

# **THE INVOLVEMENT OF PRIVATE SECTOR IN LOCAL INFRASTRUCTURE DEVELOPMENT IN MALAYSIA**

**Dani Salleh<sup>1</sup>, Ho Chin Siong<sup>2</sup>**

<sup>1</sup>*Doctorate student at Faculty of Built Environment, Universiti Teknologi Malaysia*

<sup>2</sup>*Professor at Faculty of Built Environment, Universiti Teknologi Malaysia*

**ABSTRACT:** *Due to the rising cost of infrastructure, there is a paradigm shift from the public sector to private sector provision of infrastructure. Therefore, local authority needs to identify ways into partnership with the private sector to secure adequate provision. The paper reviews the different approaches to facilitate off-site local infrastructure, then examines options for both public and private funding. It then explores how development control mechanism might be used to secure off-site local infrastructure facilities. The paper concludes with a short summary of key issues in local infrastructure and proposes a model for local infrastructure provision.*

*Keywords: Local Development - Infrastructure Development - private sector*

## **Introduction**

In Malaysia the rapid urbanisation process has created pressure for the provision of adequate and efficient of infrastructure and public facilities. Similarly in other countries, infrastructure provision is always concern with the involvement of public sector in the provision of physical facilities which range from public amenities, highways and road construction, dams for generating power supply, water treatment plant, airports and many others crucial facilities at local level. In Malaysia, traditionally most of the local infrastructure was undertaken by local authorities.

The present practice should be proactive in identifying ways to accommodate the incremental developments within its areas. As provided under present planning legislative, it gives power to local authority to regulate the development and also to impose requirements of financial contribution, adequate public amenities and appropriate infrastructure facilities to private developers' prior planning permission is granted. This means that private developers are required to provide such on-site requirements such as road improvement, construction new road and provision of other facilities.

## A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS

### Urbanisation and Infrastructure Development

The rapid urbanisation process would potentially create additional demand for the adequate provision of infrastructure. In the last three decades, Malaysia has been experiencing a progressive rate of urbanisation (see Table 1). Total urban population of Malaysia in 1991 population Census was reported at 7.68 million (54.3%), making more than half of the national total. It is anticipated that by year 2020, urban population would grow to 20 million (or 80.0%) of the total population. By referring to Table 2, urban population experienced a rapid increase of population in urban areas from 1980 to 2000.

In Malaysia, infrastructure provision always concern with the involvement of public sector to provide facilities ranging from highways and road construction, dams for generating power supply, water treatment plant, airports and many others facilities. The adequate provision of appropriate infrastructure is vital for local development in particular. In Malaysia, traditionally most of the local infrastructure was undertaken by local authorities. This practice therefore, contributed to the financial burden of the local authorities. In order to reduce the burden, the approach of the present practice should be formulated as an alternative method to secure the required infrastructure.

**Table 1:**

The distribution projection of urban population in Peninsular Malaysia, 1911-2020

Year	Total Population	Urban Population	Rural Population	Urban %	Rural %
1911	2,339,000	250,273	2,088,727	10.7	89.3
1921	2,906,691	406,936	2,399,755	14.0	86.0
1931	3,787,758	570,513	3,217,245	15.1	84.9
1947	4,908,086	929,928	3,978,158	18.9	81.1
1957	6,267,955	1,666,969	4,600,986	26.6	73.4
1970	8,819,928	2,662,787	6,157,141	30.2	69.8
1980	11,426,613	4,182,759	7,243,854	36.6	63.4
1991	14,127,556	7,676,486	6,541,070	54.3	45.7
2000	16,884,000	10,838,000	6,046,000	64.2	35.8
2010*	20,582,000	14,406,700	6,174,300	70.0	30.0
2020*	25,088,000	20,070,400	5,017,600	80.0	20.0

Source: Federal Department of Town Planning, Malaysia (2003)

Note: \*Projected figures

The previous studies have shown that adequate infrastructure facilities are very important for local development and it is clearly a necessary precondition to sustain economic development (see Peter Ache, 2003; 1996; Kaplinsky, 1999; Claydon and Smith, 1997; Bunnel, 1995; Keogh, 1985). However, the increasing cost of providing infrastructure has had a significant impact on the capacity of the local authorities to provide infrastructure as it did in the past (Healey, 1995; Choguill, 1996; 1997; Ennis). Therefore, it is important for the local authority to be proactive in identifying ways to generate additional financial sources to accommodate the incremental infrastructure requirement within the current practice of development approval system. This requires the local authority to improve their collection methods or diversify their sources of revenue and articulate development approval to promote local infrastructural provision.

**Table 2:** Distribution of Population by State in Malaysia, 2001-2005 ('000)

State	Years				
	2001	2002	2003	2004	2005
Kedah	1,707.8	1,743.1	1,778.2	1,813.1	1,848.1
Kelantan	1,394.5	1,424.7	1,453.0	1,479.7	1,505.6
Terengganu	922.1	943.2	966.1	990.6	1,016.5
Melaka	660.6	674.0	687.1	700.1	713.0
Negeri Sembilan	881.8	897.4	913.3	929.6	946.3
Pahang	1,320.6	1,346.1	1,372.5	1,399.5	1,427.0
Perak	2,128.6	2,162.2	2,194.0	2,225.0	2,256.4
Perlis	211.1	214.5	217.9	221.2	224.5
Pulau Pinang	1,362.6	1,390.3	1,416.9	1,442.8	1,468.8
Sabah	2,667.3	2,730.1	2,795.1	2,862.3	2,931.7
Sarawak	2,119.6	2,166.8	2,214.3	2,262.7	2,312.6
Selangor	4,286.3	4,388.9	4,498.1	4,613.9	4,736.1
Wilayah Persekutuan Kuala Lumpur	1,446.0	1,474.3	1,501.8	1,529.0	1,556.2
Wilayah Persekutuan Labuan	77.6	79.1	80.6	82.0	83.5
Johor	2,826.5	2,891.8	2,959.4	3,029.3	3,101.2
Malaysia	24,012.9	24,526.5	25,048.3	25,580.9	26,127.7

**Source:** Yearbook of Statistics 2005, Department of Statistics Malaysia

The development planning system in Malaysia was established with a hierarchy from the national level to the lowest level. The lowest level is concerned with physical development within its domain. The system has been formulated in order to ensure a balanced a development in public interest. Meanwhile, the New Economic Policy (NEP, 1970-1990) outlines the hierarchy of framework for physical land-use planning. In this respect, the system of planning and development control can be seen as a

## *A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS*

potential instrument for creation of urban growth in addition to its traditional function of enhancing environmental quality. Hence an effective approach applied to secure local infrastructure provision within the framework of the present development control system should be formulated.

### **An Overview of Infrastructure Development In Malaysia**

The main objective of social and economic development of any community is the improvement of the quality of life for its entire people. At the local level, overriding goal of the long term development planning is also to achieve a balanced social and economic growth through sustainable development and promotion of quality of life of the community. One way to achieve the goal was by upgrading the existing local infrastructure facilities.

Infrastructure provision in Malaysia over a decade ago was almost entirely the public sector's responsibility. Private sector was left with less important actors played in fulfilment the local needs. The involvement of the private sector started as early as 1980s. Since then, the Malaysian government has stressed that the development of the country relies on the private sector as the primary engine of economic growth through the introduction of privatisation concept. The concept was a comprehensive policy which contains liberalisation and deregulation strategies. The strategy resulted in down-sizing the public sector while widening the involvement of private sector.

The shift in strategy from public-sector-led growth to private-sector-financed development began in 1983 provides the enabling environment, infrastructure, deregulation, liberalisation and macroeconomic management; and the private sector serves as the main engine of growth (Yaacob and Naidu, 2000). This is clearly evident in the financing of infrastructure development. Until the Fourth Malaysia Plan (1981-85) investment in infrastructure in Malaysia was funded by the public sector. The growth in public financing for infrastructure development increased drastically during 1991-2000 (the Sixth Malaysian Plan and the Seventh Malaysian Plan). During the period, public sector invested RM38 billion and expected to invest about RM27 billion in the Eight Malaysian Plan (2001-2005) on infrastructure (see Figure 1). Table 5, illustrates approximately of RM65 billions (5MP-8MP) had been invested in various infrastructure projects, which ranging of roads, ports, airports, telecommunication facilities, water

supply, sewerage and railway lines. Most of the infrastructure delivered by BOOT, BOT and only few of them had been delivered by sale of equity and management contracts.

In order to increase the effectiveness in local infrastructure provision, several major infrastructures have been privatised by the federal, state or local authorities. The effectiveness of local infrastructure would be achieved through the implementation of the privatisation policy. The privatisation of infrastructure provision had changed over the past decade. The privatisation of local infrastructure to private sector has resulted in an important change in the role of the public and private sectors in local infrastructure development. Table 4 summarises some of the method of privatisation involving some of the major urban infrastructure at national level ranging from ports, roads, power supply, water supply, telecommunications, sewerage plants and other. Most of infrastructure is directly financed and managed by local authority, however they would benefited to the local development in various local economic sectors (Yacob and Naidu, 2000).

*A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS*

**Table 3** : Public and private financing for infrastructure development in Malaysia, 1991-2000

Sectors	Malaysia Plan's Expenditure			
	5MP	6MP	7MP	8MP
<b>A. Public Sector</b>				
<b>Transport</b>	11,594.7	20,484.2	21,222.1	
Roads*	7,572.6	12,269.5	14,002.6	
Rail	1,735.4	404.0	705.6	
Ports	410.9	5,450.3	4,081.0	
Airports	1,780.6	1,089.2	1,500.0	
Urban transport	95.2	1,271.2	932.9	
<b>Utilities</b>	2,796.7	3,048.0	5,549.9	
Water Supply	2,671.9	2,382.7	3,966.3	
Sewerage	124.8	665.3	1,583.6	
<b>Communications</b>	71.0	39.6	228.0	
Telecommunications and postal services	39.6	4.1	146.7	
Meteorological services	31.1	35.5	81.3	
<b>Total</b>	<b>14,462.4</b>	<b>23,571.8</b>	<b>27,000.0</b>	
<b>B. Private Sector Investment (Privatised projects)</b>				
Roads		17,505.0		
Ports		4,241.7		
Airports		5,956.0		
Telecommunications		25,400.0		
Postal Services		260.0		
Water supply		2,571.7		
Sewerage		1,759.4		
Rail		10,600.0		
<b>Total</b>		<b>68,293.8</b>		
<b>Grand Total</b>		<b>87,523.9</b>		

\* Excludes local roads in regional development areas, some local authorities and agriculture roads, which have been allocated RM700 millions.

Source: Malaysia (2001).

### **Local Infrastructure Provision In Malaysia**

As stated in the Local Government Act 1976 (Act 171) most of the local infrastructure facilities such as road maintenance, sewerage treatment plants, drainage system maintenance, upgrading traffic system, maintenance of street lighting system and

maintenance of traffic-light system are undertaken by local authorities. The practice has led local authority to increasingly facing a shortage of fund to provide the necessary infrastructure. Hence, there is a paradigm shift from the public sector to private sector provision of infrastructure. Therefore, local authority needs to identify ways to encourage private sector, specifically the private developers involving large development projects to do so. This scenario has also encouraged local authorities to look for ways of entering into partnership with the private sector to secure adequate provision.

At the local level, the improvement and provision of infrastructure is under the responsibility of various ministries or departments including the local authority itself to financing infrastructure projects (Mohammad Nong, 1990). The local authorities in responses to this have taken steps to upgrade its infrastructure facilities within its areas. Since then millions has been spent on the provision of infrastructures in the form of roads, water, domestic solid waste incinerator facilities and electricity supply, telecommunication facilities and others through various relevant implementation departments in the local authority.

As revealed by previous studies (MPPP, 1987), there is a strong relationship between land use planning and the construction of major physical infrastructure. The location, capacity and efficiency of a municipality's infrastructure greatly impact growth and development pattern. This means that adequately and appropriately provided infrastructure in accordance to development plans can provided an effective tool in the implementation of local authority development plans. Major improvements have been made in many local authorities in the past of number of years. However, additional infrastructure development is required to cope with the rapid increase of local population and also to serve the new growth centres.

In the Eight Malaysia Plan (8MP, 2001-2005) the country experienced a high rate of urbanisation of 68%. However, the more developed states experienced high urbanisation rate ranged from 58 percent to 100 per cent. Whereas in the less developed states, the range was between 37% - 55%. In 2005, comparatively the developed states in the west cost of Peninsular Malaysia experiences higher urbanisation rate than national average (about 78%). This is due to two main factors, namely the expansion of modern sector in existing towns and the greater rate of rural urban migration. These factors will continue to influence the urbanisation rate in the future. In line with the national trend, the development of individual cities and towns in Malaysia is also keeping pace.

**A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS**

**Table 4:** Method of privatisation of major infrastructure in Malaysia  
(National level of infrastructure)

Sector and projects	Method of privatisation	Type of contract
<b>Ports</b>		
Klang Port	Sale of equity (1986)	Lease (21+30 years)
Kelang Container Terminal	Sale of equity (1992)	Lease (21+30 years)
Kelang Port Management	Sale of equity and	Lease (30 years) and concession (33
Klang Multi Terminal	BOT(1986)	years)
Johor Port	Sale of equity (1995)	Lease (30+30 years)
Bintulu	Corporatization (1993)	Lease
Penang Port	Corporatization (1994)	Lease
Lumut Maritime Terminal	BOOT (1993)	Concession
Pelabuhan Tanjung Pelepas	BOOT (1995)	Concession
Kuantan Port	Sale of equity	Lease
<b>Roads</b>		
North Klang Straits Bypass	BOT(1984)	Concession (25 years)
Jln. Kuching/Kepong Interchange	BOT(1985)	Concession (16 years)
KL Interchange	BOT(1987)	Concession (30 years)
North-South Expressway	BOT(1988)	Concession (30 years)
Second Link to Singapore	BOT(1993)	Concession (30 years)
Penang Bridge	Management contract (1993)	Management contract (25 years)
Butterworth-Kulim Expressway	BOT(1994)	Concession (32 years)
Seremban-Port Dickson Highway	BOT(1994)	Concession (30 years)
North-South Expressway Central Link	BOT(1994)	Concession (25 years)
KL-Karat Highway	BOT(1994)	Concession (27 years)
New North Klang Straits Bypass	BOT(1995)	Concession (25 years)
Cheras-Kajang Highway	BOT(1995)	Concession (30 years)
Elevated Highway over Sg.Klang and Sg.	BOT(1996)	Concession (33 years)
Ampang	BOT(1996)	Concession (33 years)
Damansara-Puchong – Putra Jaya Highway	BOT(1996)	Concession (30 years)
New Pantai Highway	BOT(1996)	Concession (30 years)
Sungai Besi Road		
<b>Water Supply</b>		
Labuan Water Supply	BOT(1987)	Concession
Ipoh Water Supply	BOT(1989)	Concession
Larut Matang Water Supply	BOT(1989)	Concession
Semenyih Dam	Management contract (1987)	Management contract
Tube Well Maintenance, Labuan	Management contract (1988)	Management contract
Johor Water Authority	Corporatization (1994)	Lease
Pulau Pinang Water Authority	Corporatization (1987)	Lease
<b>Power</b>		
Tenaga Nasional Berhad (TNB)	Sale of equity (1992)	License (21 years)
Independent Power Producer (IPP)	BOT(1995)b	Power purchase agreement (21 years)
YTL-Paka and Pasir Gudang	BOT(1996-1997)b	Power purchase agreement (21 years)
SEV-Lumut	BOT(1994-1996)b	Power purchase agreement (21 years)
GSP-Sepang	BOT(1995)b	Power purchase agreement (21 years)
PDP-Port Dickson	BOT(1995)b	Power purchase agreement (21 years)
PSP-Powertek, Melaka	(1990)	License (21 years)
<b>Telecommunications</b>		
Telekom Malaysia Berhad	Corporatization (1992)	Lease
10 Private telecommunications operators	Corporatization (1992)	Lease
<b>Others</b>		
KTM Berhad (Malayan Railway)	BOT(1992)	Concession (28 years)
Malaysian Airports Berhad	BOT(1993)	Concession (60+60 years)
National Sewerage System (IWK)	BOT(1994)	Concession (60+60 years)
Light Rail Transit System I (phase 1)	BOT(1994)	Concession (60+60 years)
Light Rail Transit System I (phase 2)		
Light Rail Transit System II		

Note: i. BOT is Build-Operate-Transfer; BOOT is Build-Operate-Own-Transfer.  
ii. a. Transaction was pending in 1996. b. Date of commissioning.

Source: Yahya Yaakob, Naidu, G. (2001).



**Table 5:** Urbanisation rate by state in Malaysia (1995, 2000 and 2005)

State	Urbanisation Rate			Average Annual Growth Rate of Urban Population	
	1995	2000	2005	7MP (%)	8MP (%)
Developed States	66.5	73.4	77.7	4.9	3.8
Johor	54.4	63.9	69.1	5.7	3.8
Melaka	49.5	67.3	75.3	7.5	3.2
Negeri Sembilan	47.3	55.0	58.2	4.4	2.3
Perak	56.2	59.5	65.3	1.9	3.0
Pulau Pinang	77.0	79.5	83.3	2.7	3.1
Selangor <sup>1</sup>	80.8	88.3	92.7	7.3	5.0
Wilayah Persekutuan Kuala Lumpur	100.0	100.0	100.0	2.0	2.2
Less developed States	37.4	42.1	45.9	4.7	3.9
Kedah	35.1	38.7	43.3	3.9	3.9
Kelantan	33.5	33.5	36.7	0.5	2.8
Pahang	35.0	42.1	44.0	5.2	2.2
Perlis	29.6	33.8	38.9	3.5	3.7
Sabah <sup>2</sup>	39.8	49.1	53.2	7.7	4.9
Sarawak	41.8	47.9	54.6	4.4	4.8
Terengganu	46.6	49.4	50.1	2.7	1.6
Malaysia	55.1	61.8	66.9	4.8	3.8

Source: Eight Malaysian Plans (8MP, 2001-2005)

The rapid increase of urbanisation in major urban centres in the country resulted in the increase demand of adequate local infrastructure facilities. This requires the local administration to evolve more efficient delivery of infrastructure provision. For instance in the year of 2000, the local domestic water waste sewerage generated 800 million m<sup>3</sup> of domestic water waste (see Table 6). This figure increased drastically if compared with the volume of water waste generated in the previous years (376 million m<sup>3</sup> in 1980, 457 million m<sup>3</sup> in 1985, 550 million m<sup>3</sup> in 1990 and 664 million m<sup>3</sup> in 1995). A total of RM9.8 billions of investment was required to build the solid waste disposal sites in order to cater for the huge increase in water waste. However, the increase in the urban population has also generated a lot of waste. By referring to Table 7, there was 989 million tons of domestic solid waste generated in the urban areas in Malaysia in 1980. This figure increased to 1.4 billions tons in 1990, and in 2000 it increased to more

*A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS*

than 2 million tons of solid waste generated. In terms of investment, the government requires more than RM400 million to build solid waste disposal sites in order to cater for this huge increase in solid waste.

**Table 6:** Local infrastructure investment required for central sewerage system in major towns Malaysia

States	Investment Needed (\$ million)				
	1980	1985	1990	1995	2000
Johor	556.836	676.556	815.250	982.376	1,183.763
Kedah	155.503	311.740	227.668	274.340	330.580
Kelantan	241.028	483.200	352.883	425.224	512.395
Melaka	104.381	209.260	152.822	184.150	221.901
N. Sembilan	179.514	359.880	262.822	304.815	381.624
Pahang	200.863	402.680	294.078	354.365	427.009
P. Pinang	427.805	446.275	449.611	567.750	909.459
Perak	562.202	112.707	823.106	988.543	1,195.170
Perlis	12.949	25.960	18.958	22.845	27.528
Selangor	487.233	976.780	664.611	810.847	1,035.796
Terengganu	225.181	451.430	329.682	397.267	478.706
Kuala Lumpur	978.326	156.130	1,297.343	1,590.973	2,079.797
P. Malaysia	4,131.821	14,612.98	5,688.834	6,903.495	8,783.728
Sabah	210.600	422.200	308.334	371.543	447.709
Sarawak	238.200	477.530	348.743	420.235	506.383
Malaysia	4,580.621	5,512.328	6,345.911	7,695.273	9,737.820

- Note: 1. Wastewater generation rate is 0.225 m<sup>3</sup>/per person/day  
 2. Investment is estimated at RM5,000.00 per household  
 3. Per household population is estimated at 5 persons.

Source: Compiled from Ministry of Housing and Local Government (2003)

Such huge expenditure within limited of resources requires local authorities implementing its development project in particular infrastructure projects strategically in order to stimulate the strategic urban sector development and avoiding the allocations taped

to less needed projects. This emphasis at local level is to ensure that the urbanisation process at the local level planned and implemented would enhance local economic development.

Meanwhile the strategies to strengthen the sustainability of local development pertaining to the efforts to improve the present local infrastructure management were embedded in the 1999 Local Agenda 21. The programme was jointly collaborated involving local authorities (e.g. Petaling Jaya, Krian, Kuantan and Miri), local communities and community based organisations.

**Table 7:** Local infrastructure investment required for domestic solid waste in Malaysia

States	Investment Needed (\$ million)				
	1980	1985	1990	1995	2000
Johor	4.81	8.77	17.61	31.70	50.51
Kedah	1.34	2.45	4.92	8.85	14.10
Kelantan	2.08	3.80	7.62	13.72	21.86
Melaka	0.90	1.64	3.30	5.94	9.47
N. Sembilan	1.55	2.83	5.68	10.22	16.28
Pahang	1.74	3.16	6.35	11.43	18.22
P. Pinang	3.70	6.74	13.53	24.35	38.80
Perak	4.86	8.85	17.78	32.00	50.99
Perlis	0.11	0.20	0.41	0.74	1.17
Selangor	4.21	7.67	15.41	27.73	44.16
Terengganu	1.95	3.55	7.12	12.82	20.42
Kuala Lumpur	8.45	15.41	30.94	55.69	88.73
P. Malaysia	35.70	65.06	130.66	235.20	374.75
Sabah	1.82	3.32	6.66	11.99	19.10
Sarawak	2.06	3.75	7.53	13.56	21.60
Malaysia	39.58	72.13	144.86	260.74	415.45

Source: Compiled from Ministry of Housing and Local Government (2003)

### Local Expenditures On Infrastructure Development

In Malaysia there are 145 local authorities which collect revenue to cover its operating expenses and to fulfil their basic requirements such as maintaining local roads and

## *A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS*

as well as constructing of new infrastructure projects for the benefit of its tax payers. The collections of seven major local authorities amounted to RM 11.9 billions and spend RM13.2 billions (Table 8). The total local authority revenue, which comprises of assessment rates, trading licenses, parking fees and grants from state government, is roughly 11.3% of the consolidated general government revenue of RM105.5 billion estimated for 2003. For instant, DBKL is the largest local authorities with yearly income revenue double that of four large municipal councils in Selangor namely Petaling Jaya (MPPJ), Subang Jaya (MPSJ), Shah Alam (MPSA) and Klang (MPK).

However, large portion from the revenue have been allocated for spending on development and operating expenses. DBKL collected a total of RM919.7 million in revenue and expenditure of RM1.8 billion. This incurs a deficit of RM897.3 million which mainly attributed to the 51.7% increase in urban infrastructure expenditure to RM927 million of which the difference will be funded by the federal government. The amount allocated for urban infrastructure has been spend for upgrading and construction of new roads, interchanges and elevated highways.

This is a general trend that many local authorities have far bigger allocations for operating expenditure than development. In some cases, there is a wide gap between the big local authorities of bigger towns and smaller ones. For instance, City council of Kucing collects less than RM60 million in annual revenue just roughly one-third than that of Penang. The local authorities in the State of Johor also experienced same similar scenario of the increase in the demand for additional fund to finance some of infrastructure development. For instant, in the City Council of Johor Bahru, a total of RM42 million was required to be spend for local infrastructure development in 2004 (see Figure 2). The fund was used mostly for construction and maintaining of *off-site* local infrastructure which range from public utilities, hawkers facilities, drainage system, flood control, sewerage system and roads.

### **Source of Funds for Local Infrastructure Development**

The sources of revenue for local authority are the collection of taxes income such as assessment rates on houses and buildings and non-tax income which includes the issue and renewal of trading licenses, rental of stalls, parking fees and fines. Like public companies, the survival of local authority and their financial health depends

on how well they collect revenue and increase income, and how efficient they are in controlling expenditure. The expenditure of local authority is divided into two broad categories; i) administrative and operating expenditure; ii) development expenditure.

Specifically, revenue collected by local authorities could be classified into six major groupings which are;

- i. property tax or assessment: Is a tax levied on all holdings within the local authority area. The property tax is the main income for most local authorities.
- ii. Licence fees: The licence fee is used as a means of regulating the business activities within a local authority.
- iii. Rentals: Rentals of the local authority's properties.
- iv. Government grants: Grants received from the central government in the form of road grants and annual grants.
- v. Parking lots fees, plan fees, interest receivable and miscellaneous items.
- vi. Loans.
- vii. Improvement Services Fund (ISF): Revenue collected as provided under Street, Drainage and Building Act 1974 (Act 133), Part VI: Section 132. The provision has to be used together with the relevant provisions under Town and Country Planning Act 1976 (Act 172).

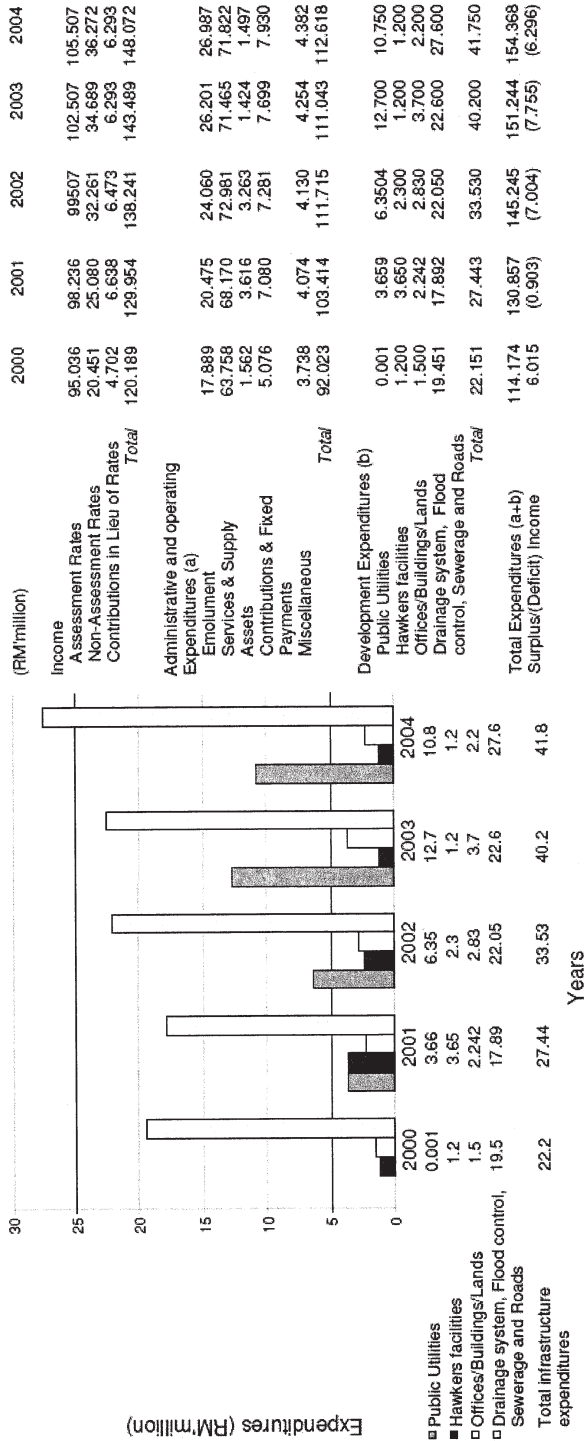
A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS

Table: Revenue of major municipalities in Malaysia, 2003

Municipal Councils	Revenue/ Collection (RM'million)	Expenditure			Surplus/ Deficit (RM'million)
		Operating (RM'million)	Development (RM'million)	Total (RM'million)	
Dewan Bandaraya KL	918.66	888.50	927.42	1,815.92	-897.26
Penang	175.70	179.99	74.84	254.83	-79.05
Subang Jaya	164.44	122.90	41.54	164.44	0
Petaling Jaya	151.87	130.68	28.77	159.45	-7.58
Shah Alam	127.69	-	-	118.26	9.43
Klang	126.70	122.50	20.00	142.50	-15.80
Ipoh	98.00	-	-	103.00	-5.00
Consolidated state governments' financial position (of all municipals councils in every state, including royalties from mining and forestry activities)	10,156.60	5,516.93	5,143.85	10,439.52	-282.92
Total	11,919.66	6,961.50	6,236.42	13,197.92	-1,278.26

> Actual collection and spending up to October 2003.  
 > The figure tabulated above represents collection and spending for 2003.

Source: Adapted from Ministry of Housing and Local Government, 2005



Source: Adapted from Ministry of Housing and Local Government, 2005

Figure 2: Infrastructure Expenditures in City Council of Johor Bahru

(RM'million)	2000	2001	2002	2003	2004
<b>Income</b>					
Assessment Rates	95,036	98,236	99,507	102,507	105,507
Non-Assessment Rates	20,451	25,080	32,261	34,689	36,272
Contributions in Lieu of Rates	4,702	6,638	6,473	6,293	6,293
<b>Total</b>	<b>120,189</b>	<b>129,954</b>	<b>138,241</b>	<b>143,489</b>	<b>148,072</b>
<b>Administrative and operating Expenditures (a)</b>					
Emolument	17,889	20,475	24,060	26,201	26,987
Services & Supply	63,758	68,170	72,981	71,465	71,822
Assets	1,562	3,616	3,263	1,424	1,497
Contributions & Fixed Payments	5,076	7,080	7,281	7,699	7,990
Miscellaneous	3,738	4,074	4,130	4,254	4,382
<b>Total</b>	<b>92,023</b>	<b>103,414</b>	<b>111,715</b>	<b>111,043</b>	<b>112,618</b>
<b>Development Expenditures (b)</b>					
Public Utilities	0.001	3.659	6.3504	12.700	10.750
Hawkers facilities	1.200	3.650	2.300	1.200	1.200
Offices/Buildings/Lands	1.500	2,242	2.830	3.700	2.200
Drainage system, Flood control, Sewerage and Roads	19.451	17.892	22.050	22.600	27.600
<b>Total</b>	<b>22.151</b>	<b>27.443</b>	<b>33.530</b>	<b>40.200</b>	<b>41.750</b>
<b>Total Expenditures (a+b)</b>	<b>114,174</b>	<b>130,857</b>	<b>145,245</b>	<b>151,244</b>	<b>154,368</b>
<b>Surplus/(Deficit) Income</b>	<b>6,015</b>	<b>(0,903)</b>	<b>(7,004)</b>	<b>(7,755)</b>	<b>(6,296)</b>

## ***A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS***

The more prosperous a town the greater the revenue that a local authority can generate from the collection of assessment rates and license fees from new buildings and increased business activities. Such revenue will then be channelled into development expenditure to enhance the standard of services provided by local authority. However, the reverse is true of the poorer towns, which often find it difficult to maintain their roads or infrastructure and have to rely on government grants. Local authorities are encouraged to undertake projects that will generate new income for them. Some local authorities are very good at it, by going into joint-ventures with the private sector. But they must balance new development with the welfare of residents. Since the local authorities are not allowed or prohibited from raising funds from the public, and they cannot simply raise taxes or rates, they have to either improve their collection methods or broaden their sources of revenue.

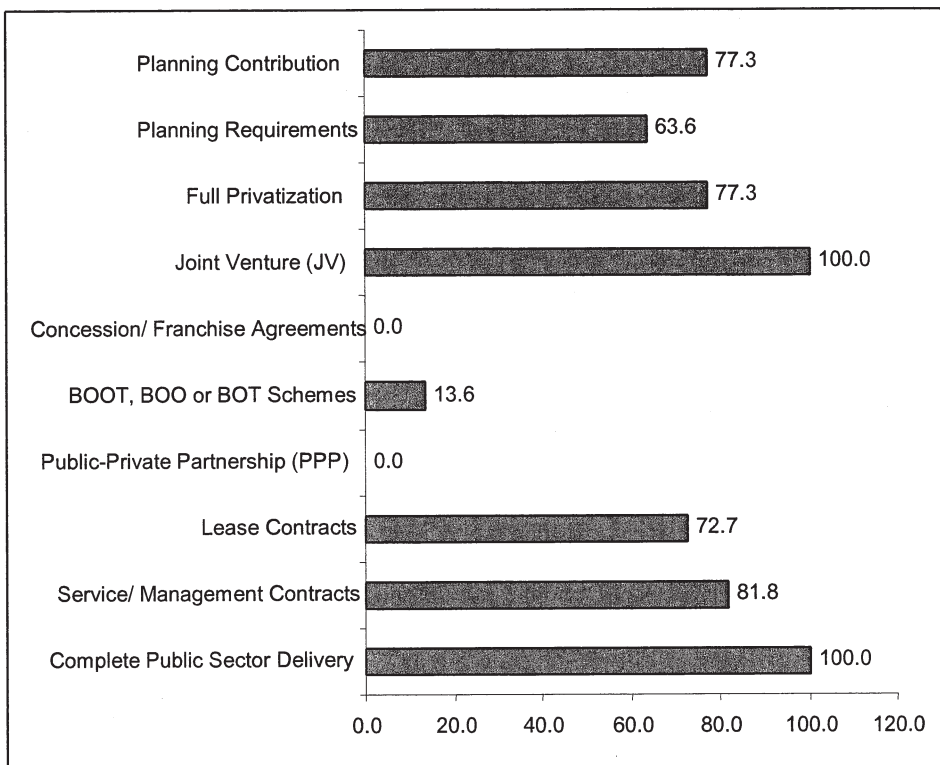
### **The Present Practice in Securing *Off-Site Local* Infrastructure**

In this part the discussion will focus on the present practice used by local authorities to acquire *off-site* infrastructure from private developer. Figure 3, revealed several methods of infrastructure delivery at the local level. Complete public sector delivery has present 100.0% from the council surveyed. The recent outsourcing approach of local infrastructure provision had been manifested in form of joint-venture (100.0%), lease contract (72.7%), service management contract (81.8%) and full privatisation (77.3%). However, other form of private option such as concession/franchise agreement and public-private partnership (PPP) was not successfully applied.

In fact, the breakdown in Figure 3 also suggests that apart from private option in *off-site* infrastructure, there are several other forms applied to acquire from private developer, such as the use of planning contribution (77.3%) and planning requirement (63.6%) during planning approval process. The use of these two forms to secure *off-site* infrastructure is very limited. It was found that local authority widely uses private sector financing. However, this situation applicable to all types of infrastructure delivery as well as to the less effective, such as concession/franchise agreements and public-private partnership (PPP). These are few local authorities which utilises an intensive type of private sector delivery of *off-site* infrastructure, i.e. Built-Operate-Transfer (BOT, BOOT or BOO) (13.6%).



From the above analysis it can be concluded that besides public sector delivery the provision of *off-site* infrastructure was widely shifted from public sector to private sector. The findings has supported by Allison and Askew (1996), a local authority might seek contribution from private developer through negotiation while considering planning approval. In return of the approved planning permission, the developer might give something to local authority in the form of 'contributions'. The contents of the contribution would be as what has been 'agreed' upon the approval. The process of securing benefits (e.g. *off-site* infrastructure) normally is enshrined between developers



**Figure 3:** The present practice of off-site infrastructure provision

Source: Fieldworks survey 2005 (n=22)

## A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS

and local authority.

### The Reasons of Using Private Sector Provision

For this purpose, local authorities were asked to indicate the reason for using private sector delivery method for *off-site* infrastructure provision. Private sector does offer improved service delivery when they are exposed in a competitive market. From Table 6.3, the findings from the survey indicate that the main reason why local authority move to use private options in delivering of *off-site* infrastructure is frequently because of the need to raise the necessary financial resource to fund the increase in demand of local infrastructure provision. This was represented by 100.0% (n=22) from the interviewed local authorities. Other reasons were to improve the efficiency and the quality of services (36.4%) and to increase efficiency of the services provided (13.6%).

Similar finding in the United Kingdom (Treasury Task, 2000) revealed that the efficiency factor constituted too much local expenditure reduction on infrastructure. A study by Megginson *et al.* (1994) also reveals the similar findings on private involvement in local infrastructure provision. The result indicates that the increased efficiency consistently happens when the local infrastructure delivery is shifted to private market.

**Table 9:** The reasons of using private sector for *off-site* infrastructure provision

The reasons	Involved with <i>off-site</i> infrastructure		Total
	Yes	No	
To raise necessary resources (e.g. <i>financing</i> )	22 (100.0)	-	22 (100.0)
Ability to identify and manage risks	1 (4.5)	21 (95.5)	22 (100.0)
To provide contemporary management skills and optimize performance	2 (9.1)	20 (90.9)	22 (100.0)
To improve the efficiency and quality of services	8 (36.4)	14 (63.6)	22 (100.0)
Efficiency improved when exposed to competition	3 (13.6)	19 (86.4)	22 (100.0)

Source: Field Survey, 2005 (n=22)

## **The Major Drivers of Private Sectors Involvement**

The findings from the survey had identified several drivers for the involvement of the private sector in local infrastructure provision. The prompts response to the questions listed factors such as to reduce the cost of providing infrastructure, to improve quality of service delivery and enable to bring the private financing. These were answered repeatedly by the respondents in the study. From Table 10, if the reasons listed accordingly to the ranking of percentage, the priority of the private involvement could be shown as follows;

- i. Survey recipients were also asked to rank how successful their municipality's involvement of the private sector was with 'improving the quality' of infrastructure delivery. Table 6.7 indicates the responses for improving quality of service delivery is 100.0%.
- ii. To meet the initial requirements of local infrastructure (72.7%).
- iii. To lower the local authority capital requirement (72.3%).
- iv. To use the private expertise in local infrastructure provision (40.0%).
- v. To encourage local development (31.9%).

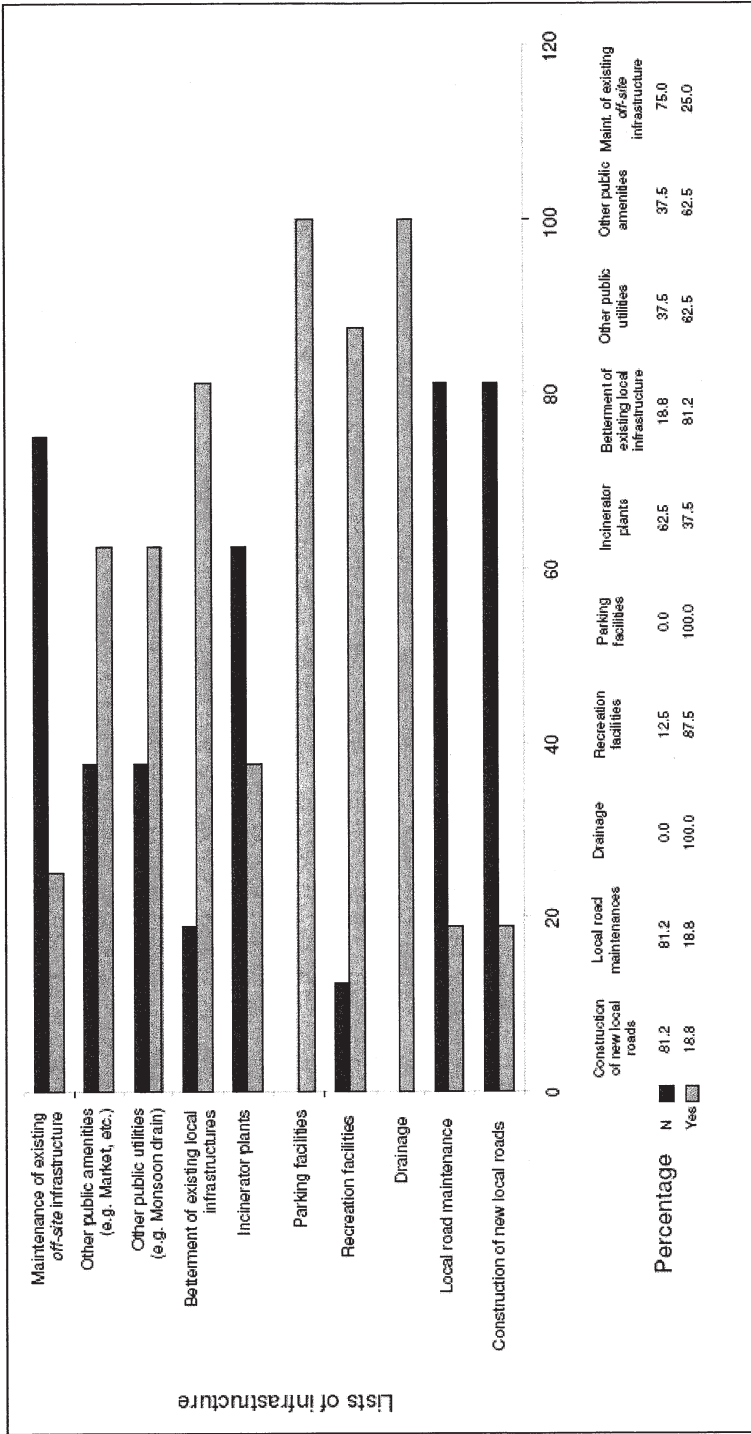
From the above summary of findings, private sector financing was perceived as acceptable by local authorities. However, in some cases, private sector was not perceived as successful option. These included the use of involvement of private sector to bring forward investment (4.5%) and to widen the scope of services (9.1%). This coincides with the aforementioned findings that private involvement in local infrastructure development is more likely to be perceived successful.

What can be summarised from the above analysis is that the private financing has generally been perceived as an efficient means by most respondents (local authority). The study revealed that most of respondents (local authorities) agreed that the involvement of private sector in local infrastructure development is significant. The

## *A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS*

main reason is that such practices would reduce the capital requirements and to meet the needs of local infrastructure provision as outlined by local authority. However, the main obstacle remains on how the financing might be efficiently tapped out from the private sector (developers).

These findings have been further supported by a study conducted by Bunnell (1995) on the application of planning approval mechanism to secure *off-site* infrastructure. He also suggested that in order to promote the involvement of private financing, the most significant part is to clarify the possible method of how private sector can finance the infrastructure. The method should be appropriately applied because it would affect the pattern of local development. Consequently, the result would be consistent with the established development plans.



Source: Adapted from Ministry of Housing and Local Government, 2005

Figure 2: Infrastructure Expenditures in City Council of Johor Bahru 2000-

**A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS**

**Table 10:**

The major drivers of private sectors involvement in *off-site* infrastructure provision

Drivers of private sectors involvement	Yes %	No %	Total
Meeting initial requirements of local authority	72.7	27.3	100.0
Lowering local authority allocation on infrastructure	50.0	50.0	100.0
Improving quality of service delivery	100.0	77.3	100.0
Bring forward investment	4.5	95.5	100.0
Enable to reduce infrastructure cost	4.5	95.5	100.0
Local authority lacks of technical expertise to manage such project	40.9	59.1	100.0
Stimulates or encourages local development	31.9	68.2	100.0
Lowers local authority's capital requirements	72.3	27.3	100.0
Access to private sector capital 'options'	45.5	54.5	100.0
Use of private sector's expertise	22.7	77.3	100.0
Broaden scope of services	9.1	90.9	100.0

Source: Field Survey, 2005 (n=22).

**The Constraints of Active-Involvement Of Private Sectors**

From the study, the main constraints experienced by local authority in the involvement of private sector (developer) in local infrastructure provision appeared in two different categories; the contents of the legitimate definition of the term *off-site* requirements and the concern of developers over the additional cost incurred have to be borne by developers (see Table 11). The table also illustrates that 62.5% of the developers admitted that the constraints over the involvement of private sector in local infrastructure provision (*off-site*) has been due to the insufficient of guidelines pertaining to the practice of *off-site* infrastructure provision requirements.

Improperly defined the procedure used to impose *off-site* infrastructure is a major concern. Many developers who had experienced problems with the local planning authority believe that such constraints can be avoided if the procedure is defined clearly by interpreting and incorporating together the local contexts. Moreover, several

developers claimed that the main problems experienced by many developers to involve in the local infrastructure development is caused by the rationale used to grant or to justify the requirements is not consistent from one project to another project, and some cases from one local authority to another (6.2%).

**Table 11:** The constraint to active-involvement of private sectors

Factors	Frequency	Percent %
Providing <i>off-site</i> infrastructure was costly.	3	18.8
Insufficient of guidelines pertaining to <i>off-site</i> infrastructure requirements.	10	62.5
Less incentive given by LA to developers who are willing to contribute <i>off-site</i> infrastructure.	2	12.5
The rational used to justify the requirements of <i>off-site</i> not consistent and unclear.	1	6.2
Total	16	100.0

Source: Field Survey 2005 (n=16)

The main problem faced by local authorities in infrastructure provision arises in the form of lack of private sector involvement. By considering cost is the main determining factor for the liability of the proposed development, developers may have the perceptions that planning control would affect the development cost. The developers have to incur additional cost in providing other necessary infrastructure prior to receiving planning approval. Some developer revealed that another reason which constraint the involvement of private sector resulted in the nature of providing the infrastructure. They claimed providing *off-site* infrastructure is comparatively high. This can quite true since 18.8% of developer who positively responded to the statements that providing *off-site* infrastructure was costly, 62.5% have the perceptions that inefficient of information on *off-site* infrastructure might be considered as one of the factors which contribute to the constraint of active involvement of private sector (see Table 6.11).

## *A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS*

### **Conclusions**

From the previous discussion, it is clear that private sector participation in local infrastructure provision is fast globalisation. Comprehensively, the ultimate aim was to improve efficiency of infrastructure delivery. The participation of the private sector in the provision of local infrastructure services has the potential of increasing the standard of living of the population. Also identified that if there is no immediate reform to the present approach on local infrastructure provision, it will continuously deplete the limited government funds desperately needed for other social programs and attracting local investments.

The rapid urbanisation which takes place at local level have definitely put pressure on the demand for adequate and timely provision of infrastructure. Based on the previous discussions, the provision of local infrastructure and services are very costly and demands a huge allocation to finance its provision. The analysis of existing situation indicates that there is a poor maintenance of this infrastructure resulting in many local authorities with poor urban infrastructural facilities. This adversely affects the life of their urban population.

Under the present legislative circumstances, the development plans system might be seen as an effective alternative to secure infrastructure facilities. Therefore, an effective development control system is required to secure adequate quality infrastructure provision in local authority. Subsequently, it enables to reduce financial burden faced by local planning authority in the country. In order to achieve the above main objective requires an appreciation and evaluation of the planning controls in the country so as to identify and quantify factors closely associated with constraints of the active-involvement of private developers in providing infrastructure.

To this end, it can be concluded that the present practice of local infrastructure provision would further squeeze local authorities financially and further worsen environmental quality. Local infrastructure provision is not only a costly responsibility but more importantly it entails several financial implications. To resolve these undoubtedly problems it is suggested that an integrated model of local infrastructure provision needs to be adopted. It is based on the costs-sharing concept amongst the users of infrastructures by adopting and integrating the improved framework of development control system in the country. Conceptually the model emphasizes the needs to share



the cost of providing urban infrastructure between the Federal Government, State Government and Local Government and beneficiary public at large. The model also stresses on the need to rely on privatisation as the main source of financing the local infrastructure. In addition, the model also incorporates improvement in the development control system as an important element. It is believed that the implementation of this integrated local infrastructure provision model will not only reduce the financial burden of the local authorities but also enable to ensure an effective and efficient provision of local infrastructure.

## References

- Ahmah Salim** (1982). *Land Use Control In Peninsular Malaysia*. University of Wales, Cardiff U.K : Masters Thesis.
- Allinson, J. and Askew, J.** (1996). Planning gain, in Greed, C. (Ed.) (1996) *Implementing town planning : The role of town planning in development process*. Harlow : Longman.
- Asiah Othman** (1999). *The effect of planning system on housing development : A study of developers' behaviour in Kuala Lumpur and Johor Bahru, Malaysia*. University of Aberdeen U.K : PhD Thesis.
- Booth, P.** (1996). *Controlling Development : Certainty and Discretion in Europe, the USA and Hong Kong*. London : UCL Press.
- Bruton, M. J.** (1982). The Malaysian Planning System, in : *Third World Planning Review*, Vol. 4. No. 4.
- Clarke, G.** (1992). *Towards appropriate forms of urban spatial planning*. In *Habitat International*. Vol. 16, pp.146-166.
- Clark, G. L., and Evans, J.** (1998). The private Provision of Urban Infrastructure : Financial Intermediation Through Long-Term Contracts, in : *Urban Studies*, pp. 301-319.
- Claydon, J. (1996)**. *Negotiations in Planning*, in : C. Greed (Ed.) *Implementing Town Planning*, pp. 110-120. Harlow : Longman.
- Claydon, J.** (2001). *Discretion in development control: A study of how discretion is exercised in the conduct of development control in England and Wales*. Planning Practice and Research.
- Claydon, J. and Smith, B. (1997)**. *Negotiating Planning Gains Through the British Development Control System*, in : *Urban Studies*, pp. 2003-2022.

*A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS*

- Dani Salleh** (2000). *The legislative framework of urban planning and development in Malaysia*, a paper presented at the World Conference of Urban Future 2000 at the University of Witwatersrand, Johannesburg, South Africa on 10-14 July 2000.
- Dani Salleh and Asan-Ali Golam-Hassan** (2001). *Urbanisation And Development: The Role Of Development Planning In Malaysia*, A papers presented at The International Planning Research Conference 2001, Co-Organised by Liverpool University And Liverpool John Moores University, 2001.
- De Vaus, D. A.** (1986) *Surveys in Social Research*, London: George Allen and Unwin.
- Development Control Standards Manual** (1998). *State Government of Sarawak*: Ministry of Planning and Resource Management.
- Dobry, G.** (1975). *Review of Development Control System*, Final Report, H.M.S.O. London.
- Economic Planning Unit** (1993). *Draft National Urban Policy*, Government of Malaysia, Kuala Lumpur.
- Elson, M.** (1990). *Negotiating the future : Planning gain in the 1990s*, ARC Ltd.
- Ennis, F.** (1997). Infrastructure provision, the negotiating process and the planner's role, in : *Urban Studies*, pp. 1935-1954.
- Federal Department of Town and Country Planning**, (1993). *Manual for Development Plans Preparation*, Kuala Lumpur.
- Foziah Johar** (1989). *An Evaluation of Malaysia Town Planning Legislation*. University of Newcastle Upon Tyne U.K : Master Thesis.
- Glennie, C.** (1982). *A Model for the Development of a Self-Help Water Supply Program*, World Bank Technical Paper No. 2, (Technology Advisory Group of the World Bank, Washington, DC).
- Government of Malaysia (1976). Town and Country Planning Acts, Act 172.**
- Graziano, A. M. and M. L. Raulin** (1989). *Research Methods: A Process of Inquiry*, New York: Harper and Row.
- Guy, S. and Marvin, S.** (1997). Infrastructure provision, development process and the co-production of environment value, in : *Urban Studies*, pp. 2023-2036.
- Healey, P.** (1991) Models of development process : a review, *Journal of Property Research*, 8, pp. 219-238.
- Healey, P. , Purdue, M. and Ennis, F.** (1995). *Negotiating Development : Rationales and Practice for Development Obligations and planning Gain*, E & FN Spon.
- Keogh, G.** (1985). *The economics of planning gain*. In S. Barrett and P. Healey (eds), *Land Policy Problems and Alternatives*, pp. 203-228. Gower Publishing Co. Ltd.

Aldershot, Hants.

**Kivell, P. (1993).** *Land and City : Patterns and Processes of Urban Change.* Routledge, London.

**Kotin, A. and Peiser, R. (1997)** *Public-Private Joint Ventures for High Volume Retailers : Who Benefits?, in : Urban Studies, pp. 1971-1988.*

**Larkham, P.J. (1990).** *The Concept of Delay In Development Control.* In Planning Outlook.

**Lee, Cassey (1995).** Regulatory Reform in the Infrastructure Sector: The Malaysian Experience. Paper presented at the Regional Workshop on Managing Regulatory Policies and Reforms in East Asia, Kuala Lumpur.

**Lee Lik Meng, Abdul Mutalip Abdullah dan Alip Rahim (1990).** *Town Planning In Malaysia : History and Legislation.* USM Publication.

**Jack W. Lillywhite (1992).** Infrastructure privatisation: A viable option for improving municipal services. Paper presented at Pacific Asian Congress of Municipalities, Calgary, Canada. Jayarajan, T.M., (1992). Prospects and Perspectives of Privatising Kuala Lumpur's Sewerage and Transportation Infrastructure. Paper presented at Pacific Asian Congress of Municipalities, Calgary, Canada.

**Mc Loughlin, J.B. (1975).** *Control and Urban Planning.* London: Faber & Feber Ltd.

**Ministry of Housing and Local Government, Welsh Office (1970).** *Development Plans : A Manual On Form and Content,* London.

**Mohd. Anuar A. Wahab, (1994).** *An Overview of the Development Control System in Peninsular Malaysia.* Occasional Paper No. 4, 1994. Fakulti Alam Bina, UTM.

**Morgan, P. and Susan, M. (1988).** *Development Control : Policy into Practice,* Butterworth : London.

**National Office of Local Government (NOLG) of Australia (2002).** Guidelines for Preparing a Local Government Infrastructure Financing Manual.

**OECD (Organisation for Economic Co-Operation and development), (1991).** *Urban Infrastructure: Finance and Management.* Paris (France).

**Kamal Salih (1979).** *Urban Development In Malaysia,* Nagoya, Japan: United Nation Centre for Regional Development, Working Paper No. 74-3.

**Thomas, K., (1997).** *Development Control: Principles and Practice : UCL Press.*

**Underwood, J., (1981).** *Development Control: A Review of Research and Current Issues, in : Progress In Planning.* Vol. 1.6. : Pergomon Press Ltd.

**Vives, A. (1996).** *Private Infrastructure : Ten Commandments for Sustainability.* Inter-American Development Bank.

*A REVIEW OF POTENTIAL AREAS OF CONSTRUCTION COST ESTIMATING AND IDENTIFICATION OF RESEARCH GAPS*

- Yahya Yaacob and G. Naidu** (2000). Contracting for private provision of infrastructure: The Malaysian experience. In Harinder Kohli, Ashoka Mody and Michael Walton (2000). *Choices for Efficient Private Infrastructure Provision in East Asia*. (Eds.). The World Bank, Washington, D.C.
- Yaakup, A., Johar, F., Sulaiman, S. and Hassan, R.** (2003). GIS and Development Control System for a Local Authority in Malaysia, in : *Habitat International*. 27 (2003) 683-696 : Pergomon Press Ltd.
- Vickerman, R.** (2002). Public and Private Initiatives in Infrastructure Provision. Paper for STELLA Workshop, Brussels, 26-27 April 2002. Centre for European, Regional and Transport Economics University of Kent at Canterbury
- Ronald McGill** (1998). Urban management in developing countries. In *Cities*, Vol. 15, No. 6, pp. 463-471. Published by Elsevier Science Ltd.
- Steinberg, F.** (1991). Urban infrastructure development in Indonesia. In *Habitat International*, Vol. 15, pp. 3-26.