

authorities do not have enough engineers to undertake drainage master plan studies nor funds to undertake comprehensive urban drainage projects.

3. REVIEW OF EXISTING LAWS AND REGULATIONS PERTAINING TO URBAN DRAINAGE

3.1 Principal Laws and Regulations

Federal Constitution: The federal constitution prescribes drainage and irrigation under the 9th Schedule on the Concurrent List which means it comes under both Federal and State competence. While both federal and state governments have powers to legislate on matters under the concurrent list, executive powers normally vest with the state unless otherwise expressly provided by Federal or state law (Art 80 (2)). It may be possible to enhance Federal executive powers on urban drainage if Federal legislation are taken under Article 74(1) read together with Article 80 (2). Notwithstanding the above the constitution ascribes all state works on water supply, river and canals, control of silt, riparian rights as within state competence. The state has absolute ownership of all rivers within the boundaries of the state (Item 6 of state list) whereas Federal works relating to water supply, rivers and canals shared by more than one state is under Federal competence.

National Land Code 1965: This Act to consolidate all laws pertaining to land and land tenure was promulgated under Article 76(4) i.e for the purposes of achieving uniformity of law in all the states of the Peninsular. Relevant provisions of the Act include s5 which defines rivers to mean rivers, streams, or artificial deviations thereof. This would suggest that flood bypass canals would fall within the definition. The encroachment of any alienated land by river will render the affected land as state land (s49). This provision could give a legal right to enforce a right of way on several buildings extending on the Melaka River in the downtown Melaka city area. Since the passage of the National Land Code several states have gazetted river reserves under the provisions of s62 NLC. There are however several areas upstream where private lots abut riverbanks without a clear reserve. Unless the government compulsorily acquires the land, the reserve is only secured when it is voluntarily surrendered when the land is developed. The state may also lease reserve land for a period not exceeding 21 years. The most common method of urban land development in the country is through the process of conversion (change of use) and subdivision of land. This is provided for under s124, 124A and s135. Generally the sub division plan submitted has to conform to the Local Plan for the area and provides for sufficient river and drain reserves and outlet drains before it is approved Permits for sand mining operations, removal and transportation of rock material

is issued by the District Land Administrator s70, 71, 72 and s72. Very often such operations are conducted close to rivers and waterways resulting in badly silted rivers and drains. Strict enforcement of the conditions of the permit is needed. However the land office is often constrained by lack of enforcement personnel. If such operations are within local authority areas, it is suggested that local authorities be given the powers to enforce the conditions of the permit.

Land Conservation Act 1960 : This Act was aimed at consolidating the law relating to conservation of hill land and the protection of soil from erosion and the inroad of silt. The Act was made pursuant to Article 76(3) of the Constitution, which requires the Act to be adopted by the States before it becomes operational. Hill Lands need to be gazetted, and once this is done there are strict prohibitions on the activities that can be carried out, for example there is prohibition of short term crops and land clearing of hill lands except with a permit. The State land office which is responsible for implementing the Act has powers to make an order prohibiting the removal of trees or ordering the laying of drains or water courses to prevent erosion. Again it is doubtful if this Act has been effectively utilised as there are very few hill lands that have been gazetted and recent trends indicate that even gazetted forest reserves on hills have been revoked for development. Again it is doubtful that the provisions of this act are monitored and enforced due to constraints in personnel and resources at the Land Office.

Town and Country Planning Act 1976: This is a comprehensive legislation enacted pursuant to Article 76(4) of the Constitution for the proper control and regulation of town and country planning in local authority areas. This Act was amended by Amendment Act A933 in 1995, which among others expanded on the contents of the Local plan; introduced the Development Proposal report; defined the Layout Plan and introduced the Tree Preservation Order. While there are several provisions pertaining to development of land in the National Land Code, this act made it necessary that all development has to conform to the Local Plan for the area and that no person can commence development without obtaining planning permission (s18, s19) from the Local Authority. The implementation of this Act lies with the State Planning Committee and the Local Planning Authority for the area, which is deemed to be the Local Authority (s5). The Act requires the Local Authority to prepare two types of development plans i.e. Structure Plan and the Local Plan. The structure plan is a policy plan pertaining to the development and use of land whereas the Local Plan is prepared on a Survey base and is a map supported by proposals on the :-

- (a) Development of land use
- (b) Protection and improvement of the physical environment
- (c) Preservation of the natural topography

- (d) Improvement of the landscape
- (e) Preservation and planting of trees
- (f) Making of open spaces
- (g) Preservation and enhancement of character and appearance of buildings
- (h) Improvement of communications
- (i) Management of traffic

The improvement of urban drainage is not specifically mentioned although it may be prescribed to be included by the State Planning Committee. Perhaps it was felt that an urban drainage master plans should be done subsequent to or concurrent to the preparation of Local Plans.

An application for planning permission (s21A) has to be supported by Development Proposal report which among others has to provide a description of the land including its physical environment, topography, landscape, geology, contours, drainage, water bodies, catchments and natural features. It is usually at the layout plan stage that adequate reserves for urban drainage and sufficient land for flood retention ponds are secured. It is necessary that urban drainage guidelines are established so that it could be effectively incorporated at the layout plan stage. Other provisions of the Act include the Requisition Notice (s30) that can be issued by the Local Authority to the owner of any land to discontinue any use or impose new conditions for the continued use of the land. This means that even if planning permission is obtained, the local authority is empowered to impose new conditions. However any person aggrieved by this notice may file an appeal with the Appeals Board. The Local Authority may also impose a Development Charge (s32) on landowners where a local plan effects a change of use or density so as to enhance the value of the land. The converse is where the Local Plan has identified any private land for public purposes which may cause the land to be incapable of reasonable beneficial use. This situation could arise if private land is identified as flood retention ponds in the Local Plan. The landowner may then serve a Purchase Notice on the local authority to purchase his property (s37). However this problem may not arise if the developer voluntarily surrenders a part of land as flood retention ponds. The Local Authority may also declare an area as a Development Area (s38). These are usually areas identified as Action areas in the Structure Plans for which there is a certain level of urgency and social objectives to be achieved. For example severe flood prone, dilapidated areas in the city could be declared a Development Area under s38 of the Act and thereby comprehensively developed. Once the area is declared and gazetted the Local Authority has to acquire the lands by purchase or compulsory acquisition.

Waters Act 1920: This Act is probably the most important law relating to rivers. The law was enacted during colonial times and revised in 1989. The law however does not have national application as it applies to Negeri Sembilan, Pahang, Perak, Malacca, Penang and the Federal Territory. Kedah has its own similar enactment. The Waters Act ascribes the entire property and control of rivers in the State to the Ruler of the State suggesting that the control of rivers is in the hands of the State Government. It was designed to prohibit certain activities affecting rivers such as diversion of water from rivers, pollution of rivers and damage of river banks, for example under s4, the State Authority may direct any person who interferes with the river banks to restore the same. It does however allow for interference to the river with approval or licence from the State Authority. Section 14 of the Act also prohibits any building or structure within 50feet of any bank or flood channel. The agency responsible for implementing the provisions of the Act is the District Office, which again has serious limitations on its enforcement capabilities. It is doubtful that this act has been effectively enforced given the state of our rivers in the country.

National Forestry Act 1984: This Act together with the supporting Forestry Rules 1986 provide for a legal basis for the protection of the Forest. The Act is implemented by the State Forestry Department as forest land comes under the State List of the Constitution. Under s7 of the Act, forest land can be gazetted as Permanent Forest reserve which may be further categorised into areas where no logging is allowed. These include areas which are gazetted as Recreational Forest and areas for Water Catchment preservation. The other categories of permanent forest are areas where controlled logging is allowed. Most of the existing forest areas are found in the upstream of rivers usually on hill lands. Any attempt to convert these areas for urban development will bring about associated problems pertaining to erosion and increased run off. There are however several issues pertaining to the effective implementation of this Act:

- (a) There are several tracts of forested areas including mangrove swamps, wetlands and rainforest that are not gazetted as forest reserves. Obviously there is a need to have an inventory of all forest land and only areas that do not cause serious environmental impacts should be allowed for development. This should be identified at the Structure Plan stage.
- (b) Logging should not be allowed in the upstream river basin areas as this cause serious siltation to the river and as shown in situations in Selangor the enforcement of controlled logging is often difficult due to lack of enforcement personnel and the remoteness of these areas.

- (c) Current EIA requirements only apply to the conversion of hill forest land to urban use covering more than 50ha. and logging covering an area more than 500 ha. There are currently suggestions to reduce the area to 25 ha for hill lands.

Mining Enactment 1936 (FMS cap 147): This enactment only applies to the extraction of metals or minerals from the earth such as tin and gold. It does not cover sand mining or extraction of crude petroleum. There are also several control measures in the Mining Enactment which states that mining operations should not interfere with the river banks unless permitted (s64). There is a need for a licence to discharge water (s65) to a river or water course and this water should be free of hazardous chemicals and excessive solid matter (s74). This Enactment is enforced by the State Director of Lands and Mines and again this department has serious constraints in enforcement and technical personnel to ensure compliance. Current EIA requirements on mining operations only cover new mining areas more than 250ha ore processing works and sand dredging involving an area of more than 50ha.

Environmental Quality Act 1974 : This is a comprehensive piece of legislation aimed at prevention, abatement and control of pollution and the enhancement of the environment. The licensing authority under the Act is the Director General of the department of environment (DOE) (s10). The Act also requires all prescribed premises to be licensed. Traditionally this covered rubber factories, scheduled waste treatment and disposal facilities and crude palm oil processing facilities. Discharges from these facilities are governed by conditions of the licence and regulations established under s51. There are also restrictions on pollution of inland waters (s25) which prohibits any discharge or deposit of any waste unless licensed into any inland water, rivers, drains or lakes. Using the powers conferred under the act, DOE has often insisted on a separate sewer line for industrial effluent to treatment facilities. In several industrial estates where there are common treatment facilities provided within the industrial estate, minor treatment works is done at the premises and often discharged into the storm water drains. The present concession agreement between the Government and IWK is to accept domestic sewage only. The proper treatment and discharge of industrial effluent has to be addressed. Environmental Impact Assessments have to be carried out as part of the project planning exercise for prescribed activities. The 1987 Prescribed Activities Order does not specifically include urban drainage as a prescribed activity. While the EIA was meant to be a preventive measure to safeguard the environment, very often it remains a mitigative measure for projects already approved by the relevant authority. This goes back to the earlier proposition that environment guidelines and environmental planning principles should be

applied at the Development Plan stage i.e. Structure and Local Plans and greater emphasis on environmental planning should be provided at the statutory plan level to ensure sustainable land use policies.

Local Governments Act 1976 : This act was enacted under Article 76(4) of the Constitution for the purposes of ensuring uniformity of law and policy for local authorities. It should be noted that under the Constitution, Local government comes under the State List which gives the State both legislative and executive competence. However some level of Federal control is achieved through the disbursement of development grants and co-ordinating role of the NCLG, the decisions of which are binding on the State. Under s69 the local Authority has powers to prosecute any person who pollutes any river, channel or drain by committing a nuisance or depositing filth. Very often it is difficult to catch the perpetrator especially when there are several squatter settlements occupying river reserves. The lack of public awareness or indifference to the river or drain as a sewer compounds the problem. The Local Authority has also the power to recover any expenses incurred in carrying out any work (s70) to remedy any nuisance, pollution or interference by any person upon the bank of any stream, channel, public drain or other water courses. The Local Authority is given wide powers to make bylaws to keep public places including streams, channels and water courses free from filth and preserve public health. However these bylaws will not have effect unless it is confirmed by the State Authority and duly gazetted. Under s101 (ee) the LA has the power to divert, strengthen and canalise any stream, watercourse subject to consent of the relevant authorities and giving adequate notice and making compensation if it involves acquisition of land. Local Authorities are empowered to collect revenue by imposing the following (s127-132):

- (a) Annual assessment rates on properties.
- (b) Drainage rate to meet the construction cost of the facility only.

There are however legal limits on the amount imposed. Assessment rates may not exceed 35% of the annual value of the property and drainage rates are capped at 5%. These funds collected goes into a Local Authority Fund (s40) that is controlled and administered by the Local Authority. This drainage rate is different from the drainage fees collected by Local Authorities from Developers under bylaws enacted under the Streets Drainage and Building Act 1974.

Streets, Drainage and Building Act : This act which was enacted under Article 76 (4) of the Constitution was aimed at consolidating the provisions relating to the construction and maintenance of street, drains and buildings in local authority areas. The responsibility to construct surface and storm water drains is with the Local Authority which may carry out the task by itself or cause to be made and constructed (s50). In most cases surface and storm

water drains within a development project are built by the developer to the specifications of the Local Authority. If the construction of drainage facilities is by the local authority s51 (1&2) empowers the local authority all cost related to the construction of storm water drains including the cost of acquiring the land. Such cost are to be paid by the frontages who benefit from the improvements when the work is completed. Notwithstanding the above the LA s51 (3) may require the developer of any land to deposit or offer security for storm water improvement before proceeding with the development. The criteria to be considered in determining the amount to be paid by frontagers and developers are:-

- (a) Affected area
- (b) Use of respective premises
- (c) Conditions of the land before, during and after completion
- (d) Degree of benefit to be derived
- (e) Value of previous improvements done by frontages
- (f) Cost of premises voluntarily surrendered

The Act also prohibits buildings to be erected unless surface or storm water drains are provided on such premise (s52). The local authority is also responsible for maintaining, repairing, altering, discontinuing or closing any surface or storm water drains (s53). The Local authority has also to ensure that surface and storm water drains are properly cleared, cleaned and emptied (s54). The Local Authority may set up an Improvement Services Fund to be self administered by the LA (s132). All monies collected or recovered for the construction of drains, culverts and gutters goes into the Fund. Most Local authorities have not set up this fund and monies collected are often incorporated into the Local Authority Fund established under s40 of the LGA. Unlike the LGA, bylaws under the SDBA are made by the State Authority (SA). The SA also has powers to make bylaws on the provision, construction, maintenance and repairs of drains and their connections to sewers (s133 vii & xviii).

Drainage Works Ordinance 1954 : This ordinance was established before independence to consolidate and amend the law relating to drainage works. The definition of drainage works is provided in s2 which includes the construction and maintenance of drains and water courses, embankments, culverts, water gates and access path in drainage reserves. Quite in contrast to the SDBA the responsibility for implementing the Ordinance is with the State Authority and the Drainage Board set up under the ordinance. The SA has to first declare any area in the State as a Drainage Area and specify the boundaries (s3). The SA will then appoint a Drainage Board in respect of every drainage area. The functions of the Board include:

- (a) Hear objection from owners and occupiers
- (b) Extend or alter boundaries of Drainage Areas

- (c) Improvement to existing drainage works
- (d) Proposal for new drainage works

The SA may impose drainage rates to meet the cost of drainage works. Again no rates can be collected until the drainage work is completed (s8) and the mode of collection of this rate is similar to that of the collection of land revenue suggesting that these rates are to be collected by the respective land office.

Earthworks By laws: These bylaws are promulgated under the provisions of S.70A Streets, Drainage Building Act. These bylaws have to be gazetted by the respective State Governments and adopted by respective LA. Under the bylaws powers are given to the local authority to control earthworks to prevent soil erosion, disturbance and pollution. Plans and particulars have to be submitted to the LA for approval before earthworks could proceed. The LA may impose conditions as are necessary:-

- (a) Drainage facilities and the provision of adequate bunds and culverts
- (b) Silt traps are adequately provided and maintained
- (c) Retaining structures are provided
- (d) Slopes protected against soil erosion
- (e) Surfaces of roads are sealed to prevent silt from being washed into water courses
- (f) Fills are compacted

Ministerial Directives and Cabinet decisions: Two key directives on roles of agencies are provided in the Ministerial Functions Act 1969, which prescribes DID's role on river management is on flood mitigation and river conservancy. The other refers to the Cabinet Directive of June 1996 which ascribes the responsibility for all rivers to DID whereas Local Authorities are responsible for all drains within the area. Responsibility in this context covers all aspects of planning, design, construction and management of the facilities. Clearly there was a need to differentiate rivers from drains. The general guidelines followed for identifying DID Rivers are:

- (a) rivers and tributaries whose catchment comprise a mixture of agricultural drainage and urban drainage areas

- (b) rivers and tributaries whose catchment extends over a number of local authorities
- (c) other natural rivers and tributaries which do not satisfy the above but upon the specific request of the Local Authority.

Rivers and drains under local authorities: All drains (trunk, secondary, tertiary) and rivers and tributaries that do not meet the conditions to qualify as DID rivers.

Obviously this requires dialogues with local authorities and a need to establish an inventory of rivers and drains. Local authorities will have to bid for Federal funds from the MHLG with respect of urban drainage and rivers within its jurisdiction. This will require a definitive programme at the Ministry level (MHLG) to set up a fund for urban drainage construction activities. As construction cost for drainage facilities is high it may be necessary for local authorities to impose drainage rates as provided under the Local Governments Act. The Ministry's current allocations to Local authorities are only for cleanliness of drains and minor drainage improvement work.

The increased workload to DID will also have to commensurate with increased development funds to be sourced from the Federal Level by expanding the scope and function of the Drainage Division of DID. Other sources could come from the State through the imposition of drainage contribution at the conversion of land use. This revenue is collected by the State and disbursed to the State DID for drainage works. Other options include the imposition of drainage rates under the Drainage Works Ordinance 1954 which have been currently applied only in gazetted agricultural drainage areas.

A summary of related legislation and the implementing agencies pertaining to urban drainage is as enumerated below. A legislative review of the various laws is shown in Appendix 1.

Legislation	Implementing Agency / Authority
<u>Landuse and Land Conservation</u>	
1. National Land Code	State Authority/ State Land Office State Planning Committee/ Local Planning Authority State Land Office
2. Town and Country Planning Act 1976 including Tree Preservation Order	
3. Land Conservation Act 1960	
<u>Natural Resources</u>	
1. National Forestry Act 1984	State Department of Forestry State Authority District Office State Director of Lands and Mines Selangor Waters Management Authority
2. Water Supply Enactment No 3 of 1955	
3. Waters Act 1920 revised 1989	
4. Mining Enactment 1936	
5. Selangor Waters Management Authority Enactment 1999	
<u>Environment Control and Planning</u>	
1. Environmental Quality Act 1974	Department of Environment Department of Environment Department of Environment
2. Environmental Quality (Prescribe Activities) Environmental Impact Assessment, Order 1987	
3. Environmental Quality Regulation	
<u>Management of Urban Drainage</u>	
1. Local Government Act 1976	Local Authority Local Authority State Authority / Drainage Board Local Authority
2. Streets, Drainage, Building Act 1974	
3. Drainage Works Ordinance 1954	
4. Earthworks By Laws	

3.2 Other Related Guidelines

Various agencies responsible for development and environmental planning have produced monographs and guidelines especially the DID, DOE and JPBD. While these guidelines have no legal relevance, they are applied as conditions to be complied at the Layout Plan stage. Some of the relevant guideline include:-

(1) **Urban Drainage Design Standards and Procedures in Malaysia 1975 –DID**

This manual was aimed at setting about a common standard of drainage amenity for all urban communities. The manual prescribes a design return period of 2-5 years for initial drainage systems which includes roadside drains, culverts and storm water pipes; and a 100 year return period for major drainage systems for major drainage channels. It also prescribes the drainage reserves necessary according to catchment sizes.

(2) **Guidelines on Riverfront Development - DID**

This guideline prescribes the necessary river reserves depending on the river hydraulics and the width of the river with a minimum reserve of 15m in urban areas. The guideline also prescribes the need for detention ponds for development exceeding 10ha whereby 3-5% of the total development area is set aside for such purposes. Some of the guidelines on riverfront development are as follows :

- (a) Realignment of the river course is not encouraged and all development along the river should be planned in an integrated manner with the river.
- (b) When submitting the development proposal, the developer is also required to submit beautification proposals for the river reserve. The river reserve which is developed as a park recreational area may constitute part of the open space requirement that is to be met by the developer.
- (c) Retention pond facilities must be provided for development areas larger than 10ha. to avoid direct discharge into the river.
- (d) No buildings and permanent infrastructure are permitted on the river reserve.
- (e) The design criteria of the platform levels of buildings on the river corridor in urban area must meet the 100 years return period.

- (f) Buildings which incorporate double frontage and river frontage will be encouraged.
- (g) The river view must not be blocked by tall buildings.
- (h) The river reserve must be accessible to the public.
- (i) Promote and retain the natural flora and fauna found in the river.
- (j) Promote recreational use of the river.
- (k) Avoid too many discharge outlets into the river.
- (l) The design of bridges should allow for sufficient headway for the passage of tour boats.

In addition to the above, the Drainage and Irrigation Department (JPS) has specific guidelines on river reserve requirement. The river reserve is necessary for a number of reasons:

- (a) space to allow the meander of the river
 - (b) serves as space to construct retaining walls/embankments
 - (c) serves as a flood plain
 - (d) serves as a buffer against erosion
 - (e) temporary storage area for dredged silt
 - (f) to facilitate operations and maintenance work
 - (g) landscaping
- (3) Guidelines on the Prevention and Control of Soil Erosion and Siltation in Malaysia - DOE 1996

These guidelines were prepared to address widespread soil erosion problems arising from housing and infrastructural development activities. These guidelines are applied in establishing the Erosion and Sediment Control Plan (ESCP) which is part of the Environmental Management Plan that is required by DOE for major development projects.

- (4) Use of Flood Detention Ponds as part of open space- JPBD 1997

Flood detention ponds (wet type) can be incorporated as part of the 10% open space requirement of any development if the detention pond and its surroundings are

developed as a recreational pond. The pond area should only constitute a maximum of 30% of the total open space needed in the development.

4. RELEVANT ISSUES AND STRATEGIC DIRECTIONS

In a recent survey reported by the NST June 5, 1999 on “ Save Forest, save rivers, safe water survey”, 82% of the respondents consider the rivers in their area as polluted. Only 2% said it was clean. The causes of the problem were “lack of enforcement (29%),” indiscriminate garbage disposal (21%), and excessive land development (17%). Other potential concerns are pesticide contamination although this is not so apparent. Although the survey was addressed specifically to rivers, it underpins the complex problems related to water resource management and urban drainage in the country. Some of the issues raised in this preliminary paper are:

- (a) Urban Drainage should not be viewed in isolation but as part of the wider context of river management. Ultimately all final discharge goes to the river or the sea and policies affecting river management will have a direct impact on urban drainage. Newer concepts on urban drainage that favours point source control should be encouraged instead of the Quick Disposal System that is currently used.
- (b) It is only in recent years that urban drainage has become a matter of importance in the country. In the past most urban drainage works were related to flood mitigation and not viewed in an integrated manner with urban development.
- (c) The laws pertaining to urban drainage are fragmented and clear areas of responsibilities and funding procedures are not yet clearly established. Part of the problem is the relegation of drainage and irrigation on the Concurrent List of the Federal Constitution and local authorities on the state list. A clear understanding on the Federal and State roles particularly with respect to executive functions have to be defined.
- (d) As the country becomes more urbanised the role of DID in the future may be directed towards non agricultural sectors such as river management, coastal management and erosion and urban drainage in the future. This can be perceived from the Cabinet Directive of June 1996 which requires DID to be responsible for all rivers in Local Authority Areas. All these rivers play an

important urban drainage function in the city. As such it may be necessary to expand the scope and function of the Drainage Division of the DID.

- (e) The review of the current laws seems to suggest that rivers and drains come within the purview of the state. As such there may be need to establish a Committee or a Board at the State level on all policy matters pertaining to water resource management including rivers and urban drainage. A model for this is Selangor which has set up the Water Resources Management Board to ensure that all relevant agencies works are co-ordinated to protect rivers.
- (f) At an operational level, the Cabinet Directive of June 1996 allocates functional responsibilities of river and drains to DID and Local authority respectively. Obviously there is a need to develop a technical criteria for differentiating the two, for example, rivers with a catchment of less than 2sqkm could be classified as a drain. Notwithstanding this an inventory of all drains and rivers in the Local authority areas has to be established. A preliminary differentiation could be the guidelines suggested by DID.
- (g) Urban drainage is very much affected by landuse developments. At a policy level all matters pertaining to the development of land in the State lies with the State Planning Committee established under the Town and Country Planning Act. With increased functional responsibilities given to DID on river management and urban drainage it may be necessary to designate the State Director of DID as a permanent member of the SPC.
- (h) The responsibility of providing for urban drainage appears to be the function of the Local Authority as provided in the SDBA 1974. These responsibilities include construction, maintenance, control of effluent and powers of prosecution. However very few local authorities have the personnel nor the funds for undertaking this responsibility. Very often even trunk drains are built by the Developer at his expense and maintenance responsibilities taken over by the Local authority once the facility is surrendered over. There are several provisions within the SDBA for the LA to play a more proactive role in the construction and maintenance of drainage facilities. This will require initial capital outlay and trained technical personnel to manage and supervise the project. This funding could come from federal funds of the Ministry of Housing and Local Government and supplemented through the imposition of drainage rates under the Local Governments Act 1976. As for technical personnel, the

planning, design and supervision of construction could be undertaken by the State DID at the request of the Local Authority.

- (i) In line with the need to establish federal funding for urban drainage, there is a need to expand the scope and functions of the Local Government Department of MHLG to play a proactive role on all policy matters pertaining to urban drainage at the Federal Level. There is also a need to establish a programme for urban drainage projects for local authority areas and defend the budget with EPU and Treasury.
- (j) The various rates and levies currently collected has to be rationalised. This include the drainage contribution which is imposed by the State at the conversion stage, the drainage fee imposed by local authorities at the layout and building plan application stage, the drainage rate imposed under the LGA, the drainage rate imposed under the Drainage Works ordinance and cost recovery measures suggested under s51 of the SDBA for cost relating to the construction of storm water drains including the cost of acquiring the land.
- (k) There need to be a long term programme to prepare integrated urban drainage plans for all local authorities in the country in tandem with the current programme to prepare Local Plans.
- (l) The SDBA only provides for cost recovery of construction cost of drainage works and does not include the cost of maintenance. This can only be recovered from the drainage rates imposed under the LGA.
- (m) It should be noted that bylaws on drainage are to be made by the respective SA and not the LA under the SDBA. For purposes of uniformity it may be expedient to have uniform drainage and earthworks by laws for all local authorities in the Peninsular, similar in concept to the Uniform Building By-laws (UBBL). This would mean that such by-laws will have to be approved by the NCLG prior to adoption by the respective State Governments.
- (n) The quality of urban drains and rivers is an important consideration and enforcement capabilities of both the land office and District office are often limited, particularly with reference to the Mining Enactment, Sand Mining permits and Land Conservation Act. Enforcement responsibilities of these acts have to be carried out by the relevant agencies or alternatively shouldered by the local authority. Similarly enforcement needs of the Environmental Quality

Act on pollution control should be strengthened by having DOE branches at District Level.

Several of these issues raised in this chapter will be explored further in the next phase of the study (See Volume 4) which will suggest recommendations on a suitable institutional set up for integrated urban drainage planning and management in the country.