

TRAFFIC IMPACT ASSESSMENT OF NEW COMMERCIAL DEVELOPMENT  
IN THE NEIGHBOURHOODS OF SKUDAI TOWN

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**TRAFFIC IMPACT ASSESSMENT OF NEW COMMERCIAL  
DEVELOPMENT IN THE NEIGHBOURHOODS OF SKUDAI TOWN**

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*Dedicated to my beloved mama, Hasnah Binti Abdul Rahim  
and ayah, Zaki Bin Ahmad Ghazi*

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## ABSTRACT

Urban areas in Malaysia including Johor Bahru are witnessing a rampant commercial development. The purpose of development can easily be defeated by unanticipated traffic congestion and other negative impacts. This paper deals with traffic impact assessment (TIA) of proposed commercial development in the neighbourhoods of Skudai Town. In traffic impact studies, estimation of mean trip rate is a central component for TIA and adoption of inaccurate trip rates can result into underestimation or overestimation of development traffic, both with undesirable impacts. This paper analyses three regimes of Trip Rate Analysis, Cross-Classification Analysis and Regression Analysis techniques to determine the future development traffic for a proposed Tesco hypermarket (TH) within Skudai Town. Furthermore, the obtained mean trip rates for critically examined for their adoption and forecasting traffic for base year 2015 and horizon year 2025. The results indicated significant variances in the estimated entry mean trip rates when compared with the entry trip rates from Trip Generation Manual (TGM) Malaysia. These estimated mean trip rates were then tested to measure the performance of critical intersection in the immediate vicinity of proposed Tesco Hypermarket for the opening year 2015. Critical Intersection is analysed using SIDRA software to estimate delay, a criterion for determining the level of service (LOS) provided to motorists. The traffic projections made for horizon year 2025 were further analysed, depicting a LOS F with 2716.9s of average delay. Furthermore, traffic improvements were proposed to mitigate the impact of future development traffic. In this regard, the study provided a framework for the estimation of trip rates for local Malaysian conditions and their adoption guidelines. These offer indispensable assistance to TIA that can assist developers or local authorities in decision making.

## ABSTRAK

Kawasan Bandar di Malaysia termasuk Johor Bahru sedang menyaksikan pembangunan komersial yang pesat. Matlamat pembangunan boleh dikalahkan dengan kesesakan lalu lintas dan impak negatif lain yang tidak dijangka. Kajian ini membincangkan tentang taksiran impak trafik (TIA) oleh cadangan pembangunan komersial di dalam kawasan kejiranan Bandar Skudai. Di dalam kajian impak trafik, pengiraan kadar perjalanan adalah perkara asas untuk TIA dan penggunaan kadar perjalanan yang tidak tepat boleh menghasilkan kadar yang terlalu tinggi atau rendah yang mana kedua-duanya mempunyai impak yang tidak diinginkan. Kajian ini menganalisa tiga rejim iaitu Analisa Kadar Perjalanan, Analisa Klasifikasi Menyilang dan Analisa Regresi untuk mengetahui trafik di masa hadapan disebabkan oleh pembangunan Pasaraya Besar Tesco (TH). Purata kadar perjalanan yang diperolehi diuji secara kritikal untuk penggunaan dan ramalan trafik untuk tahun dasar 2015 dan tahun ufuk 2025. Hasil kajian menunjukkan terdapat perbezaan ketara di antara kadar perjalanan masuk yang di kira dengan kadar perjalanan masuk daripada Manual Generasi Kadar (TGM) Malaysia. Kadar perjalanan yang di kira diuji untuk mengira prestasi simpang kritikal di dalam kawasan persekitaran cadangan TH untuk tahun pembukaan 2015. Persimpangan kritikal itu dianalisa menggunakan perisian SIDRA untuk mengira kelewatan iaitu kriteria untuk mengetahui Tahap Servis (LOS) untuk pengguna jalanraya. Analisa diteruskan dengan unjuran trafik untuk tahun ufuk 2025 yang menunjukkan LOS F dengan purata kelewatan 2716.9s. Tambahan lagi, penambahbaikan trafik telah dicadangkan untuk mengatasi impak trafik akibat pembangunan di masa hadapan. Dalam hal ini, kajian ini memberi rangka kerja dan juga garis panduan penggunaan untuk pengiraan kadar perjalanan untuk situasi Malaysia. Ini memberi bantuan yang amat penting kepada TIA yang boleh membantu pemaju dan pihak berkuasa tempatan di dalam membuat keputusan.