GUIDELINES FOR TRAFFIC IMPACT ASSESSMENT

1. Introduction

The Guidelines included therein are not intended to be prescriptive. Rather, the intention is to establish the minimum requirements for the conduct of traffic impact assessment (TIA). Note that at the outset, it is required to determine if a TIA is indeed necessary and thresholds are identified for this purpose. These Guidelines outline and discuss the recommended contents of a TIA and is intended to assist reviewers of TIA as to the completeness and substance of TIA undertaken for projects.

The consultant will determine the need to prepare a TIA based on an initial assessment of transportation impacts, traffic generation, and parking generation. For traffic generation, for example, the threshold may be taken as 100 or more new vehicle trips during the A.M. or P.M. peak hour as generated by the project. For parking generation, the threshold is a parking deficiency of one or more parking spaces generated by the project. Or when a project might impact an already congested or high-accident location, or when specific site access and safety issues are of concern.

An analysis can be prepared for any type of developments such as residential, commercial, office, industrial or mixed-use project. A TIA usually needs to be submitted by a developer before any changes in land use zoning, subdivision maps, site plan or new driveways are approved. If a TIA is not needed the City/Municipal Planning and Development Office (CPDO or MPDO) may require a traffic operations analysis to address local transportation issues.

2. Step-by-step Process

Consistent with the TIA process, the step-by-step manner in carrying out the TIA study for a development project is shown in **Figure 1**. It is crucial to follow each step of the process since they are related. Furthermore, it is important in the first step to have full knowledge of the magnitude and phasing of the development so as to determine the scope of work and phasing of implementation.

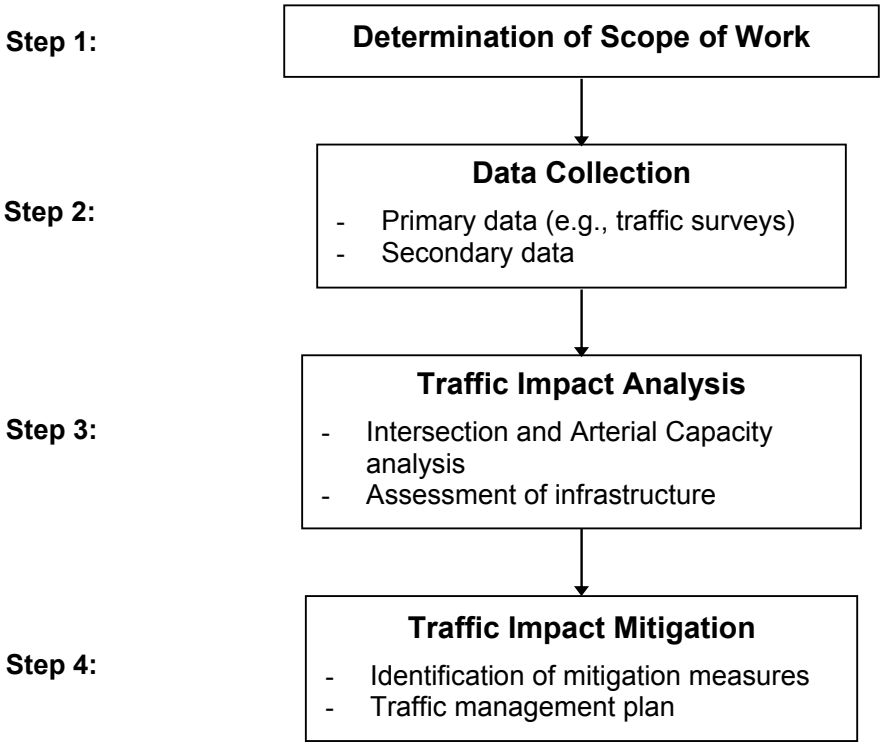

Figure 1 Step-by-step TIA Process

In the data collection stage, it is important to know what particular data are needed for the traffic impact analysis step. Inventory of existing transportation facilities, present developments in the area, future developments and future transportation improvements in the area are among the data required for the analysis. It is advisable that the analytical tools employed and presentation of outputs should be easily understood. This is important especially for local government units that would evaluate the results of the TIA study. Finally, the identified traffic mitigating measures are incorporated in a traffic management plan. The traffic management plan likewise includes the following:

a) institutional plan,
b) costing,
c) implementation phasing and other information that may be required.

3. When Should Transportation Impact Analysis be Prepared?

3.1 General

A TIA should start in the earliest planning stages of a project, including at site selection. This would assist in the preparation of a more responsive and cost effective site plan. In lieu of other locally preferred thresholds, it is suggested that a TIA be conducted whenever a proposed development will generate 100 or more new peak hour vehicle trips to or from the site. A cross sampling of data collected by Institute of Transportation Engineers (ITE) shows that the following situations or thresholds that commonly trigger a requirement for traffic impact analysis:

- When a specified amount of area is being rezoned.
- When development contains a specified number of dwelling units or square footage.
- At the judgment or discretion of the staff.
- When development will occur in a sensitive area.
- When financial assessments are required and the extent of impact must be determined.

Developers should have a TIA undertaken in advance of submitting a project to the government for approval, communicating with the concerned agencies (e.g., Department of Public Works and Highways (DPWH), Department of Transportation and Communication (DOTC), Metro Manila Development Authority (MMDA), local governments) to obtain specific TIA requirements.

A TIA is typically appropriate for the following local processes:

- Zoning and rezoning application.
- Land subdivision application.
- Environmental assessment.
- Site plan approval.
- Special-purpose districts.

- Development agreements.
- Changes to general and / or specific plans.
- Annexations.

3.2 Zoning Thresholds (Deviations)

A TIA shall be required if a proposal falls under the Deviations clause of the Zoning Ordinance. The assessment as to whether a project falls under this clause simply entails the comparison of the proposal with the allowed uses and land use intensities in the zone where it is located.

For this purpose, the Zoning Administrator shall provide the following information for the zone in consideration:

- List of Allowed Land Uses
- Land Use Intensity Control (LUIC) ratings

The project proponent, in turn, provides the basic information on the project as follows:

- Project location
- Project classification according to the latest Housing and Urban Land Use Regulatory Board (HLURB) Guidelines
- Total land area of project site
- Total floor area of buildings in square meters
- Resultant floor to area ratio (considering all buildings within the project site)
- Percentage of land occupancy

3.3 Project Size Thresholds

The Zoning Administrator shall prepare a list of Significantly Sized Projects (SSP) with the corresponding thresholds. The project proponent shall, in turn, submit information that corresponds to the required threshold criteria. Proposals within the list of SSP's and exceed the specified threshold criteria shall be required to conduct TIA regardless of conformance with the use or land use intensity provisions of the Zoning Ordinance.

3.4 Public Roadway Modification Thresholds

The project proponent shall submit its requirements for the Public Roadway Modifications to the Zoning Administrator. A TIA shall be conducted if the modifications required fall under the criteria specified herein.

4. Who May Prepare and Evaluate Traffic Impact Assessments?

A Transportation Engineer or Planner certified by the Environmental Management Bureau (EMB) and the National Center for Transportation Studies (NCTS) of the University of the Philippines as qualified to prepare TIA may undertake impact assessment. Certification requires that the person or persons undertaking the TIA will have the adequate background to conduct the study. Adequate background is defined as a person holding at least a master's degree in transportation or its equivalent in terms of training and professional experience.

Similarly, the same minimum qualifications must be true of the city or municipal TIA evaluator(s). These evaluators may comprise a committee formed by the local government to review and/or evaluate the traffic impact of development proposals.

5. Scope Of Work

5.1 General

The City or Municipal Planning and Development Office (CPDO or MPDO) will evaluate and approve the proposed scope of work for a TIA. Upon approval of scope of work, the consultant may proceed with the work and prepare a TIA report. During the work, the consultant should discuss any new issue with the City/Municipal Traffic Engineer or his equivalent.

The TIA will cover many aspects of different projects that will affect the transportation network of the City, mainly the project surroundings. The scope of work for the conduct of TIA includes but is not limited to the following:

- Transportation Improvements.
- Road Geometry.
- Traffic Safety.
- Site Circulation and Parking.
- Transportation facilities related to public transport, bicycle and pedestrian travel
- Transportation Demand Management.
- Neighborhood Traffic and Parking Management.
- Funding for countermeasures.

5.2 Minimum Study Area

The Minimum Study Area should include all critical site access points as well as signalized and unsignalized intersections adjacent to the site.

5.3 Additional Study Area

Beyond the Minimum Study Area, the approving authority shall determine any additional area to be included based on local or site-specific deficiencies, development size, traffic conditions, or local policy potentially affected by the proposed development.

Vacant parcels of land within the in the study area shall also be analysed in order to consider the proposed project in the context of previously approved or anticipated development. The City/Municipal Planning and Development Office (C/MPDO) shall identify these vacant parcels and provide land use projections for them.

5.4 High Traffic Impact Areas

The C/MPDO should designate and maintain maps of High Traffic Impact Areas (HTIA) within their jurisdiction. HTIAs are those that have “special sensitivity to traffic condition

changes due to existing congestion, problematic circulation patterns, burgeoning traffic operations problems, or other traffic conditions of special concern."

Development proposals within HTIAs should include an analysis of the entire HTIA in addition to the normally defined study area. This is in order to assess the cumulative impact of the proposal within the HTIA. Considering the enormity of the task that may be required to prepare non-site traffic estimates within HTIAs, the C/MPDO should provide this information to project proponents to include those projected for remaining vacant parcels of land.

6. Traffic Impact Analysis Contents

A TIA that accurately documents the impacts of a new development should contain the following information:

1) A description of the site and study area. This will include a description of the proposed land use (i.e., size, type, and location), phases of development and site plan.
2) Purpose and objectives of the analysis.
3) Determination and identification of the area of influence of the development.
4) Description of existing roadway / transportation conditions including traffic volumes, transit accessibility, accidents, road geometry, transit, bicycle and pedestrian facilities, traffic signals, overall traffic operations and circulation.
5) Identification of traffic congestion, accident areas and other deficiencies of the transportation system in the study area.
6) Anticipated nearby land development (planned or under construction) and associated traffic and overall traffic growth trends in the area.
7) Anticipated trip generation and daily peak hour traffic volumes of the proposed development at full build and at any interim construction phase.
8) Trip distribution and assignment of site traffic on the transportation system.

9) Projection of existing traffic to a future design year, as determined by the City/Municipal planning or traffic engineering staff.

10) A future combined traffic volume plan for typical daily and key peak hours of the development and roadway system.

11) Identification of traffic congestion, safety problems and / or other deficiencies of the future transportation system (for vehicle, transit, bicycle and pedestrian travel), with and without the proposed development, including identified transportation improvements being planned by other public or private organizations that are expected to be in operation by the future years under study.

12) An assessment of the change in roadway operating conditions resulting from the development (quantifying the impact of the development).

13) Development and evaluation of potential improvement measures needed to mitigate the impact of the development to the level defined by local/ state policies.

14) Recommendations for site access and transportation improvements needed to maintain traffic flow to, from, within, and past the site at an acceptable and safe level of service. Improvements typically include roadway widening, turn lanes, traffic signals, bicycle, pedestrian and transit amenities, safety measures, sight distance, and transportation demand management strategies. Detailed improvements and their costs specifically associated with the development should be identified.

15) On-site issues including number and location of driveways, parking needs/layout, circulation, bicycle and pedestrian facilities, truck access and operations, transit and safety.

16) Coordination efforts with other affected jurisdictions impacted by the development. The TIA report should be presented in a clear and logical sequence. It should lead the reader step-by-step through the various stages of the process and to the resulting conclusions and recommendations.

7. What Issues does a Traffic Impact Analysis Need to Address?

Once the developer has hired the consultant, it is important that a meeting be held with concerned officials (i.e., stakeholders) to determine issues that need to be addressed. The meeting will involve the representative of the Municipal or City Planning Development Office (MPDO or CPDO), the developer, and the consultant preparing the TIA. Typical issues that need to be addressed would include the following:

- What are the transportation improvements needed to serve the traffic generated by the new development?
- How much will the improvement cost be and who will pay for them?
- Will the new project impact traffic on any existing residential streets and how will those impacts be mitigated?
- Will the new development aggravate any existing safety hazards or create new ones and, if so, how can those hazards be corrected?
- Can the proposed development be served by public transportation and does the design encourage ridesharing?
- Is the design of the development friendly towards bicyclists and pedestrians who need to access the development or who need to pass through or by the development?
- Is the on-site parking sufficient or is there an opportunity to share parking with other adjacent uses?
- How many driveways are needed, what design should each driveway have and is there a long enough throat for each driveway that is clear of parking spaces and other cross aisle traffic?
- If any driveway is proposed to be signalized, is the traffic signal really needed and can on-site circulation handle the traffic that will be queuing to wait for a green light?

8. Data and References

Data for use in the TIA must be current (within a one-year period). However, in the necessity of forecasting data for the horizon year, historical data such as that for the last 5 to 10 years may be required. Data for street traffic volumes, intersection traffic volumes, speed surveys, traffic signal timing plans, and traffic collisions are available from the Department of Public Works and Highways (DPWH), from the Traffic Engineering Center (TEC), and the concerned local governments' related agencies (e.g., CPDO, MPDO, Office of the Municipal or City Engineer). Past transportation impact analyses, approved development traffic plans, transportation improvement project plans, specifications, and estimates are available for review with the DPWH or the Metro Manila Development Authority (MMDA).

"Trip Generation," by the Institute of Transportation Engineers (ITE), is a source for trip generation rates. The Evaluator may approve local trip generation rates for similar developments and rates from other sources and pass-by trip data for certain commercial land uses.

"Parking Generation," also by the Institute of Transportation Engineers (ITE), is a source for parking generation rates. The City/Municipal TIA Evaluator may approve local parking generation rates for similar developments and rates from other sources.

Consultant shall obtain approval from the City/Municipal TIA Evaluator for approved projects, trip generation, modal split, trip distribution, and trip assignment. They must also furnish a proposed development site plan.

9. Capacity Analysis

For capacity analysis of intersections and arterials, several scenarios are required for analysis. The four basic scenarios of capacity analysis for intersections and arterials are:

1) Existing Conditions

2) Background Conditions (Existing + Approved Projects)
3) Project Conditions (Existing + Approved Projects + Project)
4) Expected Growth Conditions (Existing + Approved Projects + Project + Expected Growth)

For the project, the horizon year for capacity analysis will be at full build-out and occupancy. In the case of a multi-phase development, the TIA shall include capacity analysis for each horizon year at each phase. Approved projects are to be included in the background conditions. General Plan Amendments and Master Plan Developments also shall include a horizon year for the General Plan build-out year. The capacity analysis shall include programmed transportation improvements at the horizon year.

Typical study hours for capacity analysis of study intersections and study arterials are A.M. peak hour and P.M. peak hour. In other cases, it may include mid-day peak hour, weekend peak hour, and project peak hour.

The consultant shall use standard procedures for analysis such as those specified by the U.S. Highway Capacity Manual (US HCM) or those recommended by the DPWH, for capacity analysis of the transportation system for all scenarios, with exceptions. The capacity analyses shall show the dates of their intersection traffic and street traffic counts. The dates are required to establish the relevance and recentness of data.

10. Standards of Significance

The standards of significance for traffic impacts for a project are based on the following:

- If the project traffic will cause the existing intersection or highway roadway levels of service to drop below acceptable levels (e.g., below LOS "D"[†]);

[†] Level of Service D is taken to be the minimum acceptable LOS for most facilities. LOS E usually denotes congestion.

- If the project traffic will contribute to the increase in traffic along arterials or at intersections currently operating at unacceptable levels;
- If the project design does not have adequate parking or circulation capacity to accommodate traffic increase.
- If traffic increase or roadway design will result in safety concerns; or
- If the project does not include adequate provision for bicycle, pedestrian, or public transport access.

Other criteria may be included or required according to the type, magnitude and perceived potential for traffic impact of a specific development project. Such may be determined within the auspices of the C/MPDO in close coordination with the project proponents (i.e., owner/client and his consultant(s)).

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