 Days Mo, Tu, We, Th, Fr, Sa, Su  
 Time Interval 60 minutes  
 Time / Day 00:00 - 23:59

## Time / Volume graph




## Author

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 Email



Generated with **DataCollect Webreporter** version 1.0 at 22/06/2015 09:51:08

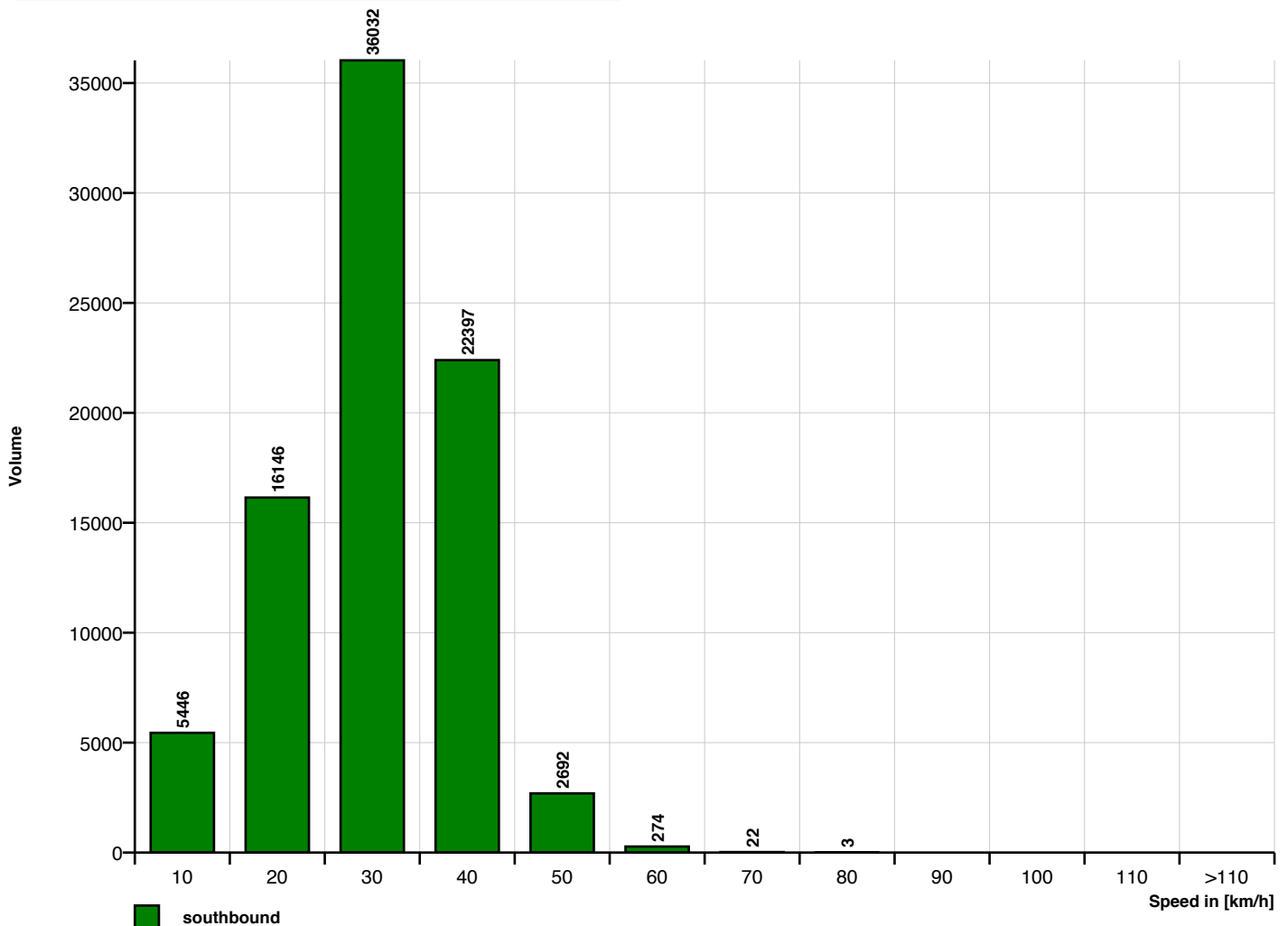
## Site

Name GLACIS RD 1.sdr  
 Dir. Oncoming (name) southbound  
 Dir. Outgoing (name) northbound  
 Posted Speed Limit   
 Comment  
 Device type **SDR**

## Time Range

Start date 14/04/2015 13:00  
 End date 25/04/2015 10:59  
 Days Mo, Tu, We, Th, Fr, Sa, Su  
 Time Interval 60 minutes  
 Time / Day 00:00 - 23:59

## Speed histogram




## Author

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 Email



Generated with **DataCollect Webreporter** version 1.0 at 22/06/2015 09:51:08

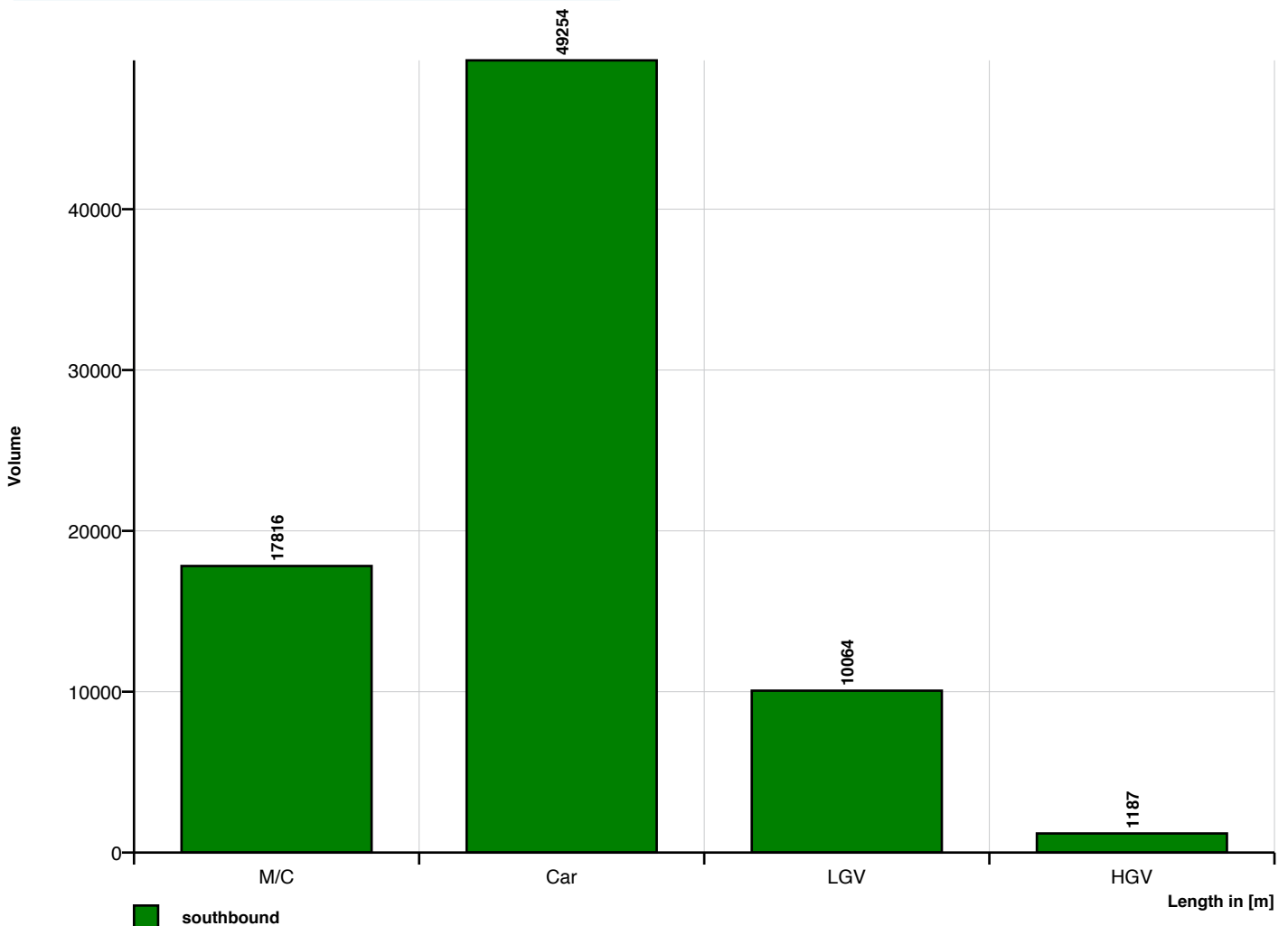
## Site

Name GLACIS RD 1.sdr  
 Dir. Oncoming (name) southbound  
 Dir. Outgoing (name) northbound  
 Posted Speed Limit   
 Comment  
 Device type **SDR**

## Time Range

Start date 14/04/2015 13:00  
 End date 25/04/2015 10:59  
 Days Mo, Tu, We, Th, Fr, Sa, Su  
 Time Interval 60 minutes  
 Time / Day 00:00 - 23:59

## Length histogram



Time	Σ	M/C	Car	LGV	HGV	10	20	30	40	50	60	70	80	90	100	110	>110	V/Min	V/Avg	V/Max	V/5	V50	V85
14/04/2015 13:00	124	34	65	8	4	6	33	72	13	0	0	0	0	0	0	0	0	8	22	35	14	23	29
14/04/2015 14:00	523	160	259	53	11	26	188	249	55	5	0	0	0	0	0	0	0	5	22	47	14	21	29
14/04/2015 15:00	530	184	237	50	14	45	188	207	83	6	1	0	0	0	0	0	0	5	22	51	13	21	31
14/04/2015 16:00	448	150	225	35	7	79	119	175	64	11	0	0	0	0	0	0	0	5	21	50	10	21	31
14/04/2015 17:00	485	131	275	40	8	35	144	231	67	7	1	0	0	0	0	0	0	6	22	56	13	23	31
14/04/2015 18:00	453	107	278	42	6	14	74	247	109	7	2	0	0	0	0	0	0	6	25	55	18	26	32
14/04/2015 19:00	465	38	370	38	1	4	68	254	125	14	0	0	0	0	0	0	0	6	27	50	19	26	34
14/04/2015 20:00	377	23	297	39	0	1	39	196	131	9	1	0	0	0	0	0	0	10	28	55	21	27	34
14/04/2015 21:00	275	18	217	30	0	2	27	147	96	3	0	0	0	0	0	0	0	6	27	43	23	29	34
14/04/2015 22:00	188	10	152	24	1	1	4	85	86	12	0	0	0	0	0	0	0	6	31	50	26	31	35
14/04/2015 23:00	181	22	137	19	0	1	2	86	83	9	0	0	0	0	0	0	0	10	30	50	24	31	35

[Tue, 14 April]	Σ	M/C	Car	LGV	HGV	10	20	30	40	50	60	70	80	90	100	110	>110	V/Min	V/Avg	V/Max	V/5	V50	V85
00:00-06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00-09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00-19:00	1917	572	1015	167	36	173	525	861	323	31	4	0	0	0	0	0	0	5	23	56	13	23	31
06:00-22:00	3680	845	2223	335	51	212	880	1778	743	62	5	0	0	0	0	0	0	5	24	56	14	24	31
00:00-24:00	4049	877	2512	378	52	214	886	1949	912	83	5	0	0	0	0	0	0	5	24	56	14	24	32

Time	Σ	M/C	Car	LGV	HGV	10	20	30	40	50	60	70	80	90	100	110	>110	VMin	VAvg	VMax	V15	V50	V85
15/04/2015 00:00	102	6	78	18	0	0	0	35	65	2	0	0	0	0	0	0	0	21	32	47	26	31	37
15/04/2015 01:00	54	2	41	11	0	0	2	23	23	4	2	0	0	0	0	0	0	19	31	56	26	31	35
15/04/2015 02:00	31	0	27	4	0	0	1	7	20	1	2	0	0	0	0	0	0	18	34	60	27	34	39
15/04/2015 03:00	17	1	13	2	0	0	0	4	9	4	0	0	0	0	0	0	0	23	36	50	29	37	42
15/04/2015 04:00	21	1	13	7	0	0	1	4	11	5	0	0	0	0	0	0	0	18	34	47	26	34	42
15/04/2015 05:00	32	5	21	5	0	0	0	2	29	1	0	0	0	0	0	0	0	27	34	43	31	34	39
15/04/2015 06:00	166	15	118	28	2	1	2	49	102	11	1	0	0	0	0	0	0	8	33	55	26	34	39
15/04/2015 07:00	388	46	243	71	9	4	38	152	172	22	0	0	0	0	0	0	0	6	29	50	21	31	37
15/04/2015 08:00	575	148	286	80	20	31	156	260	112	14	2	0	0	0	0	0	0	5	24	51	14	23	32
15/04/2015 09:00	468	188	173	49	14	141	191	104	29	3	0	0	0	0	0	0	0	5	16	43	8	14	26
15/04/2015 10:00	487	114	227	80	9	14	135	247	89	2	0	0	0	0	0	0	0	6	23	47	16	23	31
15/04/2015 11:00	456	145	174	63	16	85	124	187	53	6	1	0	0	0	0	0	0	5	21	51	10	21	29
15/04/2015 12:00	493	131	259	48	10	43	170	212	59	9	0	0	0	0	0	0	0	5	21	50	13	21	29
15/04/2015 13:00	519	159	255	58	10	12	150	290	58	7	2	0	0	0	0	0	0	5	23	55	16	23	29
15/04/2015 14:00	506	145	252	48	16	14	160	256	66	9	1	0	0	0	0	0	0	6	23	53	14	23	31
15/04/2015 15:00	527	167	252	53	9	45	155	268	54	5	0	0	0	0	0	0	0	5	22	50	14	23	29
15/04/2015 16:00	459	151	226	41	2	104	140	168	42	5	0	0	0	0	0	0	0	5	19	50	10	19	27
15/04/2015 17:00	574	177	324	44	3	46	208	260	57	3	0	0	0	0	0	0	0	5	21	45	13	21	29
15/04/2015 18:00	466	131	278	30	2	16	96	289	63	2	0	0	0	0	0	0	0	6	24	42	18	24	29
15/04/2015 19:00	454	91	303	45	1	8	53	292	93	6	2	0	0	0	0	0	0	6	26	53	21	26	31
15/04/2015 20:00	319	20	227	50	2	1	37	160	115	6	0	0	0	0	0	0	0	10	28	47	21	27	34
15/04/2015 21:00	232	39	164	23	1	0	20	122	88	2	0	0	0	0	0	0	0	11	28	47	23	29	34
15/04/2015 22:00	191	6	165	17	1	2	11	68	102	7	1	0	0	0	0	0	0	6	30	56	24	31	35
15/04/2015 23:00	147	7	124	14	0	1	3	63	68	12	0	0	0	0	0	0	0	8	31	48	26	31	39

[Wed, 15 April]	Σ	M/C	Car	LGV	HGV	10	20	30	40	50	60	70	80	90	100	110	>110	VMin	VAvg	VMax	V15	V50	V85
00:00-06:00	257	15	193	47	0	0	4	75	157	17	4	0	0	0	0	0	0	18	33	60	26	32	39
06:00-09:00	1129	209	647	179	31	36	196	461	386	47	3	0	0	0	0	0	0	5	27	55	18	27	35
15:00-19:00	2026	626	1080	168	16	211	599	985	216	15	0	0	0	0	0	0	0	5	21	50	13	21	29
06:00-22:00	7089	1867	3761	811	126	565	1835	3316	1252	112	9	0	0	0	0	0	0	5	23	55	14	23	31
00:00-24:00	7684	1895	4243	889	127	568	1853	3522	1579	148	14	0	0	0	0	0	0	5	24	60	14	24	32

## Author

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 Phone  
 Email



Generated with **DataCollect Webreporter** version 1.0 at 22/06/2015 09:55:25

## Site

Name GLACIS RD 1.sdr  
 Dir. Oncoming (name) southbound  
 Dir. Outgoing (name) northbound  
 Posted Speed Limit **50**  
 Comment  
 Device type **SDR**

## Time Range

Start date 14/04/2015 13:00  
 End date 25/04/2015 10:59  
 Days Mo, Tu, We, Th, Fr, Sa, Su  
 Time Interval 60 minutes  
 Time / Day 00:00 - 23:59

## Length Classes [L in m]

northbound				
Time	$\Sigma$	CAR	TRUCK	LONG
00:00-06:00	4110	253	1690	2167
06:00-09:00	6952	638	1932	4382
15:00-19:00	21681	4924	7115	9642
06:00-22:00	69222	12186	21818	35218
00:00-24:00	77881	12725	25198	39958

## Calculated speeds [V in km/h]

	Vmin	Vmax	Vavg	V15	V50	V85	Vexc %
northbound	5	71	29	21	29	37	<b>0.6</b>

## Descriptions

Vmin: Minimal velocity  
 Vmax: Maximal velocity  
 Vavg: Average velocity  
 V15: Critical velocity for the first 15% of vehicles

V50: Critical velocity for the first 50% of vehicles  
 V85: Critical velocity for the first 85% of vehicles  
 Vexc %: Speeding in %


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Generated with **DataCollect Webreporter** version 1.0 at 22/06/2015 09:55:25

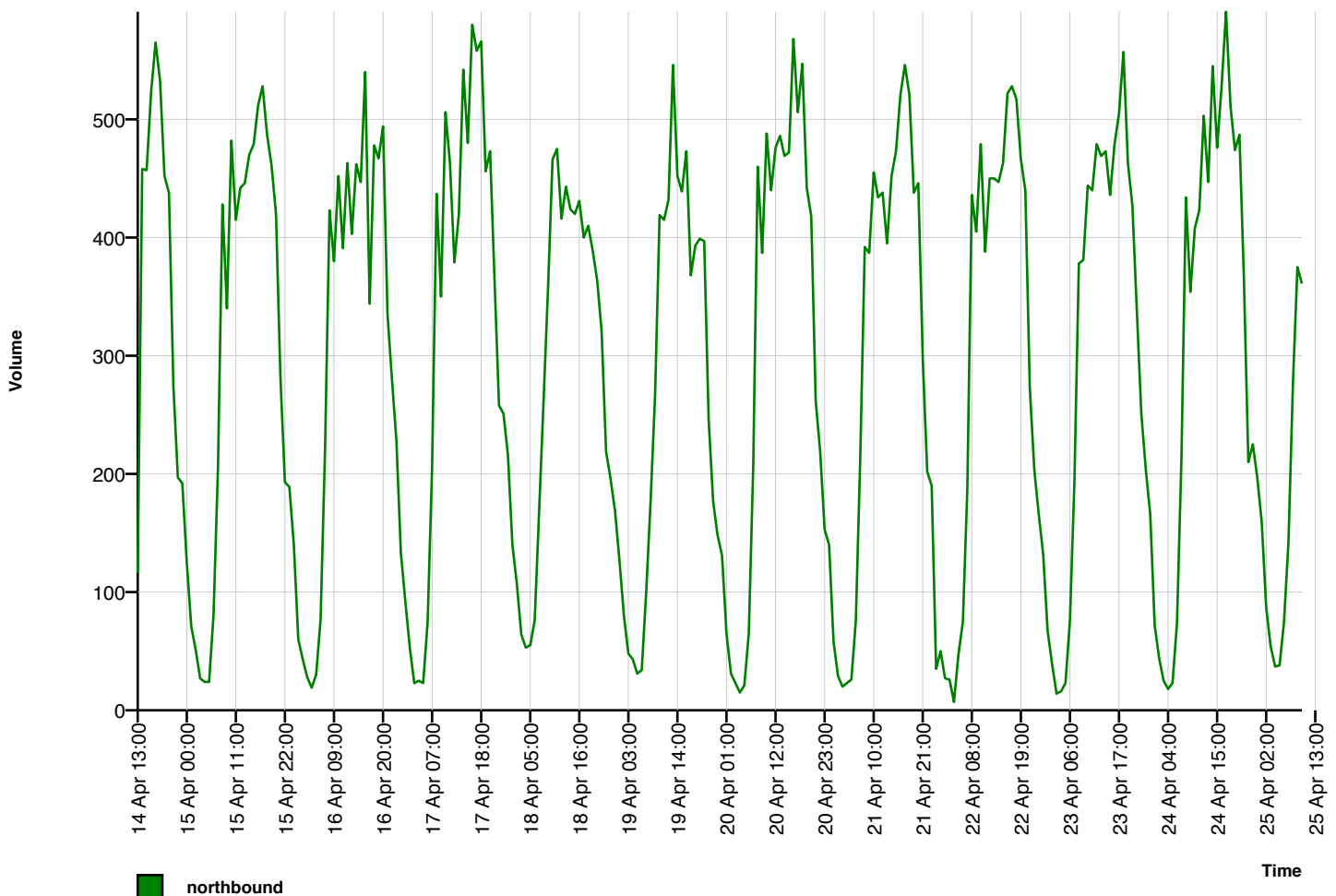
## Site

Name GLACIS RD 1.sdr  
 Dir. Oncoming (name) southbound  
 Dir. Outgoing (name) northbound  
 Posted Speed Limit   
 Comment  
 Device type **SDR**

## Time Range

Start date 14/04/2015 13:00  
 End date 25/04/2015 10:59  
 Days Mo, Tu, We, Th, Fr, Sa, Su  
 Time Interval 60 minutes  
 Time / Day 00:00 - 23:59

## Time / Volume graph





## Author

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Generated with **DataCollect Webreporter** version 1.0 at 22/06/2015 09:55:25

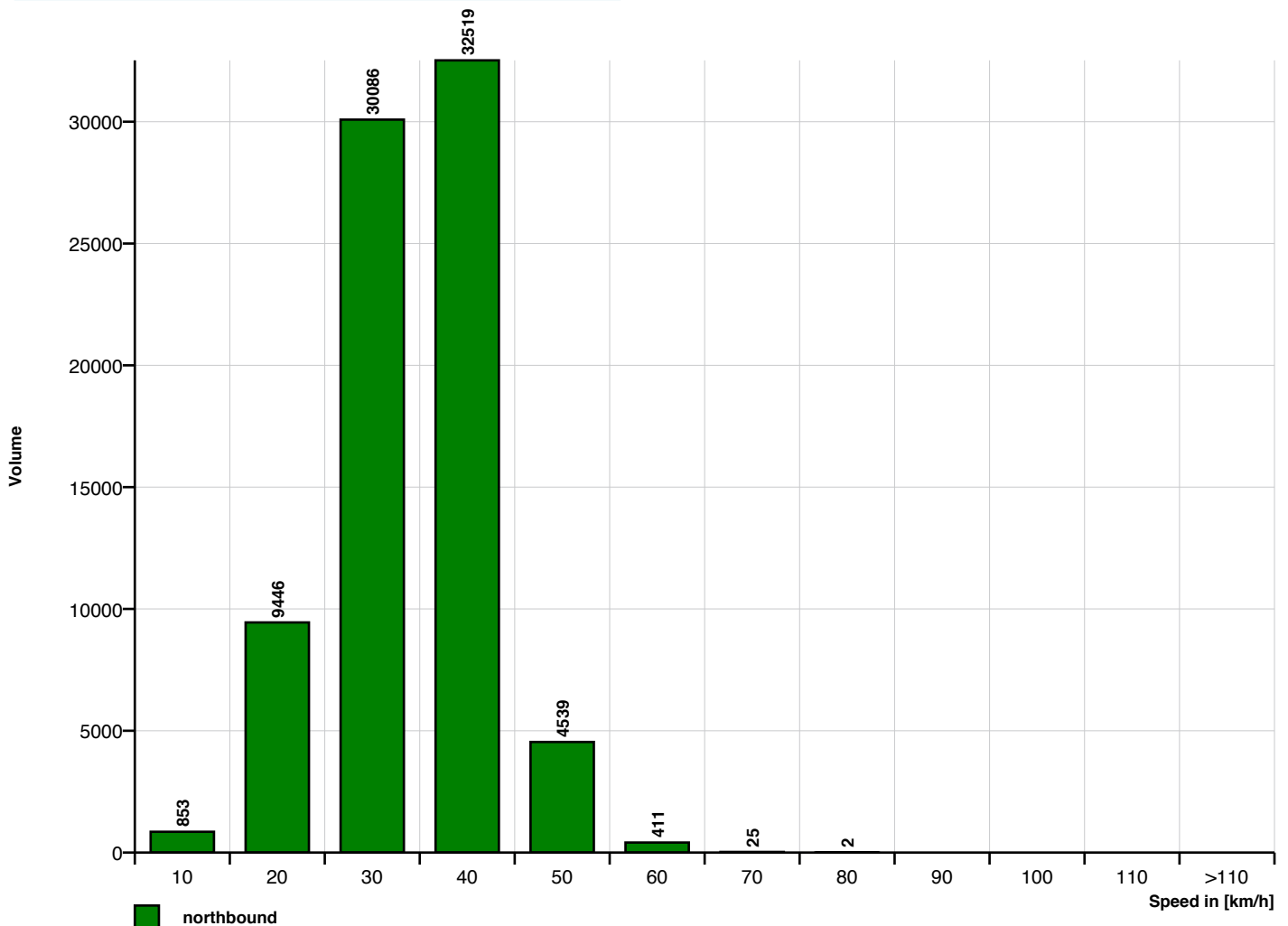
## Site

Name GLACIS RD 1.sdr  
 Dir. Oncoming (name) southbound  
 Dir. Outgoing (name) northbound  
 Posted Speed Limit **50**  
 Comment  
 Device type **SDR**

## Time Range

Start date 14/04/2015 13:00  
 End date 25/04/2015 10:59  
 Days Mo, Tu, We, Th, Fr, Sa, Su  
 Time Interval 60 minutes  
 Time / Day 00:00 - 23:59

## Speed histogram



## Author

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Generated with **DataCollect Webreporter** version 1.0 at 22/06/2015 09:55:25

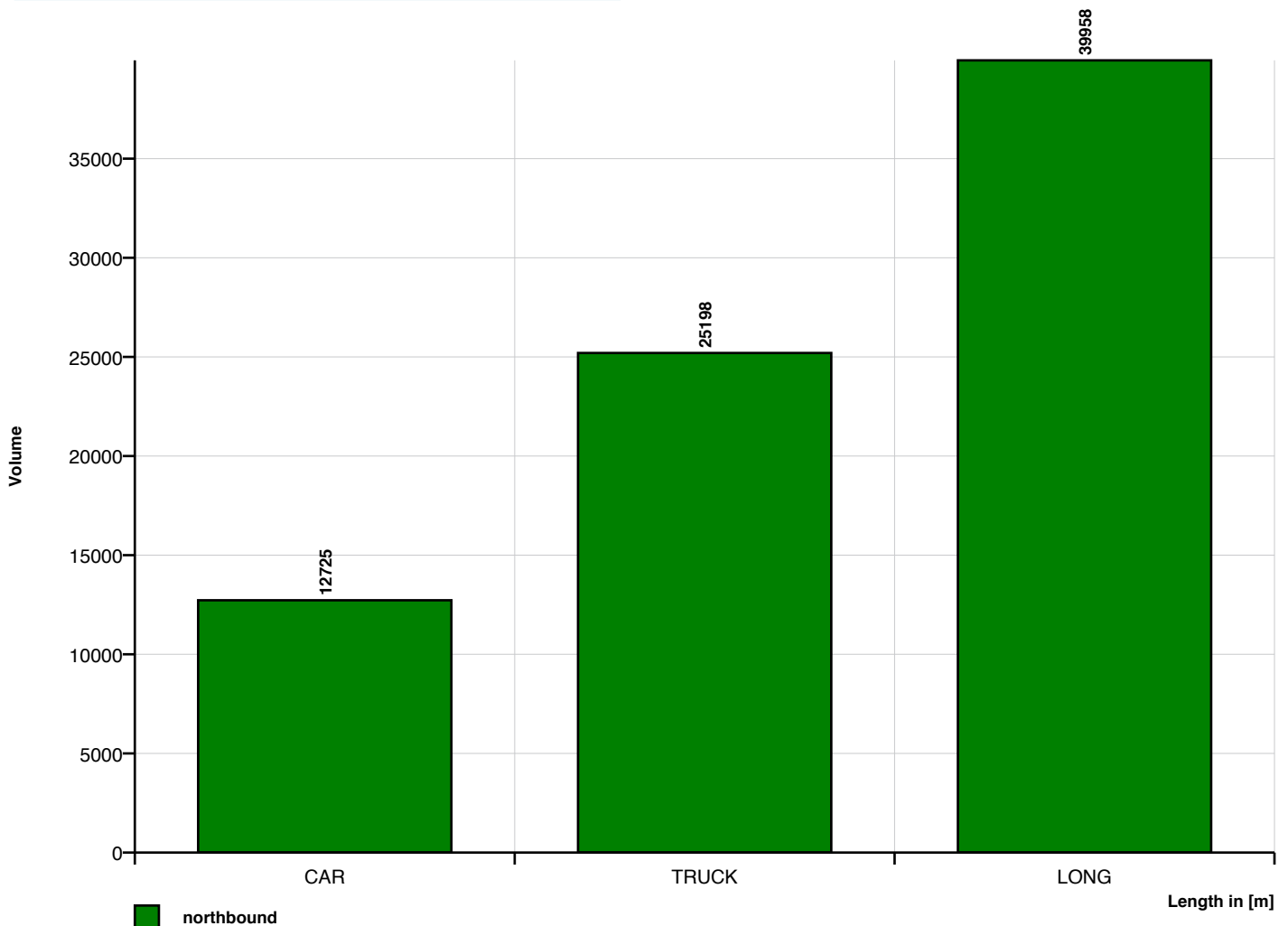
## Site

Name GLACIS RD 1.sdr  
 Dir. Oncoming (name) southbound  
 Dir. Outgoing (name) northbound  
 Posted Speed Limit **50**  
 Comment  
 Device type **SDR**

## Time Range

Start date 14/04/2015 13:00  
 End date 25/04/2015 10:59  
 Days Mo, Tu, We, Th, Fr, Sa, Su  
 Time Interval 60 minutes  
 Time / Day 00:00 - 23:59

## Length histogram



Time	Σ	CAR	TRUCK	LONG	10	20	30	40	50	60	70	80	90	100	110	>110	V <sub>Min</sub>	V <sub>Avg</sub>	V <sub>Max</sub>	V <sub>15</sub>	V <sub>50</sub>	V <sub>85</sub>
14/04/2015 13:00	116	36	31	49	2	41	49	21	3	0	0	0	0	0	0	0	10	24	47	14	24	31
14/04/2015 14:00	458	104	136	218	4	68	238	132	15	1	0	0	0	0	0	0	10	27	53	19	27	35
14/04/2015 15:00	457	110	138	209	12	112	226	101	6	0	0	0	0	0	0	0	6	24	47	16	24	32
14/04/2015 16:00	523	144	150	229	7	79	283	141	11	2	0	0	0	0	0	0	8	26	55	19	26	34
14/04/2015 17:00	565	122	188	255	3	98	269	180	13	2	0	0	0	0	0	0	10	27	55	19	26	34
14/04/2015 18:00	533	134	138	261	2	68	238	203	21	1	0	0	0	0	0	0	10	28	60	21	29	35
14/04/2015 19:00	452	31	150	271	0	16	157	245	29	5	0	0	0	0	0	0	13	31	55	26	31	37
14/04/2015 20:00	438	14	165	259	1	22	166	222	25	2	0	0	0	0	0	0	10	31	60	24	31	37
14/04/2015 21:00	274	10	87	177	0	4	90	165	15	0	0	0	0	0	0	0	18	32	47	27	32	37
14/04/2015 22:00	197	10	74	113	0	1	33	137	26	0	0	0	0	0	0	0	18	35	50	29	34	40
14/04/2015 23:00	192	23	110	59	0	3	48	128	11	2	0	0	0	0	0	0	14	33	51	29	34	37

[Tue, 14 April]	Σ	CAR	TRUCK	LONG	10	20	30	40	50	60	70	80	90	100	110	>110	V <sub>Min</sub>	V <sub>Avg</sub>	V <sub>Max</sub>	V <sub>15</sub>	V <sub>50</sub>	V <sub>85</sub>
00:00-06:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00-09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:00-19:00	2078	510	614	954	24	357	1016	625	51	5	0	0	0	0	0	0	6	27	60	19	26	34
06:00-22:00	3816	705	1183	1928	31	508	1716	1410	138	13	0	0	0	0	0	0	6	28	60	21	29	35
00:00-24:00	4205	738	1367	2100	31	512	1797	1675	175	15	0	0	0	0	0	0	6	29	60	21	29	35

Time	Σ	CAR	TRUCK	LONG	10	20	30	40	50	60	70	80	90	100	110	>110	VMin	VAvg	VMax	V15	V50	V85
15/04/2015 00:00	125	17	56	52	0	3	20	85	16	1	0	0	0	0	0	0	13	35	53	29	35	40
15/04/2015 01:00	71	1	34	36	2	0	12	40	17	0	0	0	0	0	0	0	8	35	47	29	35	42
15/04/2015 02:00	51	2	24	25	0	0	10	30	9	2	0	0	0	0	0	0	23	36	58	29	35	42
15/04/2015 03:00	27	1	18	8	0	0	1	17	9	0	0	0	0	0	0	0	29	39	48	34	39	45
15/04/2015 04:00	24	1	13	10	0	1	1	15	7	0	0	0	0	0	0	0	14	36	47	32	35	42
15/04/2015 05:00	24	0	8	16	0	0	2	15	6	1	0	0	0	0	0	0	26	38	55	31	37	47
15/04/2015 06:00	81	3	35	43	0	0	8	54	18	1	0	0	0	0	0	0	24	36	55	31	35	42
15/04/2015 07:00	206	10	45	151	0	1	49	128	28	0	0	0	0	0	0	0	16	34	50	27	34	40
15/04/2015 08:00	428	96	103	229	4	33	172	204	13	2	0	0	0	0	0	0	10	29	55	23	31	35
15/04/2015 09:00	340	91	96	153	8	102	146	76	7	1	0	0	0	0	0	0	10	24	55	14	24	32
15/04/2015 10:00	482	79	137	266	1	29	257	188	7	0	0	0	0	0	0	0	8	28	42	23	29	34
15/04/2015 11:00	415	98	111	206	19	123	183	87	3	0	0	0	0	0	0	0	8	23	42	14	23	31
15/04/2015 12:00	442	101	130	211	8	83	224	115	10	2	0	0	0	0	0	0	10	26	58	18	26	34
15/04/2015 13:00	446	126	132	188	8	101	201	127	9	0	0	0	0	0	0	0	8	26	50	18	26	34
15/04/2015 14:00	470	113	142	215	6	75	238	136	14	1	0	0	0	0	0	0	10	27	53	19	27	34
15/04/2015 15:00	479	111	156	212	11	111	229	117	10	1	0	0	0	0	0	0	6	25	56	18	26	34
15/04/2015 16:00	512	123	170	219	15	114	245	128	9	1	0	0	0	0	0	0	8	25	51	18	24	32
15/04/2015 17:00	528	151	177	200	6	88	280	142	12	0	0	0	0	0	0	0	8	26	48	19	26	34
15/04/2015 18:00	487	141	186	160	5	97	244	138	3	0	0	0	0	0	0	0	8	26	43	18	26	32
15/04/2015 19:00	461	74	205	182	0	20	234	193	12	2	0	0	0	0	0	0	11	29	51	23	29	35
15/04/2015 20:00	420	13	176	231	4	29	183	192	11	1	0	0	0	0	0	0	10	29	55	23	29	35
15/04/2015 21:00	281	42	110	129	0	2	78	189	12	0	0	0	0	0	0	0	16	33	47	27	32	37
15/04/2015 22:00	193	8	84	101	0	0	36	141	15	1	0	0	0	0	0	0	21	34	51	29	34	39
15/04/2015 23:00	189	10	59	120	0	1	36	137	13	2	0	0	0	0	0	0	14	34	58	29	34	39

[Wed, 15 April]	Σ	CAR	TRUCK	LONG	10	20	30	40	50	60	70	80	90	100	110	>110	VMin	VAvg	VMax	V15	V50	V85
00:00-06:00	322	22	153	147	2	4	46	202	64	4	0	0	0	0	0	0	8	36	58	29	35	42
06:00-09:00	715	109	183	423	4	34	229	386	59	3	0	0	0	0	0	0	10	31	55	24	31	39
15:00-19:00	2007	526	690	791	37	410	999	525	34	2	0	0	0	0	0	0	6	26	56	18	26	34
06:00-22:00	6478	1372	2111	2995	95	1008	2971	2214	178	12	0	0	0	0	0	0	6	27	58	19	27	34
00:00-24:00	7182	1412	2407	3363	97	1013	3089	2694	270	19	0	0	0	0	0	0	6	28	58	19	29	35