

TRAFFIC IMPACT ASSESSMENT FOR SUSTAINABLE TRAFFIC MANAGEMENT AND TRANSPORTATION PLANNING IN URBAN AREAS

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Abstract: Traffic impact assessment (TIA) is a powerful tool for engineers and planners to determine the possible effects of a project on the transportation and traffic system. Often it is applied only to the direct impact area and countermeasures for potential negative impacts are specific for the development. This paper presents TIA as a useful tool for local governments, especially for managing traffic and in planning their respective transportation systems. Two cases involving projects that were required to undertake TIA are compared, and results are examined in relation to the sustainability of traffic management and transportation planning strategies in Metro Manila and in other cities as well. The experiences presented and discussed in this paper underline the need for the government to take an active role in promoting TIA. This will ensure that stakeholders would participate in the TIA process, leading to the careful and substantive assessment of impacts of proposed developments.

Key Words: traffic impact assessment, sustainable, traffic management

1. INTRODUCTION

Traffic impact studies are a fundamental part of the environmental impact assessment (EIA) process for projects. These are not usually required in the Philippines yet recently more developers in Metro Manila have been required to undertake traffic impact assessment (TIA) to secure an Environmental Compliance Certificate (ECC) for their projects. Traffic impact assessment (TIA) includes formulation of traffic management schemes and recommendation of infrastructure for possible transportation and traffic problems that will be encountered during the construction and operation phases of projects. However, these specific traffic management schemes need to be integrated with other developments along with the overall scheme of the government. This paper examines the common practices among developers in conducting traffic studies and compares two projects that were required to undertake TIA. Employing TIA for an integrated approach to traffic management and transportation planning is discussed and recommendations are made to promote TIA in this regard.

2. THE CONDUCT OF TRAFFIC STUDIES

2.1 Current Practices in the Philippines

The ideal scenario would always be for developers to conduct full-blown traffic impact assessments for their proposed projects. In theory, this would solve a lot of problems

regarding potential negative impacts on the transportation and traffic system. However, full TIA's are perceived as costly and time consuming. As such, developers would usually try to downplay their project's potential impacts on traffic, agreeing only to come up with the mandatory traffic management plan. This plan would usually include only a description of current conditions and an expanded statement on measures to be undertaken during the construction phase. Often, the study will mention efforts by the project proponent to coordinate with local traffic authorities to ensure that the project will not have any detrimental effects on the traffic in adjacent roads or streets.

The Institute of Transportation Engineers recommends a checklist of requirements for traffic impact analysis (ITE, 1991). These were also the basis for the Philippine guidelines developed in 2001. Given that the recommended contents of a TIA are quite comprehensive and may be impractical for certain situations, including the limited budget of a developer, a scaled down report may be created. A compact TIA may focus on seven (7) items that are deemed critical or at the least, important in the conduct of traffic impact analysis. These include the following:

- (a) Definition of the impact area;
- (b) Characterization of baseline traffic;
- (c) Estimation of traffic generation attributed to the project;
- (d) Formulation of traffic management plan;
- (e) Access points and routing analysis;
- (f) Parking requirement analysis; and
- (g) Formulation of implementation mechanisms for recommended countermeasures.

The above components can be considered as the minimum contents of a TIA. These are elements that can be required by the EIA Review Committee that will be tasked to evaluate the overall impacts of a project. It is this committee that will recommend for the granting of an ECC and therefore approve the implementation of a project.

3. EXAMINATION OF TWO CASES

3.1 Background

This paper examines two actual projects that required traffic impact assessment. Case 1 is the 670 Heights Condominium, a development that complied with the requirement of the EIARC to conduct TIA. Case 2 is Skycity, a project that failed to conduct traffic impact studies despite strong recommendations from the EIARC. Both cases are of high-rise mixed use condominiums located in central business districts in Metro Manila. The first is located in Quezon City, and the second in the City of Mandaluyong but near its border with three

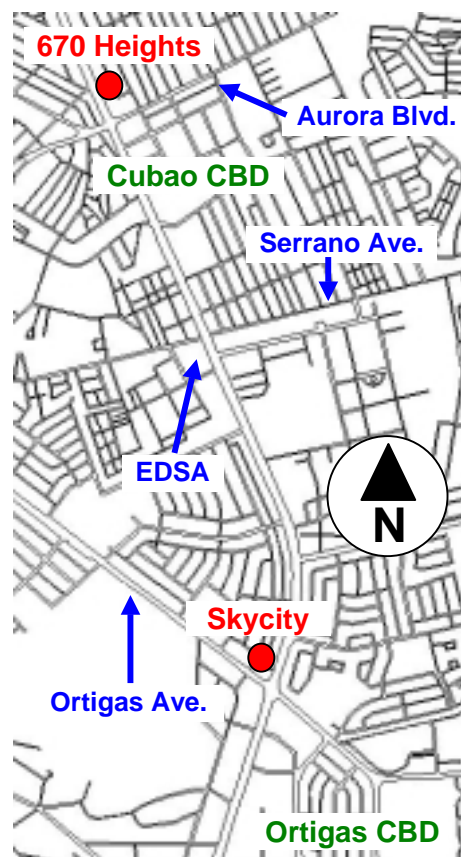


Figure 1. Location of the two cases examined.

other cities and municipalities. The locations of the projects are shown in the map in Figure 1.

3.2 Case 1: Compliance of a New Development

The proposed 670 Heights Condominium is a 40-storey mixed-use building to be located along EDSA in the Cubao central business district of Metro Manila. Case 1 presents a situation where the developer followed the recommendations of the EIARC for a full TIA and actively sought the approval of the Metropolitan Manila Development Authority (MMDA). Traffic management schemes for this project were developed in part upon close discussion with the EIARC and the MMDA. Figure 2 was taken from the final report for the TIA of the project and shows the traffic conditions in the direct impact area.

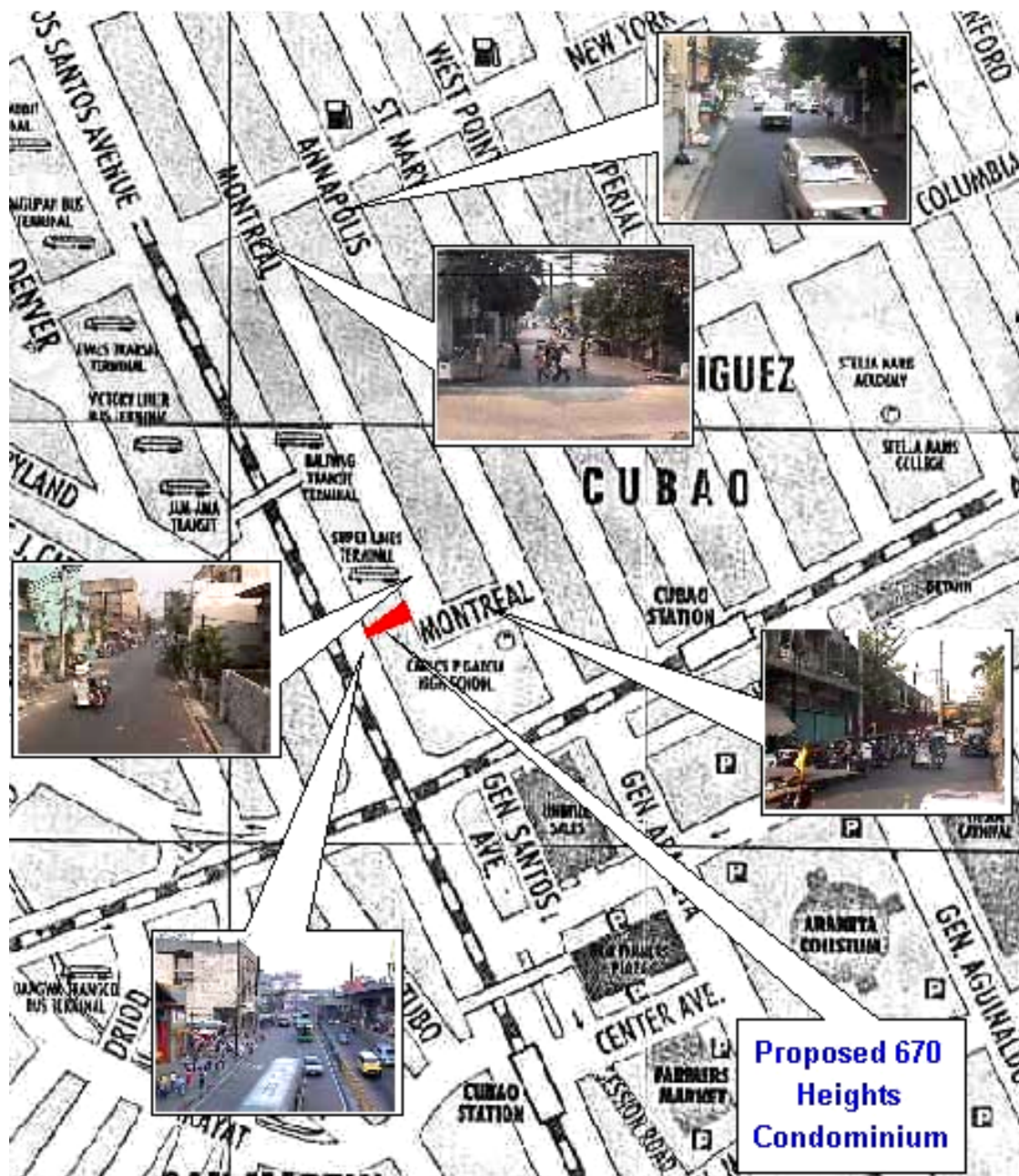


Figure 2. Vicinity map of 670 Heights illustrating traffic conditions around the site.

The assessment conducted for 670 Heights included the following items:

- Estimation of future traffic generation with and without the project;
- Estimation of traffic volumes at approach routes and critical intersections with and without the project;
- Identification of locations of potential traffic congestion due to the project; and
- Recommendation of remedial measures to overcome potential traffic problems with the project;

Among the tasks undertaken to meet the requirement of the MMDA and the EIARC were the following:

- a. Inventory of the physical conditions of the study area;
- b. Conduct of primary and secondary traffic count data for roads in the projects environs;
- c. Projection of traffic generated/attracted by the development;
- d. Estimation of levels of service of roads and intersections; and
- e. Evaluation of impacts of future traffic.

The 670 Heights project represents the ideal situation. That is, a developer that complied with EIARC recommendations and recognized the importance of conducting a TIA even without the prodding of stakeholders in the community where the project is located. The developer was granted an ECC and the project is scheduled for completion in 2006.

3.3 Case 2: Non-Compliance of a New Development

Skycity is a proposed 85-level building project. It shall be a mixed-use development comprised of movie theatres, sports and recreation facilities, commercial and office space, and hotel accommodation units. The project was envisioned to be the tallest building in the Philippines. Figure 3 shows the project relative to existing large shopping malls in the Ortigas Center. Its proximity to major traffic generators like the SM Megamall and Robinsons' Galleria combined with the facilities that will be located in building underline the importance of conducting TIA.

Case 2 presented a situation where the development was required to undertake a full TIA due to the strong opposition raised by stakeholders composed primarily of people in the adjacent residential areas. But despite the requirement, the developers opted to conduct a simplistic study that understated the negative impacts of the project and passed the burden of countermeasures to the local government and the Metropolitan Manila Development Authority (MMDA). There was no semblance of a decent effort to formulate a traffic management plan for various stages of the project including its full operation after construction is completed and tenants have moved in the building.

The EIA for Skycity contained a statement that passed all responsibility of traffic management to the Metropolitan Manila Development Authority (MMDA). However, it is interesting to point out that in the public hearings conducted for the EIA review, the MMDA was not even cited nor invited as a stakeholder to the project. An interesting implication of such "passing of responsibility" to the government agency is that taxpayers' money will be used to mitigate traffic impacts. As a result of their failure to conduct TIA and the blatant

disregard for the valid concerns of stakeholders, the developer's application for an ECC was rejected by the EIARC.



Figure 3. Location of Skycity relative to major traffic generators in Ortigas.

3.4 Comparison of the Two Cases

The differences between the two cases described previously are both significant and obvious. The end results alone (i.e., 670 Heights was granted and ECC while Skycity's application was disapproved) indicate which project is regarded as a good example that other developers should emulate. Table 1 contains a checklist for a typical comprehensive traffic management plan. Such a list is usually given by the EIA Review Committee to the project proponents to serve as a guide for their formulation of the plan for their proposed development.

Table 1. Contents of a Comprehensive Traffic Management Plan

Comprehensive Traffic Management Plan Checklist
<ul style="list-style-type: none"> a) Assumptions and computations for pedestrians/visitors and occupants; b) Assumptions and computations for additional vehicles and vehicular movements; c) Ingress and egress to and from major roads and the vehicle lanes to the entrance of the parking floors and from the exit gates of these parking areas. Include open parking spaces outside the building if there are any; d) Assessment of impacts on air quality and existing traffic conditions which must be based on actual traffic count surveys; e) Identification of mitigating measures that will be adopted by the proponent and those measures that can be implemented by appropriate traffic authority (within their current capacity).

Based on Table 1, a comparison of the two cases is made. Table 2 presents the comparison of the two projects in terms of the checklist in Table 1. The checklist is slightly expanded to highlight the essential elements of the TIA. Note that for almost all items, the proponents of Skycity failed to provide anything resembling an effort to address potential traffic impacts of the proposed development. This underlines the developer's disregard for the issues and concerns raised by stakeholders and implies its indifference toward the recommendations or guidance of the EIARC.

Table 2. Comparison of Two Cases Based on EIARC Checklist

Item	670 Heights	Skycity
a) Estimation of base number and forecast of visitors and occupants	Yes. Trips generated and attracted at peak hours, weekdays and weekends estimated according to specific use of space.	None. Stated only that the project will attract people from all over Metro Manila and adjacent provinces.
b) Estimation of base number and forecast of vehicle traffic due to the development	Yes. Number of vehicle trips generated and attracted was estimated based on person trips.	None. Presented available but old traffic volume data for the nearby major intersection.
c) Analysis of access to and from the building	Yes. Traffic circulation along access roads and within the building was analyzed.	None. Assumed that there would be no queuing for vehicles entering and exiting the building.
d) Assessment of parking	Yes. Parking demand analyzed and number of slots provided by the developer assessed.	None. Assumed that parking spaces within the building is sufficient based on the minimum required by building code.
e) Assessment of impacts to existing traffic conditions	Yes. Comprehensive analysis of traffic impacts including road and intersection LOS.	None. Provided only descriptive statistics of current traffic conditions along adjacent roads.
f) Assessment of impacts on air quality	Yes. But not linked to traffic.	Yes. But not linked to traffic.
g) Identification of mitigating measures	Yes. Comprehensive traffic management plan developed for various phases of development. Recommendations to modify building design to accommodate commuting visitors and occupants	None. No comprehensive traffic management plan developed. Burden of traffic management passed on to local government and MMDA.

Tables 3 and 4 show analysis results for roads and intersections in the study area for the 670 Heights Condominium. Such kind of analysis was never undertaken for Skycity yet they represent the traffic conditions for the "with" and "without" project scenarios that would show if a development would have any detrimental impacts to the existing and forecasted traffic systems.

Table 3. Example of Estimated LOS for Roads in the Study Area for Case 1

Year 2009		Without project		With project	
Road	Time	v/c	LOS	v/c	LOS
EDSA (One Direction)	AM	0.33	B	0.34	B
	PM	0.69	C	0.70	C
New York Street	AM	0.29	B	0.38	B
	PM	0.34	B	0.44	B
Annapolis Street	AM	0.34	B	0.34	B
	PM	0.36	B	0.36	B
Montreal Street	AM	0.20	B	0.38	B
	PM	0.20	B	0.39	B

Table 4. Example of Intersection Capacity Analysis for Case 1

Intersection	Estimated capacity (pcu/hr)	Year 2004			Year 2020		
		Total volume critical movements (pcu/hr)	v/c	LOS	Total volume critical movements (pcu/hr)	v/c	LOS
New York-Montreal	1,600	428	0.27	B	526	0.33	B
New York-Annapolis	1,600	782	0.49	B	885	0.55	C
Annapolis-Montreal	1,600	456	0.29	B	490	0.31	B

4. ADVOCATING TIA FOR SUSTAINABLE TRAFFIC MANAGEMENT

4.1 Development of Traffic Management Plan

While there are many issues and concerns usually mentioned in the preparation of a TIA, these can be classified into the following:

- Those that pertain to the preparation of traffic management measures both for the construction and operation phases of the development;
- Those that pertain to traffic congestion due to the development;
- Those that pertain to the provision of recommended countermeasures or solutions to transportation and traffic problems brought about by the development.

The first concerns the development of traffic management schemes for the project. Present traffic conditions are assessed and baseline data are established for use in forecasting future scenarios. These scenarios are traffic during construction, and at various phases of operation (e.g., with respect to occupancy of a residential condominium). Future traffic are estimated from baseline data and growth rates are dependent on the methodology applied.

The second focuses on the perception of traffic congestion due to the proposed development. This is a common concern and usually includes issues on circulation, parking, air pollution

and noise. The third concerns the development of sufficient solutions to the perceived problems including the determination of who bears the responsibility of providing the countermeasures (e.g., infrastructure that needs to be built to alleviate congestion or to promote safety). These serve as inputs to the formulation of the traffic management plan.

4.2 Public Involvement and the Responsibility of the Government

The ideal situation in public participation in the preparation of a TIA concerns the cooperation of the project proponents, the stakeholders and the government. Government should have an important role in involving the public considering that these are comprised of constituents within the community or locality where a project is to be located. Government should take an active stance by being aware of developments, comprehending its impacts, being sensitive and critical in the decision-making process, and being vigilant during a project's implementation. It is also the role of government to make sure that all sectors are represented regardless of their views toward a particular development.

Incompatible traffic management schemes should not be pursued and the EIARC should be watchful in the submission of reports that tend to oversimplify traffic impacts and pass the burden of providing solutions to problems brought about by the project to local authorities. It is recommended that agencies like the MMDA become involved in requiring TIA by participating in the EIARC's evaluation process. These agencies must also commit to developing, approving and implementing policies requiring the conduct of TIA for various projects deemed to have significant traffic impacts.

4.3 Sustainable Traffic Management and Transportation Planning

A complete and reliable TIA is essential in order for it to be useful in predicting and addressing potential transportation and traffic problems. Completeness in terms of content would imply a comprehensive approach to evaluating impacts. Meanwhile reliability will be reflected in the following:

- Quality of baseline data
- Accuracy of traffic forecasts
- Soundness of traffic analysis employed
- Suitability of recommended countermeasure

The above is consistent with the established procedures in evaluating an EIA. The review and assessment of the traffic-related components of an EIA is based on the two-stage review process as outlined in the Philippine EIA Procedural Manual (EMB, 1996) and likewise adopted by the EIARC. The first stage is the procedural review and deals primarily with the completeness of the report, the data it presented and the information it provided to address traffic related issues. The second stage is referred to as the substantive review. It deals with the quality of the EIA; the congruence, accuracy and precision of its analytical data and its interpretation; as well as the statistical and scientific soundness of the analytical techniques and methods employed.

Careful review and assessment of the contents of the environmental impact study (EIS) often reveal glaring deficiencies with respect to the traffic components of the estimated impacts of

the proposed development. These include weak discussions on traffic management, traffic generation, and countermeasures offered by the proponents. The traffic studies usually found in the EIS would need to be expanded much further and it is clear that a TIA is necessary to completely and satisfactorily address traffic concerns posed by the stakeholders of a project.

5. CONCLUSIONS AND RECOMMENDATIONS

Impacts of developments on the transportation and traffic system are often taken for granted. Both project proponents and stakeholders tend to neglect the fact that projects situated in built-up areas will generate and attract traffic. Whether this traffic will have a significant effect on the background conditions necessitates the conduct of impact assessment. Countermeasures to potential problems will be addressed by the results of careful and systematic analysis of “with” and “without” development scenarios. From such an approach, one can have a clear and substantive understanding of the circumstances regarding the impacts to the transportation and traffic system.

Sustainability in transportation planning, including the development of effective and practical traffic management schemes, can only be realized when specific strategies for projects are developed in relation with other proposed projects and integrated with the schemes implemented by the government. It is presumed that the government would act in the interest of its constituents, the same people who comprise the stakeholders in the TIA or EIA process. As such, the government should take an active role in promoting TIA, if only to ensure that developers and stakeholders become aware of the negative effects of not conducting impact analysis, and the benefits that TIA can provide to the community.

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