Policy 11: Land Development Guidelines

Section 13 Water Sensitive Urban Design (WSUD) Guidelines

13.12 Pretreatment

Table of Contents

13.12.1 Introduction

Pretreatment for stormwater quality improvement to protect receiving waters or subsequent treatment measures downstream within the treatment train from coarse sediment, solid and floatable contaminants is to be achieved by the installation of a Gross Pollutant Device (GPT).

There are many differing types of gross pollutant traps that are commercially available. The Urban Stormwater: Best Practice Environmental Guidelines has evaluated and summarized all currently available GPT products based on the following criteria:

- treatment performance for a range of sediment sizes, gross pollutants and attached contaminants;
- capital and maintenance costs;
- hydraulic losses.

13.12.1.1 Gross Pollutant Sources

All forms of development and land use generate gross pollutants of one kind or another. In residential areas, the bulk of the volume of pollutant could be grass clippings, etc. with only small volumes of plastic, bottles, cans, etc. Residential areas also contribute pollutants as a result of household activities such as renovation works, painting, pet droppings, detergents and oils from car washing. Studies and logic indicate that a significant proportion of gross pollutants discharged to waterways are generated by residential land, as this type of development constitutes a significant proportion of the land use in most catchments.

In tourist areas and general commercial and office areas, the type of pollutant is more likely to be floatable (ie. cans, cigarette butts, paper, food wrappers, etc) and motor vehicle generated pollutants (eg. oils, brake linings, etc). These items, when discharged to waterways are highly visible to the public. The volume of pollutant may be small in comparison with pollutants generated elsewhere in the system, but degrade the appeal of the waterway.

Industrial areas are more likely to generate gross pollutants such as polystyrene, wood particles, cardboard, wrappings, etc. Industrial sites are also more likely to generate spills of oil, chemicals and similar liquid contaminants, which are not generally trapped by physical gross pollutant control devices.

Shopping centre developments are more likely to concentrate pollutants related to food, packaging and motor vehicles (parked vehicles leak oils, cars deposit brake linings, etc).

Park Living and Rural developments are likely to generate volumes of organic matters (ie. grass, leaves, etc) and chemical pollutants associated with farming type land use.

In assessing the source of type of pollutant to be collected, consideration needs to be given to potential change in pollutant source and type of pollutant which may occur as a catchment develops or is redeveloped.

13.12.2 Design Considerations

13.12.2.1 Design Objectives

The design objective will vary from one location to another and will depend on site characteristics, development form and the requirements of the receiving ecosystems. It is essential that these objectives are established as part of the conceptual design process and approved by GCCC prior to commencing the engineering design.

Primarily, GPT system design layout should have a minimum footprint size to minimise disturbance to the existing park and associated park infrastructure and services.

For a design to be acceptable, it will need to satisfy the following minimum requirements:

1. Treat a minimum design flow of 1 in 6 month ARI so that the GPT will treat approximately 90% of the annual volumetric flow for the subject drainage system.
2. Capture a minimum of 95% of all solid gross pollutants (including floatables) greater than 2mm in any dimension and sediment greater than 0.125mm in diameter.
3. Prevent resuspension of captured contaminants during flows in excess of the design ARI.
4. Is suitably located immediately adjacent to a public road reserve or park or drainage reserve with a suitable access.

13.12.2.2 Selecting Type of Gross Pollutant Control Device

The selected GPT must be a direct circular screen-type (refer to description in the **Urban Stormwater: Best Practice Environmental Guidelines**) and incorporate a mechanism to ensure the filtration screen is self-cleansing (ie. non-blinding). The filtration efficiency and effectiveness of the GPT must be sustainable during intervals between cleaning and the treatment flow capacity and hydraulic performance must not be reduced by accumulation of contaminants within the captured area.

The GPT must provide an offline storage volume for captured contaminants, which is separate and additional to the screening area to allow intervals between cleaning and maintenance to be maximized. The design of the GPT must prevent re-suspension of captured contaminants during design and high flow conditions.

The installation must be designed to allow for the GPT to be disconnected from the adjacent stormwater pipes/ channel for the purposes of cleaning and maintenance, by means of the installation of isolating devices such as a water control gate, penstock, dropboard or equivalent. The isolating devices must:

- prevent flows entering both the inlet and outlet and must allow low flows to pass the diversion weir of the GPT where applicable;
- be engaged/ actuated from the surface (ie. not required confined entry trained staff to engage) by equipment that remains on-site or by Council's current portable electric penstock actuators (refer Watergates SP Actuator model PA02 with 33mm square socket);
- access to all components of the isolating devices for routine maintenance, such as lubrication, must be provided.

The results of independent full-scale field testing of hydraulic performance and treatment effectiveness of the GPT must be provided.

13.12.2.3 Sizing

For the sizing of the adopted GPT, detailed hydraulic calculations will need to be prepared to establish the hydraulic response of the drainage system downstream and upstream of the devices as follows:

a) New Drainage - Gross Pollutant Control Devices to be installed

Where a GPT is to be installed on a new drainage system the full hydraulic losses through the device are to be assessed and the drainage system and GPT sized accordingly to prevent surcharge at the pit/ manholes located upstream of the device during a Q_2 event.

b) New Drainage - Gross Pollutant Control Devices to be retrofitted

Hydraulic loss through the GPT is to be equal to 1.5 times the velocity head at the potential site for a GPT, or at the outlet of the system for a Q_2 event.

Where it is proposed to retrofit a GPT on an existing stormwater drainage system the hydraulic assessment will need to consider:

- potential surcharge flows;
- potential overland flowpaths;
- upsizing of Gross Pollutant Control Devices to reduce hydraulic losses;
- impacts on road, reserves and private lands upstream and downstream of the Gross Pollutant Control Device.

13.12.2.4 Siting

A GPT should only be located at sites where access for inspection and maintenance can be carried out using Council's standard maintenance vehicles. Adequate access and hardstand areas for maintenance plant (vacuum loader, crane, tippers, etc) from the street to the device must be provided as per GCW's requirements for pump stations must be provided (refer to Council's **Standard Drawing N° 05-07-401**). The location of GPTs in swampy areas, at the bottom of embankments or other inaccessible locations is not permitted. Where practicable, GPT should be located adjacent to sewers and not be located near electrical equipment.

No GPT can be installed within a submerged pipe network, due to a decrease in treatment effectiveness. This includes temporary ponding within stormwater detention basins immediately downstream of the GPT.

13.12.2.5 Flow Management

GPT design should aim to maximise the captured treatable flow rate whilst causing zero afflux in the hydraulic grade line (HGL) immediately upstream of structure and minimise system hydraulic head loss associated with both the design treatable flow and the major bypass flow.

Where possible, 'above design' flows will bypass the GPT. Design of the adopted GPT needs to ensure that the risk of system failure is extremely low and that, in the event of system failure, an alternative bypass system can accommodate the design Q_{100} ARI flows.

13.12.2.6 Durability

The design and construction of the GPT and weir system must be in accordance with Australian Standards for a minimum 20 year design life to suit the site conditions. Major structural design and replaceable operational elements must have a 50 year design life.

13.12.2.7 Trafficability and Aesthetic Considerations

As design objectives vary depending on site characteristics, the use of gross pollutant trapping devices also varies, therefore with regards to some applicable devices, trafficability and aesthetic characteristics are important.

Design and construction of the device roof structure needs to be trafficable and capable of supporting loading by heavy vehicles (W7 design wheel load).

Access lids constructed from materials of suitable strength and durability to resist anticipated loads and pedestrian slippage. The lids shall be removable by hand and include a safe, secure locking mechanism to prevent unauthorised access to the device.

Where possible, manholes and lids are to be located in already existing 'hard surfaced' areas to minimise 'visual impact' in the park, (eg. footpaths, road carriageway).

Access lids should be design with an 'architectural' finish sympathetic to the surrounding area.

13.12.2.8 Safety

The provision of functional and safe access for plant and personnel for maintenance, replacement and cleanout purposes is required.

All proposed GPTs must be fitted with suitably designed lockable access covers approved by Council, which prevent entry of unauthorised persons.

Consideration should be given to the GCCC report **Stormwater Inlet/ Outlet Screens ER295/ 249/ 46/ 02**.

13.12.2.9 Maintenance Management Plans

A supplier-certified ongoing maintenance management plan (MMP) that must be implemented immediately following construction to ensure the device is cleaned adequately to ensure treatment effectiveness is maximised and bypass of contaminants is minimised. Based on the maintenance requirements during the on-maintenance period, the contents of the MMP that is handed to GCCC at on maintenance must describe the cleaning method/ procedure, the cleaning frequency required and the relevant costs. The GPT and maintenance programming must be able to demonstrate that captured contaminants can be stored so as not to cause significant adverse environmental impact or nuisance (eg. odours and putrefaction).

13.12.3 Design Process

Submissions to Council shall include:

1. Catchment plan together with hydrological and hydraulic calculations. Calculations should generally commence at the outlet of the drainage system to a waterway under the control of Council or other location nominated.
2. Sketches/ plans of the proposed GPT.
3. Facts detailing the performance of the GPT Device.
4. Details of the verification procedure to be applied by Council to confirm that the GPT is performing as stated by the designers.
5. Copies of reports on the performance of the device from laboratory and/or field trials.

6. Details of locations where similar GPT have been constructed, including name of authority and contact telephone number of person who can provide verification as to the performance of the Gross Pollutant Control Device in service.

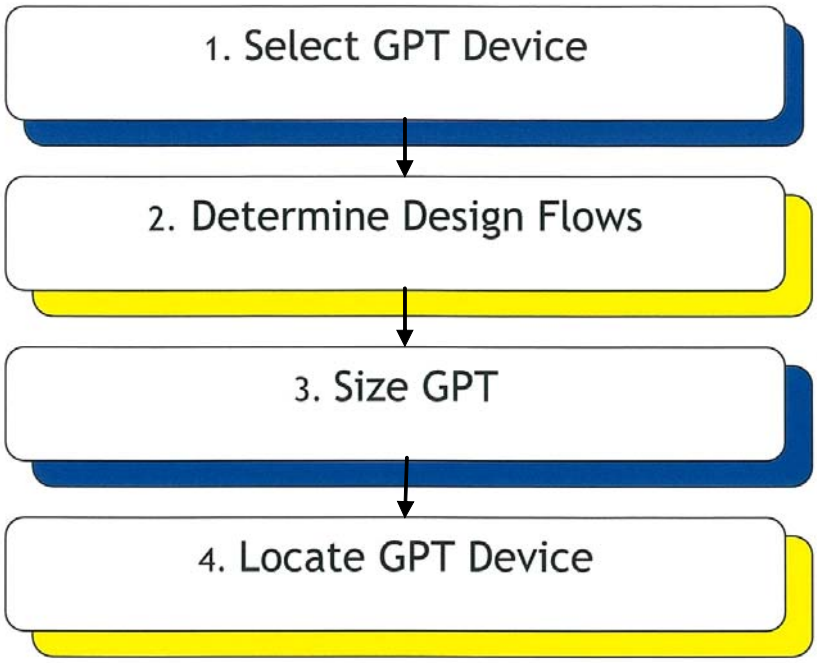
7. Details of cleanout/ maintenance procedures to be adopted. Cleanout/ maintenance will need to utilise plant and equipment currently in use by Council. Requirements for use of specialised equipment not currently available to Council's maintenance operations may preclude the use of the GPT.

8. Structural calculations showing the device, the roofs and access covers are designed for a W7 traffic load. Council prefers access covers to be of checker plate or similar construction. Access covers are to be large enough to enable vertical removal of components where required.

9. Inspection/ maintenance access lids shall be provided to the GPT. The lids shall be 900mm x 600mm in size and shall have recessed hinges and padlocks. The inspection access lids are required to all chambers and chamber areas where separated by dividing walls or weirs.

10. Maintenance drop boards are required to isolate the device from upstream and downstream flows. The drop boards must stay with the device and designed to be lowered in position within Workplace Health and Safety lifting requirements.

The following sections detail the design steps required for gross pollutant traps. Key design steps are:



13.12.3.1 Step 1: Selecting Gross Pollutant Control Device

Selection of the type of gross pollutant trapping device for a particular application must occur as part of the conceptual design process (ie. Site Based Stormwater Management Plan). The type of gross pollutant device will be selected by assessing the site conditions against the relative merits of the different available devices.

Where a submission and/or design for a GPT proposes a device which is not on Council's approved product list the design will need to be submitted to Council to assess:

- the performance, efficiency and suitability of the device;
- the potential cost of maintenance of the device.

Detailed calculations and test results (laboratory and field) will need to be submitted to provide verification of the claims being made as to performance, efficiency, suitability and maintenance costs for the device proposed.

13.12.3.2 Step 2: Determining Design Flows

To configure the gross pollutant trapping device and the flow management elements the following design flows generally apply:

- design operation flow typically a minimum 1 in 3 month ARI;
- above design flow where possible, will bypass the infiltration systems via an alternative bypass system that can accommodate the design Q_{100} ARI flows.

13.12.3.3 Step 3: Size Gross Pollutant Control Device Sizing

An assessment of the required design recurrence interval for the sizing of GPT device has established that GPT devices should be sized to treat a storm event having a minimum recurrence interval of 1 in 3 month.

The use of an empirically derived flow rate based on a rainfall excess applied over the catchment is not acceptable (ie. first flush is 20mm of rainfall).

Design rainfall for sizing of the gross pollutant control device is to be based on the Intensity Duration Data in **Clause 3.5.7.6** and **Table 13.12-A** for calculation of rainfall less than one (1) in one (1) year, ARI unless otherwise approved.

Table 13.12-A: Table Proportions for Determination of Rainfall for ARI's less than 1 in 1 year

Design ARI	1 month	2 month	3 month	4 month	6 month	9 month	12 month
Proportion of 1 in 1 year ARI	0.25	0.40	0.50	0.60	0.75	0.9	1.0

At specifically defined locations it may be necessary to design GPTs to treat flows from a recurrence interval greater than the 1 in 3 month event. This requirement will be based on an assessment of the capacity of the receiving waterway downstream of the GPT to accept a pollutant load and the hydraulics of the drainage system.

13.12.3.4 Step 4: Confirm Location of Gross Pollutant Control Device:

The location for installation of GPT should be based on an assessment of the stormwater drainage catchment both upstream and downstream of the proposed siting.

The assessment should:

- identify the size, hydrological and hydraulic response of the catchment;
- identify the source and type of pollutants likely to be generated by the catchment both present and in the future.

GPT devices are to be located such that a downstream overland flow path through public road or open space is available to carry any surcharge flows which may occur by blockage of the GPT device or other causes. A downstream overland flow path through private land or easement is not appropriate. GPT's should be located so that they can function under non-submerged conditions.

13.12.3.5 Design Calculation Summary

The following is a Design Calculation Summary Sheet for the key design elements of a GPT to aid the design process.

Gross Pollutant Trap	Calculation Summary	
Calculation Task	**Outcome**	**Check**
Catchment Characteristics		
Catchment Area Contributing	ha (or m^2)	
Catchment Land Use (ie. Residential, Commercial, etc)		
Design Storm Event (Minor or Major)	year ARI	
1 Confirm Design Objectives GPT Type		
Confirm Design Objectives as Defined by Conceptual Design		
Confirm Treatment Performance		
GPT appropriate to pollutant types and land use?		
2 Determine Design Flows		
Minor Storm	year ARI	
Major Storm	year ARI	
Time of Concentration		
(Refer to **GCCC Land Development Guidelines** and **QUDM**)	minutes	
Identify Rainfall Intensities		
Minor Storm	mm/hr	
Major Storm	mm/hr	
Design Runoff Coefficient		
Minor Storm		
Major Storm		
Peak Design Flows		
Minor Storm	m^3/s	
Major Storm	m^3/s	
3 Size GPT		
Hydraulic losses assessed and no surcharge at upstream pits/ manholes?		
Appropriate size for design storm?		
4 Confirm Location of GPT		
Access for inspection and maintenance provided?		
Integrated within surrounding environment (eg. open space)		

13.12.4 Construction and Establishment

There exist a number of challenges that must be appropriately considered to ensure successful construction and establishment of a GPT. These challenges are best described in the context of the typical phases in the development of a Greenfield or Infill development, namely the Subdivision Construction Phase and the Building Phase (see **Figure 13.12-A**).

a) Subdivision Construction Phase

Involves the civil works required to create the landforms associated with a development and install the related services (roads, water, sewerage, power, etc.) followed by the landscape works to create the softscape, streetscape and parkscape features. The risks to successful construction and establishment of the WSUD systems during this phase of work have generally related to the following:

- construction activities which can generate large sediment loads in runoff;
- construction traffic and other works can result in damage to the GPT structure.

Importantly, all works undertaken during Subdivision Construction are normally 'controlled' through the principle contractor and site manager. This means the risks described above can be readily managed through appropriate guidance and supervision.

b) Building Phase

Once the Subdivision Construction works are complete and the development plans are sealed, then the Building Phase can commence (ie. construction of the houses or built form). This phase of development is effectively 'uncontrolled' due to the number of building contractors and sub-contractors present on any given allotment. For this reason, the Allotment Building Phase represents the greatest risk to the successful establishment of WSUD.

13.12.4.1 Staged Construction and Establishment Method

To overcome the challenges associated within delivering WSUD, a Staged Construction and Establishment Method should be adopted (see **Figure 13.12-A**):

Stage 1: **Functional Installation**	Construction of the functional elements and structures associated with the GPT at the end of Subdivision Construction (ie. during landscape works) and the installation of temporary protective measures (ie. stormwater bypass system).
Stage 2: **Sediment and Erosion Control**	During the Building Phase the temporary protective measures preserve the functional infrastructure of the GPT against damage.
Stage 3: **Operational Establishment**	At the completion of the Building Phase, the temporary measures protecting the GPT can be removed and the system allowed to operate in accordance with the design intent.

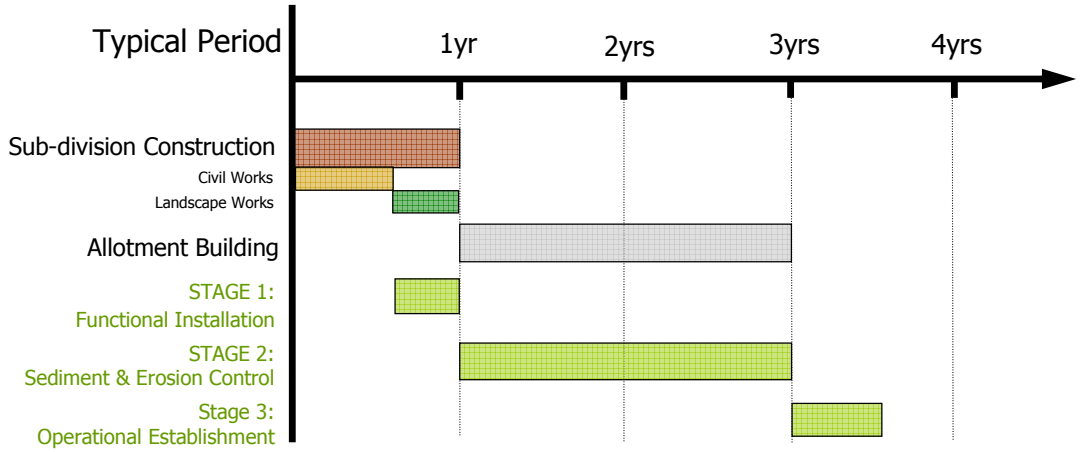


Figure 13.12-A: Staged Construction and Establishment Method

a) Functional Installation

Functional installation of the GPT should occur at the end of Subdivision Construction where possible, however some GPT types will be required to be constructed at the time of the installation of the stormwater drainage system (eg. in-line underground units). Installation would generally involve:

- installation of the inflow and overflow/ bypass structures;
- flow to be diverted around GPT to ensure sediment laden stormwater flows 'bypass' the system;
- place erosion and sediment controls upstream of the GPT to exclude silt and restrict access.

b) Sediment and Erosion Control

The erosion and sediment controls and the bypass measures are left in place through the allotment building phase to ensure sediment laden waters do not enter and fill the GPT.

c) Operational Establishment

At the completion of the Building Phase the temporary measures (ie. stormwater bypass) can be removed and the GPT allowed to operate.

13.12.5 Maintenance Requirements

The maintenance of GPT System must be able to demonstrate that captured contaminants can be stored so as not to cause significant adverse environmental impact or nuisance (eg. odours and putrefaction).

The recurrent cost of maintenance/ cleanout of the GPT Device is significant to Council and the maintenance/ cleanout procedure to be adopted for the Gross Pollutant Control Device will need to utilise plant and equipment currently used by Council's maintenance operations.

The appropriate management of gross pollutant trapping devices requires both the installation of design features appropriate efficient maintenance and a Maintenance Management Program.

13.12.5.1 Design Requirements for Maintenance and Cleanout

1. The design of any removable sump or basket collection system must ensure that floatable contaminates do not overspill the basket during lifting/ cleanout operations.
2. Design should make provision to enable the device to be cleaned by a mechanical vacuum induction truck and basket lift-out, with plant that is readily available for use in the Gold Coast area. The mechanical basket lift must also ensure no loss of captured pollutants during cleanout.

13.12.5.2 Maintenance Management Program

Provide a Maintenance Management Program to monitor the performance of and service the given gross pollutant trapping device.

In order to ensure that maintenance of a proposed device is considered in sufficient detail at the design stage, designers will be required to submit a Maintenance Plan to Council. This Plan would be used by Council's maintenance personnel if the device is to be taken over by Council, or reviewed by Council to ensure that sufficient consideration has been given to maintenance of the GPT.

The Maintenance Plan should be in the form of a short report and include the following information:

- the location and type of device proposed;
- who is going to perform the routine maintenance and who will incur the costs of maintenance;
- what parts of the device are to be cleaned and how;
- type of maintenance and likely frequency;
- what, if any, machinery is required to maintain the device;
- expected maintenance and inspection frequency;
- expected maintenance costs or other resource requirements;
- access issues such as locked gates, entry through private property, etc. including contact telephone numbers;
- any environmental safeguards required during cleaning. (ie. hay bales required to filter stormwater drained from device);
- occupational Health and Safety issues (ie. is confined spaces accreditation required to clean the device);
- alternatives to proposed cleaning method (ie. device may be cleaned by lifting out baskets by crane or by vacuum truck);
- any other information that is important to the routine maintenance of the device;
- monitoring, measurement, recording and reporting of system capture performance.

A level of maintenance and cleanout to ensure the GPT system operates at the design level of performance to maximise pollutant capture without causing adverse environmental or hydraulic impacts should be provided. Site visits and the monitoring of GPT capture performance and contaminant volumes, should be carried out on a monthly basis and also following any significant rain event (ie. ≥ two month Average Recurrence Interval (ARI) and following five consecutive days of 'steady' rainfall).

Allow for the costs of collection, transport and delivery of captured gross pollutants to a Council approved waste disposal facility. Unless instructed otherwise waste is to be disposed of at the following locations:

- gross solid non-putrescible waste –Council's Labrador landfill facility;
- putrescible waste – Council's Stapylton waste facility;
- liquid waste – Council's Coombabah Waste water treatment facility.

As part of the device cleanout, undertake monitoring, and recording of the captured pollutant quantities and waste characterisation (ie. weight and volume) including but not limited to the following:

- large floatable and non-floatable litter;
- grass clippings and other vegetative matter;
- coarse sediments (>0.125mm);
- fine sediments (≤0.125mm).

Where monitoring of the GPT cleanout is required, allowance should be provided for and undertake the necessary on-site or laboratory processing to separate the contaminants into the above classifications for analysis purposes.

Following construction of a developer initiated SQID, Council may be willing to take operational control of the device(s). The hand-over of SQIDs to Council should be discussed during the early stages of the project with Council's development assessment team to determine the likelihood of Council taking control of the device.

Before Council take over any device(s) the following must be completed:

1. 'As-constructed' plans of the device(s) must be submitted to Council.
2. The device(s) must have been operating for at least six months and optimally has been cleaned at least once (this will provide Council with an indication of the maintenance frequency and costs associated with the device).
3. A Maintenance Plan has been prepared and submitted to Council.
4. Council has inspected the device to confirm that it is in an operational state.
5. Where water quality monitoring has been required by Council, then monitoring results shall be submitted to Council for review.

Until written approval is received from Council indicating that the device has been taken over, the developer retains responsibility to ensure routine maintenance is performed.

13.12.6 Checking Tools

This section provides a number of checking aids for designers and Council development assessment officers. The following checking tools are provided on the following pages:

- Design Assessment Checklist;
- Construction Inspection Checklist (during and post);
- Operation and Maintenance Inspection Form;
- Asset Transfer Checklist (following 'on-maintenance' period).

Figure 13.12-B below shows the stages of the development approval, construction and establishment and asset transfer process and which checklists should be used at each stage.

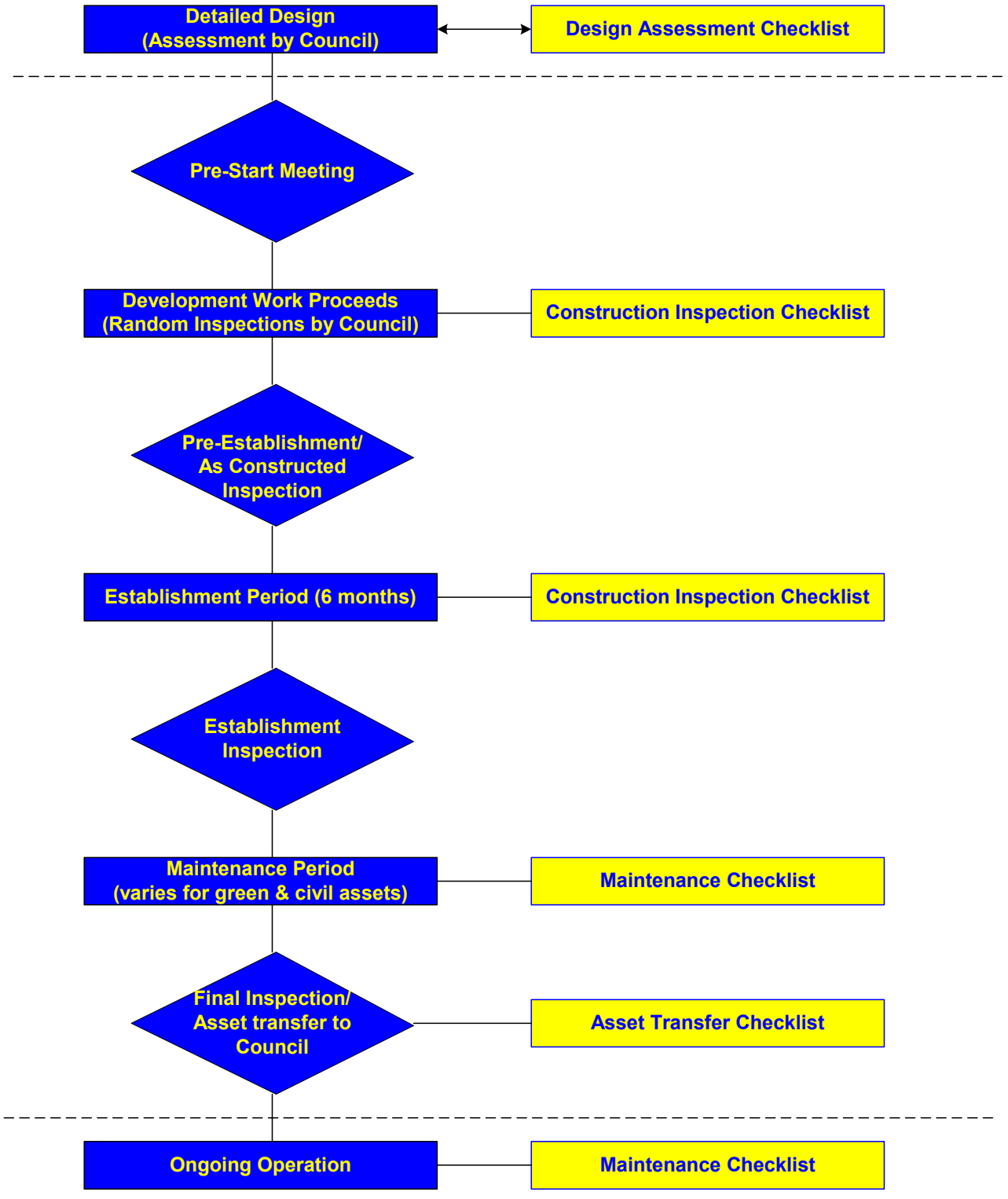


Figure 13.12-B: Development Approval and Handover Stages – Appropriate Checklists

13.12.6.1 Design Assessment Checklist

The design assessment checklist presents the key design features that are to be reviewed when assessing the design of an infiltration system. These considerations include configuration, safety, maintenance and operational issues that need to be addressed during the design phase. If an item receives an 'N' when reviewing the design, referral is to be made back to the design procedure to determine the impact of the omission or error.

In addition to the checklist, a proposed design should have all necessary permits for its installation. Council development assessment officers will require that all relevant permits are in place prior to accepting a design.

13.12.6.2 Construction Checklist

The construction inspection checklist presents the key items to be reviewed when inspecting a GPT during and at the completion of construction. The checklist is to be used by Construction Site Supervisors and local authority Compliance Inspectors to ensure all the elements of the infiltration measure have been constructed in accordance with the design. If an item receives an 'N' in Satisfactory criteria then appropriate actions must be specified and delivered to rectify the construction issue before final inspection sign-off is given.

13.12.6.3 Maintenance Checklist

The maintenance checklist form should be used as an example to base a maintenance inspection for a GPT. It should be kept as a record on the asset condition and quantity of removed pollutants over time.

13.12.6.4 Asset Transfer Checklist

Land ownership and asset ownership are key considerations prior to construction of a stormwater treatment device. A proposed design should clearly identify the asset owner and who is responsible for its maintenance. The proposed owner should be responsible for performing the asset transfer checklist. For details on asset transfer to specific to each Council, contact the relevant local authority. The asset transfer checklist provides an indicative asset transfer checklist.

GPT Design Assessment Checklist

GPT Location:		
Hydraulics:	Design Operational Flow (m^3/s):	Above Design Flow (m^3/s):
Area:	Catchment Area (ha):	

Treatment	**Y**	**N**
Treatment performance verified?		
GPT Structure	**Y**	**N**
Appropriate hydraulic calculations and IFD used?		
GPT capacity sufficient for maintenance period?		
Maintenance access provided? Refer to **Section 13.12.2.4**		
Compliant with **GCCC Grating Guidelines**? (**GCCC Report: Stormwater Inlet/ Outlet Screens ER295/ 249/ 46/ 02**)		
Public access to system prevented?		
Drainage facilities/ dewatering provided for cleanout?		
Overall flow conveyance sufficient for design flood event? Refer to **Sections 13.12.2.5**, **13.12.3.2** and **13.12.3.3.**		
No head loss in drainage system?		
No surcharge upstream?		
Bypass sufficient for conveyance of design event? Refer to **Section 13.12.2.5**		
Comments		

GPT Construction Inspection Checklist

Asset I.D.:		**Inspected by:**	
Site:		**Date:**	
		Time:	
Constructed By:		**Weather:**	
		Contact During Visit:	

Items Inspected	Checked Y	Checked N	Satisfactory Y	Satisfactory N	Items Inspected	Checked Y	Checked N	Satisfactory Y	Satisfactory N
During Construction and Establishment									
A. Functional Installation					**Structural Components**				
Preliminary Works					7. Location and levels of inlet and outlet and overflow points as designed				
1. Erosion and sediment control plan adopted					8. Pipe joints and connections as designed				
2. Traffic control measures					9. Concrete and reinforcement as designed				
3. Location same as plans					10. Inlets appropriately installed				
4. Site protection from existing flows (flows diverted around site)					**B. Sediment and Erosion Control**				
Earthworks					11. Stabilisation immediately following earthworks				
5. Excavation as designed					12. Silt fences and traffic control in place				
					13. Temporary protection in place (if appropriate)				
Pretreatment					**C. Operational Establishment**				
6. Contributing catchment stabilised/ not a sediment source					14. Temporary protection removed				
					15. GPT diversion removed				
Final Inspection									
1. Confirm levels of inlets and outlets					4. Maintenance access provided				
2. Traffic control in place					5. Construction generated sediment and debris removed				
3. Confirm structural element sizes									

Comments on Inspection

Actions Required

1.

2.

3.

4.

5.

Inspection officer signature:

GPT Example Maintenance Checklist

Asset I.D.:		
Type:	Below-ground GPT	
Location:		
Description:		

Site Visit Details

Site Visit Date:	
Site Visit By:	
Weather:	

Purpose of the Site Visit	Tick Box		
Routine inspection	☐		
Routine clean out of trash rack and baskets	☐		
Annual inspection	☐		

Inspection

Percentage of trash rack covered by debris:			%
Trash rack and/or basket cleanout required if above >50%	Yes	No	
Any visible damage to GPT? (if YES, complete Section 4 – **Condition**)	Yes	No	

Inspection Comments:

Cleanout of Trash Rack and Baskets

Volume of debris removed:			m^3
Any visible damage to GPT? (if YES, complete Section 4 – **Condition**)	Yes	No	

Condition

Component	Checked?		Condition OK?		**Remarks**
	Yes	No	Yes	No	
Concrete walls					
Trash rack					
Baskets					
Access ladders					
GPT inlet					
GPT outlet					
Lids					

Comments

GPT Asset Transfer Checklist			
Asset I.D.:			
Asset Location:			
Construction by:			
'On-Maintenance' Period:			
Treatment		**Y**	**N**
System appears to be working as designed visually?			
No obvious signs of under-performance?			
Maintenance		**Y**	**N**
Maintenance plans provided for each asset?			
Inspection and maintenance undertaken as per maintenance plan?			
Inspection and maintenance forms provided?			
Asset inspected for defects?			
Asset Information		**Y**	**N**
Design Assessment Checklist provided?			
'As constructed' plans provided?			
Copies of all required permits (both construction and operational) submitted?			
Proprietary information provided (if applicable)?			
Digital files (eg. drawings, survey, models) provided?			
Asset listed on asset register or database?			
Comments			