102 North Road
PO Box 484, ALBANY WA 6331
P: (08) 9841 9333
F: (08) 9841 4099
E: staff@albany.wa.gov.au
Synergy Reference: NG1881509

CITY OF ALBANY

SUBDIVISION & DEVELOPMENT GUIDELINES 2018

ADDENDUM TO
Institution of Public Works Engineering Australia, *Local Government Guidelines for Subdivision Development November 2017*, Edition 2.3

INTRODUCTION

The Subdivision and Development Guidelines herein relate to the design and construction of all civil infrastructure associated with the subdivision and development of land within the City of Albany. They shall be interpreted as setting out the minimum standards, which will be accepted by the City of Albany in granting clearance to development applications or subdivision conditions imposed by the Western Australian Planning Commission (WAPC).

This document is a guideline for all parties involved with subdivision, and other private development within the City of Albany. The City of Albany's Engineering Officer has delegated authority to approve innovative engineering design that does not conform to these guidelines but satisfies sound engineering principles.

This document is an addendum to the *Local Government Guidelines for Subdivision Development November 2017* (LGGSD) by the Institute of Public Works Engineering Australia (WA Division), Edition 2.3; and outlines conditions specific to the City of Albany.

City of Albany's Strategic Plan and Objectives

The *Albany 2030 Community Strategic Plan* outlines the vision, and provides the overarching strategic direction for development within the community now and in the future.

In addition, the City of Albany's objectives (which are in alignment with the LGGSD) are to ensure subdivision and development:

- Meets relevant standards.
- Produces a beneficial asset for the Albany community.
- Occurs in an efficient manner.
- Is in accordance with the Albany Local Planning Strategy.
- Minimises adverse effects on the local environment.
- Produces suitable lots and facilities at a reasonable cost to the communit.
- Minimises future maintenance liability.
- Considers and allows for future development and maintenance.

Statutory Environment

The subdivision and development of land in Western Australia is controlled by legislation, which includes:

- Planning and Development Act 2005
- Local Government Act 1995

Where the conditions of subdivision approval require the construction of roads and/or drainage shown on the plan of subdivision then, pursuant to the Planning and Development Act 2005, the City of Albany requires that the Developer employ a Consulting Engineer to design the civil engineering works and a Superintendent to ensure the intent of the works for the subdivision is met.

1.0 ADDENDUM TO MODULE NO.1 – LEGAL FRAMEWORK AND CONTRACT ADMINISTRATION

The legal framework and contract administration for new developments and subdivisions within the City of Albany shall generally be in accordance with Module 1 of the latest edition of *Local Government Guidelines for Subdivision Development* (LGGSD) by the Institute of Public Works Engineering Australia (WA Division Inc).

The following City of Albany specific modifications to the LGGSD include:

1.14 Street Lighting

Page 16 Clause 1.14
Add after 1st paragraph the following:

All new lighting shall be LED unless otherwise approved.

1.16 Project Signage

Page 17 Clause 1.16
Delete existing paragraph and *substitute* the following:

A project signboard shall be erected at a suitable location on the site to advise the public of the project details, including contact details for the consulting engineer and contractors (including out of hours contact number), and the expected completion date of the project.

1.17.1 Notification of commencement of works

Page 18 Clause 1.17.1
Delete 1st paragraph and *substitute* the following:

A start-up meeting shall be arranged by the consultant at least five working days before the commencement of any works, and after a cessation of work, one day before recommencing any works. Residents who may be affected either directly or indirectly by the proposed subdivisional works are required by the local government to be notified in writing of these works at least five working days prior to the works commencing. A plan identifying all lots affected by the proposed subdivisional works and a copy of the letter to residents shall be supplied for approval to the City's Officer, prior to distribution.

1.17.2 Hours of Work

Page 19 Clause 1.17.2
Delete 2nd paragraph and *substitute* the following:

Normal working hours for construction work shall be 7:00am to 6:00pm Monday to Friday, excluding public holidays, and 7:00am to 1:00pm Saturday. No work shall be undertaken outside these hours without prior written City of Albany approval. Construction work includes deliveries to the site of the works and the on-site servicing and fuelling of machinery.

1.18 Practical Completion

Page 24 Clause 1.18
Add after 1st paragraph the following:

Practical Completion shall not be granted until all as-constructed information has been received to the satisfaction of the City in accordance with the As-constructed Information Checklist (see Appendix A).

Albany Spatial Data Specification (ASDS) information is required on all infrastructure, built assets, managed space and serves as per the City of Albany's requirements. Details are available on the City's website. All ASDS information is required as a condition of Practical Completion.

1.20.2 Bond Agreement

Page 26 Clause 1.20.2
Delete 1st and 2nd paragraphs and *substitute* the following:

The acceptance of bonds is a concession to the Developer by the City of Albany to facilitate the release of titles. Neither the City of Albany nor the Developer is obligated to enter into a bonding arrangement for incomplete works.

The City of Albany will not bond works on land, which remains private property after the creation of titles.

Bonding (civil and/or landscaping) shall only be considered where:

- The land will be under the control of the City after creation of titles
- All earthworks are completed
- Roads are constructed to base course level
- Drainage systems are demonstrated as functioning
- Environmental Management Practices are in place; and
- All relevant fees and contributions are paid.

The Developer may apply to lodge a bond, in the form of cash/cheque or an unconditional guarantee from a financial institution acceptable to the City of Albany, in lieu of completed subdivisional works.

Requests to bond incomplete work shall include:

- Reasons for requesting the bonding of the incomplete works
- A concise reference to the extent, nature and location of the work to be bonded
- A timetable for completion of the bonded work
- An itemised estimate of the costs for the bonded work certified by the Consulting Engineer
- Lodgement of the bond and fee amounts described in 1.20.3
- The contact details of the Contractor responsible for completing the bonded works; and
- Any other information that shall assist the assessment of the application.

1.20.3 Calculation of bond amount

Page 27 Clause 1.20.3
Delete clause and *substitute* with:

The calculation of a bond amount is to be negotiated between the developer and the local government.

In calculating the amount:

- the contractual amount for the works being bonded can be taken from the contract documents supplied by the consulting engineer or by providing a contractor's quotation acceptable to the City of Albany;
- an additional contingency of 30% above the itemised estimate of the bonded works certified by the Consulting Engineer against the developer should the local government have to carry out the works either by its own day labour workforce or by hiring another contractor;
- obligatory GST charges by any new contractor who is brought in, which would need to be calculated on the contractual costs and the 30 per cent surcharge (it should be noted that if the local government was to engage a new contractor then GST would apply); and
- payment of a non-refundable fee of 2% inc. GST of the bonded value (minimum fee of $110 inc. GST) to compensate the City of Albany for the additional inspection and administration costs incurred by the acceptance of each bond.

The City of Albany will not release portions of bonds until items to the value of 60% of the total bond amount have been completed. Portioned release of bond amounts will only be considered for bonds greater than $20,000.

City of Albany reserves the right to draw on the bond to complete the works at any time. Practical completion will not be awarded until all bonded items are completed to the City of Albany's satisfaction.

Held bonds that meet these criteria will be returned to developers at their written request in a timely manner.

1.21.2 Defects liability bond

Page 29 Clause 1.21.2
Delete words "may be required to" in the first line and *substitute* with "shall".

1.22 Asset register

Page 29 Clause 1.22
Delete last sentence and add paragraph

Albany Spatial Data Specifications (ASDS) information is required on ALL infrastructure, built assets, managed space and services as per the City of Albany's requirements, details available on the website. All ASDS information is required as a condition of practical completion and shall not be delayed to handover for Managed Space.

2.0 ADDENDUM TO MODULE NO.2 – SITE PREPARATION GUIDELINES

Site Preparation for new developments and subdivisions within the City of Albany shall generally be in accordance with Module 2 of the latest edition of Local Government Guidelines for Subdivision Development (LGGSD) by the Institute of Public Works Engineering Australia (WA Division Inc).

The following City of Albany specific modifications to the LGGSD include:

2.2.1.1 General

Page 32 Clause 2.2.1.1

Add new paragraph as follows:

Subdivisional lots shall be designed in accordance with the following:

- Fill over 600mm will require a Planning Scheme Consent from the City's planning section.
- All lots are to be S class or above. Alternatively, lots with a final classification lower than S class must have notices placed on the individual titles advising they are below S class.
- Fill shall be of non-organic material capable of freely passing through a 100mm sieve.
- The top 600mm of the fill shall be clean sand which is free of clay, silt and rock, and appropriately compacted, unless otherwise approved.
- All cleared vegetation shall either be removed from the site or mulched and spread evenly over the lots prior to clearance of the subdivision.
- The entire road reserve shall be self draining and stable.
- Any subdivision within flood prone areas must be in accordance with City of Albany policy of Development in Flood Prone Areas.

2.2.1.1.1 Retaining Walls

Page 33 Clause 2.2.1.1.1

Add new Clause as follows:

Developers are encouraged to erect retaining walls as part of the subdivision process particularly where the existing and/or proposed levels will result in level differences in excess of 0.5m on any lot in urban areas. This will reduce the need for the future landowners to do individual retaining and filling, which can adversely affect neighbours. There are also economies in scale in erecting retaining walls at the subdivision stage.

Subdivisional retaining walls shall be undertaken in accordance with the following:

- If retaining walls with levels are not shown on the originally submitted subdivision plans, which are stamped and approved by the WAPC, a separate Planning Scheme Consent is

required for any walls over 0.5m from natural ground level. The Developer is advised to contact the City of Albany's planning section prior to the contractor applying for a building licence.

- Retaining walls in/on the lot frontage should be avoided, with side retaining walls not exceeding 1m. Rear retaining walls higher than 1.5m are not encouraged, however may be considered if not visually prominent and the consent of the City's planning section is obtained.
- **A building licence approval is required prior to the commencement of construction for all retaining walls.** Walls exceeding 1m in height or subject to vehicular surcharge loading require structural Engineers certification. Failure to obtain the required approval may result in prosecution in accordance with Section 374 of the Local Government (Miscellaneous Provisions) Act 1960. Further, a notice may be served on the owner, Developer or builder in accordance with Section 401 of this Act requiring that the retaining walls constructed without a building licence be demolished.
- Where retaining walls are provided as part of the subdivision they are to be designed by a Certified Structural Engineer to withstand the superimposed loads of vehicular access ways and residential development. Where the wall is a gravity block wall, the standard local building practice for COLORBOND® panel style fence posts is to core them into the top of the wall (typically to the third block). Walls must be adequately designed, detailed and constructed for the appropriate loadings to allow for this to occur.
- Prior to clearance certified documentation shall be submitted detailing the superimposed loads and set back requirements for residential development that can be applied to each retaining wall. Walls are to be designed to allow a single storey dwelling to be built 1m from the wall and a 2 storey dwelling 1.5m from the wall.
- Appropriate drainage is to be installed behind retaining walls. This is to be approved by the City of Albany prior to installation. Discharge into neighbouring lots is not permitted unless easements are created.
- Soakwells and infiltration structures from paved or roof areas should not be placed in fill areas retained above 0.5m above natural ground level (or subject to Building Licence approval).
- All retaining walls must comply with the relevant R Codes and BCA requirements.

2.2.5.6 Disposal of Cleared Vegetation

Page 37 Clause 2.2.1.5.6
Add new paragraphs as follows:

In the case where it is known that there are declared plants (and environmental weeds) the developer shall prepare a declared plant management plan, in consultation with the Dept. of Food and Agriculture. This document shall detail a management and disposal plan.

Burning of cleared vegetation on site is not permitted.

2.2.5.7 Fire breaks for rural areas

Page 37 Clause 2.2.1.5.7
Add new paragraphs as follows:

Firebreaks are to be located within the subdivision boundary and not on adjacent land (Crown or otherwise).

3.0 ADDENDUM TO MODULE NO.3 – ROAD GUIDELINES

Road design and construction for new developments and subdivisions within the City of Albany shall generally be in accordance with Module 3 of the latest edition of Local Government Guidelines for Subdivision Development (LGGSD) by the Institute of Public Works Engineering Australia (WA Division Inc).

The following City of Albany specific modifications to the LGGSD include:

3.3.5 Kerbing

Page 55 Figure 3.2: Kerbing Profiles
Delete figures of kerbing profiles and *substitute* the City of Albany Kerb profiles from "City of Albany Engineering Services Standard Construction Drawings".

3.3.17.2 Urban areas

Page 67 Clause 3.3.17.2
Delete existing paragraphs 1, 2 and 3 and *substitute* the following:

In urban areas, the minimum access leg width for a single battleaxe lot shall be 4m with a 3m wide pavement placed centrally in the access leg, unless a lesser width has been approved by the WAPC. For 2 or more battleaxe lots with a common access, the minimum standard shall be a 3m pavement with passing lanes of 5.5m at intervals of a maximum 15m.

To improve vehicle access and safety a 2.8m truncation (2m x 2m) is required at either end of the access leg (unless otherwise approved).

Battleaxe pavements shall be constructed from concrete, segmental block paving or asphalt consistent with crossover guidelines.

3.4.5.1 General

Page 72 Clause 3.4.5.1

Add new sentence as follows:

Naturally occurring Lateritic Gravel is the most commonly used road building material in the City of Albany.

3.4.5.2 Properties

Page 73 Clause 3.4.5.2

Delete Table 3.11 and *substitute* the following:

Dust Ratio % ($P_{0.075}/P_{0.425}$)	0.3-0.7
Liquid Limit %	≤25
Plasticity Index %	≤6
Linear Shrinkage %	≤3
P0.425 x LS	≤150
Expected maximum Dry Compressive Strength kPa	≥1700
Dryback %	≤ 85(12)

3.4.5.3 Grading

Page 73 Clause 3.4.5.3

Delete existing clause and *substitute* the following:

Gravel should generally meet the requirements of the Main Roads WA publication, "A Guide to the selection and use of Naturally Occurring Materials as Base and Subbase in Roads in Western Australia - June 2003". These gravels are consistent with naturally occurring materials available within the region.

Their (Table 14) recommended material properties for road pavement designed with a thin bituminous surfacing for a 20 year design traffic loading of up to $5x10^6$ ESA are repeated below for convenience:

Material Grading Envelope		
Sieve Size (mm)	min % passing	max % passing
37.5	100	100
19	71	100
9.5	50	81
4.75	36	66
2.36	25	53
1.18	18	43
0.425	11	32
0.075	4	19
0.0135	2	9

Testing frequencies

Most projects will require a project-specific specification; however the quality assurance submission shall meet the following absolute minimum requirements:

FEATURE	QA Required	Minimum Result	Tolerance	Frequency
SUBGRADE	Unsuitable material	Marked up plan	Refer IPWEA	Each occurrence
SUBGRADE	String report	Refer IPWEA	Refer IPWEA	20m
SUBGRADE	Compaction testing	Refer IPWEA (95% MDD)	Minimum Value	1 per 40 LM of road. More required in variable material
PAVEMENT (BASECOURSE AND SUB-BASE)	Compaction testing	Refer IPWEA (98% MDD)	Minimum Value	1 per 150 LM of road
PAVEMENT (BASECOURSE AND SUB-BASE)	As constructed	Refer IPWEA	Refer IPWEA	Entire project
ROAD FEATURES	As constructed	ASDS	Refer ASDS	Refer ASDS.
BITUMEN SEAL	Spray Sheets	Refer IPWEA	Refer IPWEA	Full record
ASPHALT	Mix Specification	Supplier Certificate	Refer ASDS	Refer ASDS
ASPHALT	Depth Confirmation	Dip testing during installation and confirmation by Superintendent and Contractor	Refer IPWEA	Statement
BACKFILL / EMBANKMENT FILL	Compaction testing	92% MDD	Minimum Value	

4.0 ADDENDUM TO MODULE NO.4 – DRAINAGE MANAGEMENT GUIDELINES

Stormwater management for new developments and subdivisions within the City of Albany shall generally be in accordance with Module 4 of the latest edition of Local Government Guidelines for Subdivision Development (LGGSD) by the Institute of Public Works Engineering Australia (WA Division Inc).

The following City of Albany specific modifications to the LGGSD include:

4.3.2.4 Stormwater Drainage Design – General Principles

Page 98 Clause 4.3.2.4

Include "special rural and special residential" in first sentence after "urban residential".

Page 100 Clause 4.3.2.4

Add sentence onto paragraph 15 after "...stormwater discharge to the Local Government's drainage system must be at or below pre-development rates unless otherwise approved…" as follows:

Where a compensating basin discharges back into City of Albany infrastructure, the outlet shall be restricted to the 20% AEP (1 in 5 year ARI) pre-development rate, unless otherwise approved.

4.3.3.2 Grated gullies and side entry pits

Page 103 Clause 4.3.3.2

Delete 1st paragraph and *substitute* the following:

Road gullies may be of the grated, side-entry type or combination side entry pit. All grated lids shall be reticulate pattern complying with Australian Standards for appropriate load rating and safe traversing of bicycles; and bolted down. Refer to the City of Albany Standard Construction Drawings.

4.3.3.3 Junction and lot connection pits

Page 103 Clause 4.3.3.3

Delete existing 1st paragraph and *substitute* the following:

A junction pit is to be constructed at all pipe junctions and where the pipe changes direction or grade. The maximum distance between junction pits shall be 70 metres and their location shall not unduly restrict the future access to residential lots. The maximum distance of 70m allows maintenance to be undertaken locally without the need for more specialised equipment.

4.4 Specific Comments and Requirements

Page 107 Clause 4.4 Specific Comments and Requirements for City of Albany

Add additional section as follows

4.4.1 Site conditions

The City of Albany has a wide variety of soil conditions and terrain; unique in the south west of Western Australia.

Most of Albany town site has low permeability soils consisting of varied materials including;

- clays (e.g. Mira Mar)
- cemented lateritic gravels (ironstone), usually over clays (e.g. McKail)
- fine silty sands
- gravels
- granite

Sites can vary significantly and even when sand is encountered it is often not especially deep and is overlaying a stratum of impervious material (e.g. Mount Clarence). Where infiltration as a stormwater management tool is implemented on sites such as these that are located higher in a stormwater catchment, groundwater can be problematic at the "break of slope" – having a significant impact on downstream neighbours or infrastructure. Infiltration is usually not the preferred option of management on sites such as these or other sites with a high winter groundwater level.

In the case of building construction, the City of Albany has policies on developing in flood prone areas and minimum floor levels are set for various locations.

Some sites in Albany are assumed to be appropriate for infiltration and these are the coastal areas of Middleton Beach, Emu Point and Little Grove. The extent of "deemed pervious" areas are shown in blue on drawings 08079 Sheets 1/3, 2/3 and 3/3 at the end of this addendum.

For smaller development and redevelopment sites, specific City of Albany requirements are clarified in sections 4.4.3 and 4.4.4 of this addendum.

4.4.2 Subdivision Clearance

In the case of stormwater management being a requirement of a subdivision clearance, the stormwater infrastructure must be constructed prior to subdivision clearance.

In certain cases, an engineering design may consider stormwater treatment and management on individual lots. On lots that will be vacant once subdivided, the City of Albany may accept the applicant arranging the placement of a Section 70A notice or a legal agreement on a lot's title. This would ensure that future owners are aware of their exact requirements to construct structural controls at the time of building construction. Generally, in this case, a house connection pit within the lot that is connected to the City's drainage system will be required prior to subdivision clearance.

4.4.3 Infill Developments (where three lots or less are created) and buildings with a footprint less than 500 square metres

Section 4.4.3 refers to smaller infill developments only.

In certain circumstances the City may deem it appropriate to allow plans prepared by a plumber to be submitted for approval.

This must be by prior arrangement with the City and relates only to cases where:

- A suitable connection point to the City's system is available (i.e. manhole in the verge fronting the lot) and no extension or upgrade of the existing system is required.
- Storage volume is provided to achieve the required infiltration or attenuation as per Table A or Table C.
- No other issues are identified by the Engineering Officer that will require the plans to be designed by a Civil Engineer.

For all other cases drawings and calculations must be prepared by a practising, certified Civil Engineer to the satisfaction of the City of Albany, and submitted for approval prior to construction. Refer to LGGSD and this Addendum for engineering design criteria.

In the situation where an engineered design is not required, the stormwater management system shall provide storage and/or infiltration as detailed in this document.

4.4.3.1 Pervious Soils - Onsite management of stormwater through infiltration

A site is deemed pervious if:

- it is located within the blue shaded area in drawings 08079/1-3; **and**
- test holes dug to a minimum depth of 1.5m show coarse free draining sand; **and**
- in the case of low lying areas, it is demonstrated by the developer that winter groundwater levels will not affect infiltration capacity

In this case, the management of stormwater can be satisfied via stormwater re-use and/or onsite infiltration with no piped connection to the City's stormwater system required. The stormwater management methods include the implementation of:

- soakwells or drainage pits
- leach drains; or
- landscaped surface basins.

The following requirements must be complied with for the site:

- A 1m clearance is required from the maximum winter groundwater level to the base of infiltration infrastructure
- All impervious areas are to be connected to infiltration infrastructure.
- Overflow considerations for rainfall events greater than 63% AEP (1 year ARI) should be made.

Table A displays storage volumes that are deemed to comply to retain and infiltrate the 63% AEP (1 year ARI) event. Table B is a quick reference table for capacities of typically available concrete soakwells.

Required Storage volumes (m^3) for infill developments with pervious soils

Total land area (m^2)	300	400	500	600	700	800	900	1000
Required storage volume (m^3)	0.8	1.1	1.3	1.6	1.8	2.1	2.4	2.6

(Table A)

Reference table - Typical Pit Volumetric Capacities (m^3)

	Pit Ø	600	900	1050	1200	1500	1800
Depth (mm)							
600		0.17	0.38	0.52	0.68	1.06	1.53
900		0.25	0.57	0.78	1.02	1.59	2.29
1200		0.34	0.76	1.04	1.36	2.12	3.05
1500			0.95	1.30	1.70	2.65	3.82
1800			1.15	1.56	2.04	3.18	4.58

(Table B)

4.4.3.2 Impervious Soils - Attenuation and controlled discharge

For any site that does not meet the requirements of a pervious site;

- Post-development flow rates are to be attenuated to pre-development flow rates (up to and including the 20% AEP event (1 in 5 year ARI)) through the provision of adequate detention storage. "Pre-development" state of infill developments refers to the original undeveloped state of the block and run-off coefficients as per *Table D* apply. When calculating post-development rates of runoff, impervious areas from *Table E* shall be used.
- Discharge to the City's system is to be via a trapped House Connection Pit (HCP) located within the property. A below ground concrete liner appropriately located on the lot, with an attenuating riser meets the requirements of a HCP.
- Connection to the City's system is to be via a 100mm Grade PVC pipe to a manhole located in the verge fronting the lot. In some special circumstances, the use of a proprietary product connecting (e.g. Flowcon Conconnect) directly to the City's stormwater pipe system (via a mechanical core perpendicular to and through the top quarter of the pipe) may be considered.
- Minimum cover for any pipes installed in the verge is 400mm or greater where recommended by the manufactures specifications. Any pipes installed in the verge are to be inspected prior to backfill by a City of Albany Officer. Failure to do so may result in clearance being delayed until pipes are re-excavated and inspected.
- Trenches are to be backfilled and compacted in no more than 300mm layers to at least 95% MDD or to match the adjacent in situ material. Quality assurance documentation (compaction test results) is to be submitted prior to clearance.
- Should a suitably located manhole not be available in the verge fronting the lot, the existing City of Albany drainage system shall be extended and a manhole installed at the cost of applicant.

- Where no piped drainage system exists the Engineering Officer may allow discharge to the street via a pipe through the kerb (refer to Standard Drawing STD-01-07).

  Attenuation and controlled discharge are typically undertaken using:
  - below ground concrete storage tanks with attenuating risers and 30mm outlet hole (see Standard Drawing STD-01-6 for typical details); and
  - attenuated rainwater tanks with a restricted 30mm outlet hole (see Figure 1).

  Although the City of Albany encourage rainwater tanks for reuse of rainwater, a **below ground attenuation system is the preferred system**. Rainwater tanks can be considered as an alternative option in dealing with high outlet inverts on more difficult sites.

  The total attenuated volume required (volume above controlled discharge point in stormwater structure) for a non-engineered solution is shown in Table C.

Required Storage volumes (m^3) for infill developments with impervious soils

Total land area (m^2)	300	400	500	600	700	800	900	1000
Required storage volume (m^3)	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0

(Table C)

Where an engineering design is required, rates of runoff for impervious soils shall be determined by the following tables.

Pre-development runoff coefficients

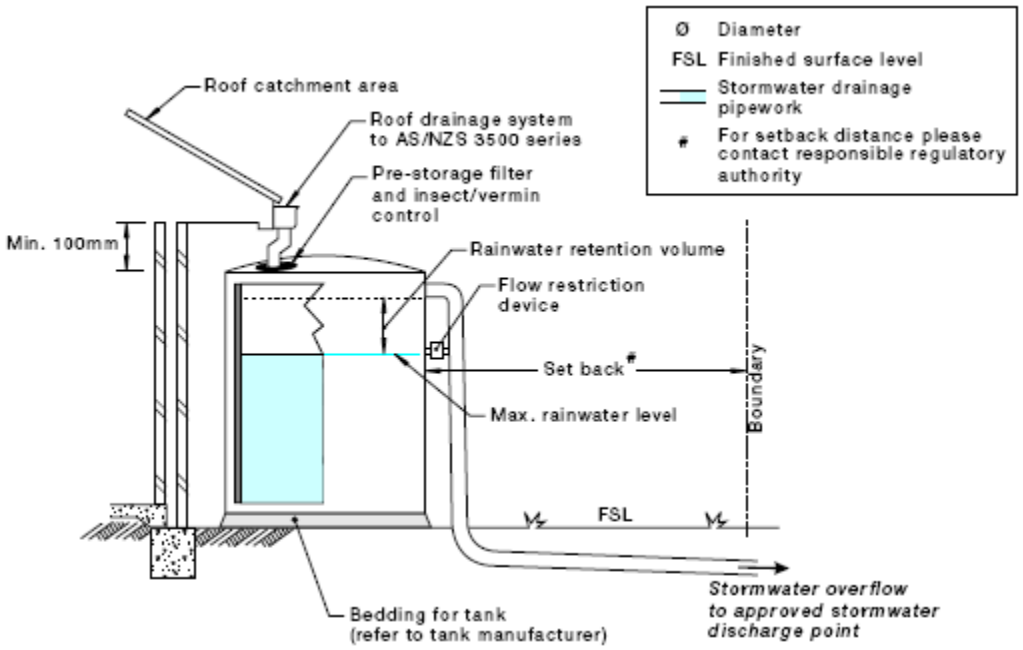
	Slope	< 1:10	> 1 :10
Soil type			
Silty Sand		0.4	0.4
Gravel		0.5	0.6
Clay		0.5	0.7
Granite		0.8	0.95

(Table D)

Impervious area per lot size

Total lot area (m^2)	300	400	500	600	700	800
Impervious area (%)	90%	85%	80%	70%	65%	60%

(Table E)



Rainwater buffer tank detail (Figure 1)

4.4.4 Redevelopment Sites (Commercial, Industrial, Grouped Dwelling)

Redevelopment sites refer to built-up locations undergoing redesign, reconstruction or rehabilitation. For this clause, a redevelopment site refers only to a site that has significant infrastructure remaining on the site that must be worked around. A site that is predominantly returned to cleared land prior to redevelopment is not deemed a redevelopment site for the purpose of this clause.

Stormwater management on redevelopment sites must address both stormwater discharge quality (water treatment) and quantity (attenuation of flow rates).

The design shall be prepared after consideration of the downstream drainage systems and receiving waters.

If infiltration can be achieved, refer to section 4.4.3.1 for design requirements. The quality of stormwater runoff prior to infiltration is still required to be managed.

4.4.4.1 Treatment of discharge flows

The treatment of discharge flows can be managed in the following ways:

- Residential – silt trap; or
- Commercial/Industrial – nutrient/hydrocarbon removal.

Treatment devices are to be sized to treat the 3 month ARI event. Stormwater that is discharged from a roof is deemed clean and does not require treatment for quality if kept separate from untreated flows.

4.4.4.2 Attenuation of flow rates

Flow rates must be attenuated to pre-development levels to protect the capacity of the downstream infrastructure.

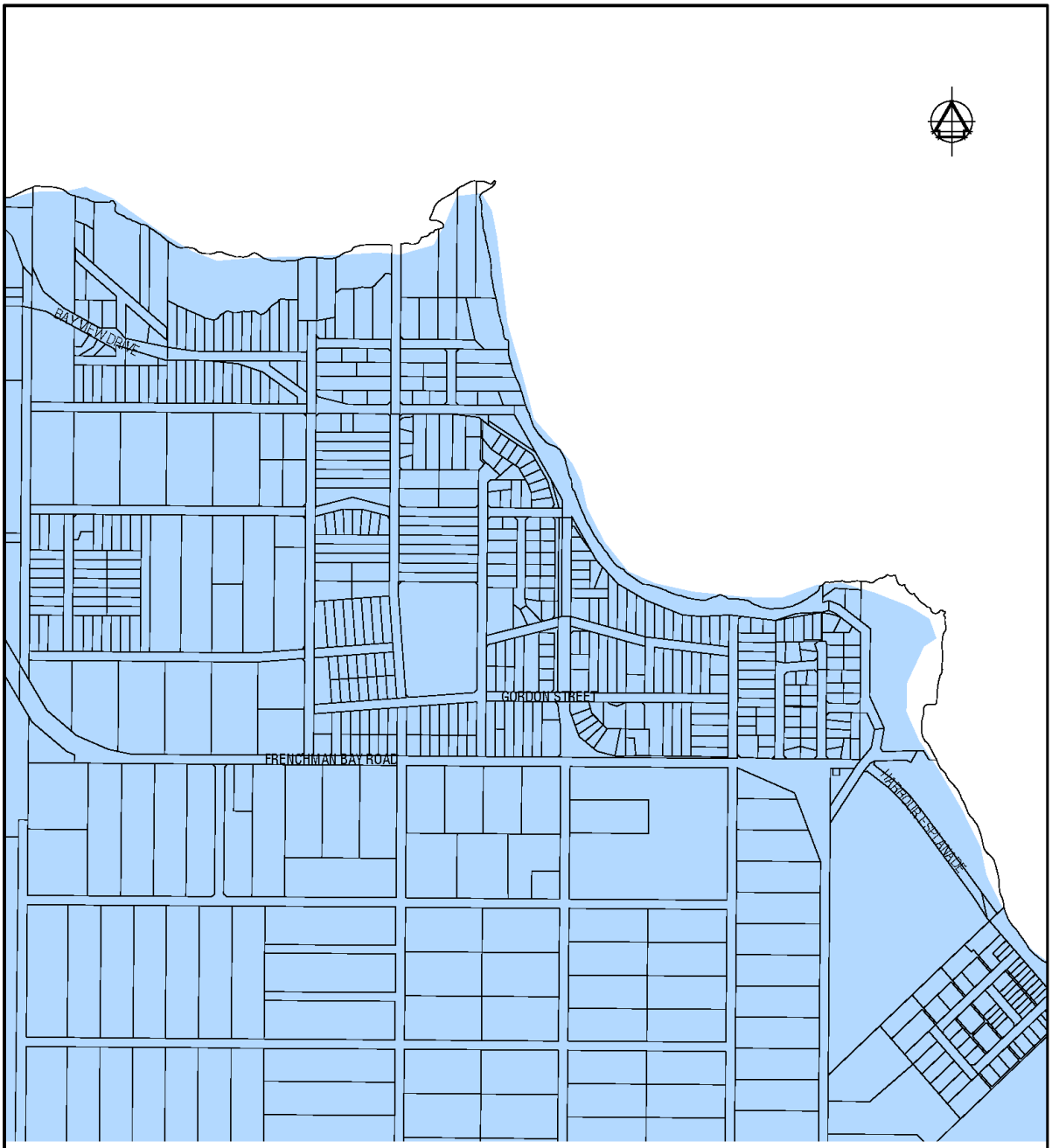
Where infrastructure placement options are limited, as an absolute minimum, the storage detention required for 100m² of equivalent impervious area is 0.3m³ for redevelopment sites.

4.4.5 Greenfield Developments

LGGSD provides strong principals for drainage. For clarification, specific requirements for management of stormwater in Albany require that:

- Manage, retain and/or detain, and treat (if required) stormwater runoff from constructed impervious surfaces generated by the first 15mm of rainfall at source as much as practical.
- Sizing of the pit and pipe system to accommodate the 20% AEP event (5 year ARI).
- Attenuate the 20% AEP event (5 year ARI) to pre-development flows (refer to amendment to Clause 4.3.2.4 for discharge into the City's infrastructure).
- Maintain the 1% AEP event (1 in100 year ARI) pre-development flood regime. Where this is not possible the downstream flood impact to be assessed and minimised to the satisfaction of the City of Albany. The overland flood route must be provided and shall be clearly identified on the stormwater design drawings.
- The pipe system shall be designed according to the "hydraulic grade line" method, and energy losses shall be allowed for in gullies and manholes. The method of design shall conform to that described in Australian Rainfall and Runoff.
- The minimum pipe size shall be 300mm (at minimum grade of 1 in 200), Class 2 concrete or equivalent pipes (unless otherwise approved).
- The minimum cover for pipes shall be to the manufacturer's specifications. Generally 600mm cover unless otherwise approved.

For smaller development and redevelopment sites, specific City of Albany requirements are clarified in sections 4.4.3 and 4.4.4 of this addendum.



SURVEYED			APPROVED		
			BY	SIGNED	DATE
DESIGNED			AUTHORISED M.C.A.		
DRAWN			ACCEPTED E.D.W.S.		

Plot Date: November 12, 2008

STORMWATER INFILTRATION

SUBDIVISION & DEVELOPMENT GUIDELINES
SECTION 12 STORMWATER MANAGEMENT
LITTLE GROVE

STATUS: FOR INFORMATION

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WORKS AND SERVICES		
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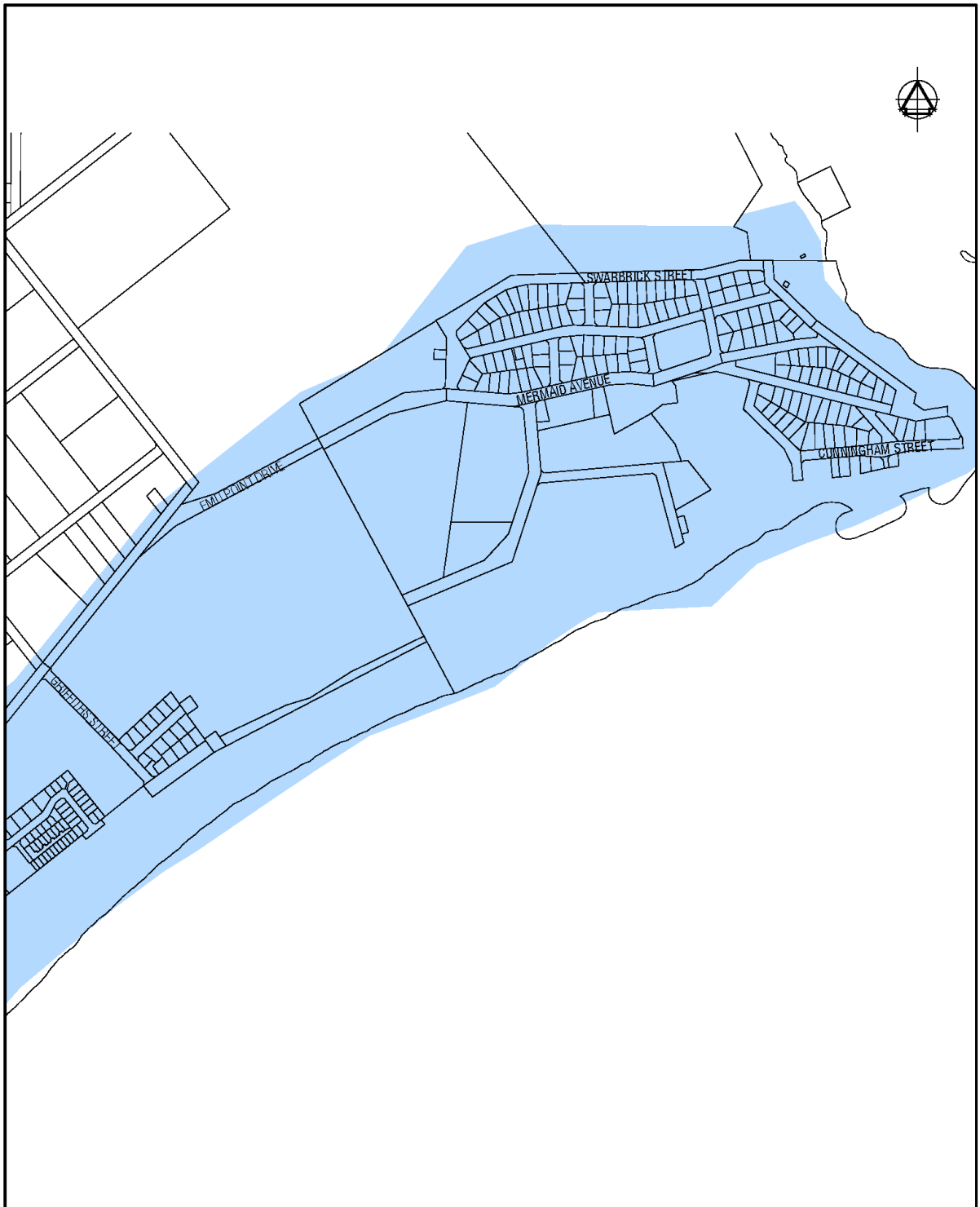
JOB No.	SHEET 1/3	REV. A



SURVEYED			APPROVED			
			BY	SIGNED	DATE	
DESIGNED			AUTHORISED M.C.A.			
DRAWN			ACCEPTED E.D.W.S.			

Plot Date: November 12, 2008

STORMWATER INFILTRATION

SUBDIVISION & DEVELOPMENT GUIDELINES
SECTION 12 STORMWATER MANAGEMENT
EMU POINT

STATUS: FOR INFORMATION

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WORKS AND SERVICES

DATUM	SCALE NTS	
FILE REF.	DRAWING No. 08079	
JOB No.	SHEET 2/3	REV. A

CITY OF Albany

			APPROVED		
SURVEYED			BY	SIGNED	DATE
DESIGNED			AUTHORISED M.C.A.		
DRAWN			ACCEPTED E.D.W.S.		

Plot Date: November 12, 2008

STORMWATER INFILTRATION

SUBDIVISION & DEVELOPMENT GUIDELINES
SECTION 12 STORMWATER MANAGEMENT
MIDDLETON BEACH

STATUS: FOR INFORMATION

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WORKS AND SERVICES

DATUM	SCALE NTS	
FILE REF.	DRAWING No. 08079	
JOB No.	SHEET 3/3	REV. A

5.0 ADDENDUM TO MODULE NO.5 – STREETSCAPE GUIDELINES

The Streetscape design for new developments and subdivisions within the City of Albany shall generally be in accordance with Module 5 of the latest edition of Local Government Guidelines for Subdivision Development (LGGSD) by the Institute of Public Works Engineering Australia (WA Division Inc).

The following City of Albany specific modifications to the LGGSD include:

5.3.1.1 General

Page 110 Clause 5.3.1.1

Delete paragraphs 4, 5, and 6 and substitute with the following:

The City of Albany's Cycling Strategy, "Cycle City Albany" has a number of planning and design guidelines that shall be met where they are deemed applicable by the City of Albany.

All new shared paths should be generally designed to a 2.5m width, however this may be reduced to 2.0m where constraints occur. Additional width should be provided where the volume of pedestrian and cyclist traffic is likely to result in more passing manoeuvres, using Austroads as a guide.

5.3.3 Street name plates and community signs

Page 116 Clause 5.3.3

Add new paragraph as follows:

All road names must be endorsed by the City of Albany and approved by the State Geographic Names Committee prior to submission of the Deposited Plan and applying for Subdivision Clearance.

Street nameplates shall be in accordance with the Standard Drawing STD-04-01.

5.3.4 Street and public area lighting

Page 116 Clause 5.3.4

Add new paragraph as follows:

The lighting of streets, car parks and public areas (including PAW's) shall be provided in all new urban and industrial developments to the full requirements.

In Special Residential Zones, street lighting shall be installed at intersections, PAW's and possibly cul-de-sacs as deemed necessary by the City of Albany. In Rural Residential zones, streetlights are not required except possibly at intersections where the access to the subdivision joins onto the existing streetlight network or where there are significant pedestrian, cyclist and/or vehicle movements or deemed necessary by the City of Albany.

Page 116 Clause 5.3.4

Add sentence as to paragraph 4 as follows:

All new lighting shall be LED unless otherwise approved.

Page 118 Clause 5.3.5

Add sentence to paragraph 4 as follows:

The City of Albany bus shelter designs should be used by the developer unless otherwise approved and meet the Public meet the Public Transport Bus Stop Site Layout Guidelines.

5.4.1 Footpath and/or shared path construction

Page 119 Clause 5.4.1

Add new paragraphs as follows:

The material deemed appropriate for construction shall be guided by the addendum to Clause 5.3.1.1. Where concrete paths are required, Lock Joint contraction joints shall be used to the manufacturer's recommendation to minimise transverse joints and create a smooth running surface.

A summary of these requirements are:

- Spacings for Lock Joint joints are to be a maximum of 1.5 times the width of a path.
- Joints such as saw cuts, or dummy joints, to create control joint are not necessary when Lock Joint is used in a path, as Lock Joint is a contraction/control joint. The Lock Joint joint shall be smooth and appear as a continuation of the path, with the concrete flush with the top of the rubber cap. Lock Joint is not edged with an edging tool.
- An expansion joint should be placed every 50m in a straight, unhindered path or at the start of a deviation of a curve in the path.
- An expansion joint must be used where the new path meets a fixed object such as another path, a kerb edge or a building.

In rural development, where paths are required, asphalt is usually appropriate, and will generally be guided by the development approval process.

5.4.2 Street trees

Page 120 Clause 5.4.2

Add new paragraphs as follows:

All street trees shall be supported by a maintenance and watering period of three years after planting to ensure that they become properly established. This shall be in the form of an agreed bond amount that is based on a maintenance quotation from a suitably experienced contractor along with 30% contingency. All street trees planted shall include the installation of root barrier and are to be planted away from crossovers, paths and kerbing. Tree species shall be approved by the City, as there may be a selected precinct theme.

The lists below are Street Trees that are recommended as being generally suitable for use in the City of Albany. Special consideration may be given to trees not on these lists.

Trees generally suitable for use under or near power lines

Botanic Name	Common Name	Height (Metres)	Cultural Notes
Angophora hispida	Dwarf Apple	2-4	Native - hardy coastal
Calistermon viminalis	Weeping Bottlebrush	5-6	Native – red flowers
Eucalyptus caesia	Silver Princess	6-9	Native - weeping
Eucalyptus torquata	Coral Gum	4-10	Native - large flowers
Eucalyptus eximia		8-10	Native - creamy blooms
Eucalyptus ficifolia		4-5	Native – red blooms
Lagerstroemia asst	Indian Summer Crepe Myrtle	4-6	Exotic - deciduous tree showy flowers
Magnolia grandiflora	Little Gem	4-10	Exotic - fragrant flowers
Melaleuca raphiphilla	Mulistem Paperbark	8-10	Native
Melaleuca decora	White Cloud Tree	5-6	Exotic - very hardy
Melaleuca quinquinerva	Broadleft Paperbark	8-10	Native

Suitable trees for streetscape (no powerlines)

Botanic Name	Common Name	Height (Metres)	Cultural Notes
Eucalyptus erythrorys illyarie	Red Cap Gum	6-7	Spectacular flowers
Agonis flexuosa	Peppermint Tree	10-15	Weeping habit small white flowers
Melaleuca quinquinerva	Broadleaf Paperbark	10-12	Multi layered papery bark
Lagerstroemia asst	Indian Summer Crepe Myrtle	4-6	Deciduous tree showy flowers
Angophora hispida	Dwarf Apple	2-4	Hardy coastal
Eucalyptus caesia	Silver Princess	6-9	Weeping
Eucalyptus torquata	Coral Gum	4-10	Large flowers
Eucalyptus eximia		8-10	Creamy blooms
Melaleuca raphiphilla	Multistem Paperbark	8-10	Native
Magnolia grandiflora	Little Gem	4-10	Fragrant flowers

Malius incensis cultivars	Crab Apple	5-8	Non fruiting, showy
Prunus niagra	Ornamental Plum	5	Purple foliage
Hymenosporum flavum	Native Frangipana	10	Glossy foliage and fragrant flowers
Eucalptus leucoxlyn rosea	Pink Flowing Gum	10-12	Attractive flowers
Pyrus ussurensis	Manchurian Pear	9	Autumn colours white flowers
Fraxinus oxycarpa	Claret Ash	8	Burgundy foliage in autumn
Acer palmatum	Japanese Maple		Autumn foliage
Sapium sebiferum	Chinese Tallow Tree	8-12	Autumn foliage
Betula pendula alba	Silver Birch	10-15	White bark

6.0 ADDENDUM TO MODULE NO.6 – PUBLIC OPEN SPACE

Public Open Space for new developments and subdivisions within the City of Albany shall generally be in accordance with Module 6 of the latest edition of Local Government Guidelines for Subdivision Development (LGGSD) by the Institute of Public Works Engineering Australia (WA Division Inc).

The following City of Albany specific modifications to the LGGSD include:

6.3.3.2.1 Development process

Page 127 Clause 6.3.3.2.2

Delete 3rd bullet point and *substitute* the following:

- construction can commence only upon approval of the detailed landscape plans and a joint start-up meeting is held on site between the City's Parks & Gardens Officer, the Developer and the Contractor;
- The Officer shall be given no less than forty-eight hours notice of site meetings, and shall be issued with a copy of the minutes (taken by the Developer).

Delete 5th bullet point and *substitute* the following:

- the developer is required to maintain the public open space reserve for a minimum three (3) year period from practical completion;
- A joint inspection with the City of Albany Reserves team shall be undertaken 12 monthly during the maintenance period to monitor growth and maintenance.

6.3.3.2.2 Development process

Page 127 Clause 6.3.3.2.2

Delete 3rd bullet point and *substitute* the following:

- construction can commence only upon approval of the detailed landscape plans and a joint start-up meeting is held on site between the City's Parks & Gardens Officer, the Developer and the Contractor;
- The Officer shall be given no less than forty-eight hours notice of site meetings, and shall be issued with a copy of the minutes (taken by the Developer).

Delete 5th bullet point and *substitute* the following:

- the developer is required to maintain the public open space reserve for a minimum three (3) year period from practical completion;
- A joint inspection with the City of Albany Reserves team shall be undertaken 12 monthly during the maintenance period to monitor growth and maintenance;

6.3.3.3 Landscape maintenance agreement

Page 128 Clause 6.3.3.3

Add new paragraphs as follows:

For the duration of the maintenance period all costs are to be borne by the Developer.

During the maintenance period the Developer shall:

- Keep the POS free of weeds.
- Ensure regular mowing.
- Remove silt from constructed lakes.
- Inspect and maintain reticulation on a regular basis; and
- Inspect and maintain play equipment on a regular basis.

6.3.3.4 Landscape maintenance bond

Page 128 Clause 6.3.3.4

Delete 3rd paragraph and *Add* new paragraphs as follows:

The Developer shall contact the City of Albany to initiate the handover process.

A joint inspection is to be held on site between a City Officer and the Developer.

The Developer is to provide the City of Albany with:

- Any specialised tools or equipment required for the maintenance or repair of infrastructure
- Any keys (to the City's key system) to locks (irrigation, electrical cabinets, gates, barbeques) within the POS; and
- Operation manuals relevant to the regular maintenance or repair of infrastructure.

It is the Developer's responsibility to ensure that all accounts (water, power) are transferred to the City of Albany at handover.

Once the City of Albany is satisfied the POS is in an acceptable condition, the City shall accept responsibility for maintenance of the POS and return the landscape maintenance bond to the Developer.

6.3.3.6 Planting

Page 128 Clause 6.3.3.6

Add new paragraphs as follows:

All plants proposed shall have an emphasis on local endemic species, due to their drought tolerance, low maintenance and ability to withstand local climatic conditions. Other Australian plants and exotic species may be acceptable, subject to prior approval from the City.

*Although the following plants are not on the declared plant list for WA they can easily invade bushland and destroy pristine bushland and are therefore **not permitted** by the City of Albany as appropriate plants to be planted within the municipal boundary. The following plant species are **not** permitted within City of Albany reserves:*

Scientific name	Common name
Acacia baileyana	Cootamundra wattle
Acacia dealbata	Silver Wattle
Acacia iteaphylla	Flinders Ranges Wattle
Acacia longifolia	Sydney Golden Wattle
Acacia melanoxylon	Blackwood
Acacia pycnantha	Golden Wattle
Agave americana	Agave
Agapanthus praecox	Agapanthus
Allamanda cathartica	Golden Trumpet, Yellow Bell, Angels
Allium spp	Allium
Amaryllis belladonna	Easter Lily
Ammophila arenaria	Marram Grass
Antigon leptopus	Corky Passion Vine, Chain of Love
Arctotis stoechadifolia	African Daisy
Canna hybrids incl. C.x generalis, c.x	Canna
Asparagus asparagoides	Bridal Creeper
Carex testacea	Orange Sedge
Carpobrotus edulis	Pigface
Celtis sinensis	Japanese Hackberry
Chasmanthe floribunda	African Cornflag
Chamaecytisus proliferus	Tagasaste
Cinnamomum camphora	Camphor tree
Colocasia esculenta	Taro, Kalo
Conyza spp	Fleabane
Cotyledon orbiculare	Cotyledon
Cortacderia selloana	Pampass grass
Cyperus rotundus	Cypres
Dietes bicolor	Dietes
Dietes grandiflora	Dietes
Dietes iridoides	Dietes

Scientific name	Common name
Dimorphotheca ecklonis current name for Osteospernum ecklonis	Cape marguerite, River daisy, White daisy bush, Blue-and-white daisy bush
Dipogon lignosus	Dolichos Pea
Dittrichea viscose	Yellow-flowered Stinkwort
Emex australis	Double Gee
Erigeron karvinskianus	Daisy fleabane
Eucalyptus camaldulensis	River Red Gum
Eucalyptus citridora	Lemon Scented Gum
Eucalyptus cladocalyx	Sugar Gum
Eucalyptus grandis	Flooded Gum, Rose Gum
Eucalyptus maculata	Spotted Gum
Euphorbia spp	Euphorbia
Freesia spp	Freesia
Gaura lindheimeri	Whirling Butterflies, White Gaura, Butterfly Gaura
Gazania spp	Gazania
Genista stenopetala	Sweet Broom, Easter Broom, Leafy Broom
Gladiolus spp	Gladiolus
Gleditsia triacanthos	Common Honeylocust
Hedera helix	Ivy, Common Ivy, or English Ivy
Khaya senegalensis	Senegal mahogany
Koelreuteria elegans subsp. Formosa	Formosa Firethorn, Golden Rain Tree
Lantana montevidensis	Trailing Shrub Verbena, Trailing Lantana
Lathyrus tingitanus	Tangier Pea
Lavendula stoechas	French Lavender, Spanish Lavender
Leptospernum laevigatum	Victorian Ti Tree
Limonium lobatum, L sinuatum	Sea Lavender
Lomandra longifolia	Spiny-Headed Mat-Rush
Lonicera japonica	Japanese honeysuckle
Narcissus spp	Daffodils
Nerium oleander	Oleander
Oenothera spp	Oenothera
Osteospermum ecklonis	Daisy Bush, African Daisy
Osteospermum fruticosum	Trailing African Daisy

Scientific name	Common name
Pelargonium capitatum	Rose Pelargonium
Pennisetum alopecuroides	Fountain Grass, Chinese Pennisetum, Swamp Foxtail
Phytolacca octandra	Inkweed
Pinus radiata	Monterey pine
Pittosporum undulatum	Sweet Pittosporum
Polygala myrtifolia	Myrtle-leaf Milkwort, Butterfly Bush
Populus alba	White Poplar
Psoralea pinnata	Taylorina
Robinia pseudoacacia	Black Locust
Rubus spp	Blackberry
Schinus terebinthifolia	Chinese Pepper
Senecio elegans	Purple Groundsel
Senecio glastifolius	Holly-leaved Senecio
Senecio tamoides	Canary Creeper
Senna alata	Candlebush
Solanum aviculare	Kangaroo Apple
Soleirolia soleirolii	Baby's Tears
Syzygium jambos	Malabar plum
Tipuana tipu	Rosewood, Pride-of-Bolivia, Tipu Tree
Tropaelum majus	Nasturtium
Typhus orientalis	Bull Rush
Vinca spp	Vinca
Watsonia spp	Watsonia
Yucca aloifolia	Yucca

This list is not exclusive. Developers should consult the updated list of declared plants produced each year by the Department of Food and Agriculture WA.

The following species **are recommended** to be planted:

Scientific name	Common name
Anigozanthos bicolor	Little Kangaroo Paw
Isolepis inundata	Swamp Club Rush
Anigozanthos humilis	Catspaw
Anigozanthos preissii	Albany Catspaw
Baumea juncea	Bare Twigrush

Scientific name	Common name
Gahnia trifida	Coast Saw-Sedge
Baumea articulata	Jointed Rush
Anigozanthos flavidus	Tall Kangaroo Paw
Xanthosia rotundifolia	Southern Cross
Actinodium calocephalum	Denmark Daisy
Banksia dryandroides	Dryandra-Leaved Banksia
Daviesia decurrens	Prickly-Bitter Pea
Hibbertia racemosa	Stalked Guinea Flower
Hovea trisperma	Common Hovea
Juncus kraussii subs *australiensis*	Sea Rush
Pimelea rosea	Rose Banjine
Acacia leioderma	Maslin
Adenanthos obovatus	Basket Flower
Darwinia citriodora	Lemon-Scented Darwinia
Dianella revoluta	Blueberry Lilly
Banksia drummondii	Drummonds Dryandra
Hypocalymma angustifolium	White Myrtle
Banksia nivea	Honeypot Dryandra
Lepidosperma gladiatum	Coast Sword-Sedge
Patersonia occidentalis	Purple Flag
Petrophile ericifolia	
Petrophile seminuda	
Petrophile serruriae	
Pimelea ferruginea	
Kennedia prostrata	Scarlet Runner
Eutaxia myrtifolia	
Acacia browniana	
Allocasuarina humilis	Dwarf Sheoak
Aotus intermedia	
Astartea scoparia	
Bossiaea linophylla	
Calothamnus quadrifidus	One-Sided Bottlebrush
Calothamnus sanguineus	Silky-Leaved Blood Flower
Calytrix acutifolia	

Scientific name	Common name
Hakea ceratophylla	Horned Leaf Hakea
Hakea corymbosa	Cauliflower Hakea
Hakea denticulata	
Hakea undulata	Wavy-Leaved Hakea
Hovea pungens	Devils Pins
Isopogon formosus	Rose Coneflower
Juncus pallidus	Pale Rush
Pimelea drummondii	
Melaleuca thymoides	
Pimelea sylvestris	
Rhagodia baccata	Berry Saltbush
Banksia plumose	
Isopogon cuneatus	Coneflower
Melaleuca lateritia	Robin Redbreast Bush
Regelia inops	
Trymalium floribundum subsp *trifidum*	
Taxandria parviceps	
Acacia littorea	
Acacia pulchella	Prickly Moses
Acacia subcaerulea	
Adenanthos cuneatus	Coastal Jugflower
Astartea fascicularis	
Beaufortia decussata	Gravel Bottlebrush
Beaufortia sparsa	Swamp Bottlebrush
Callistemon glaucus	Albany Bottlebrush
Banksia formosa	Showy Dryandra
Eucalyptus preissiana	Bell-Fruited Mallee
Hakea florida	
Hakea lasiantha	Woolly Flowered Hakea
Hakea lissocarpha	Honey Bush
Hakea nitida	Frog Hakea/Shining Hakea
Hakea ruscifolia	Candle Hakea
Hibbertia cuneiformis	Cutleaf Hibbertia
Hovea elliptica	Tree Hovea

Scientific name	Common name
Petrophile diversifolia	
Petrophile squamata	
Taxandria juniperina	
Viminaria juncea	Swishbush
Templetonia retusa	Cosckies Tongues
Acacia cyclops	Western Coastal Wattle
Actinostrobus pyramidalis	Swamp Cypress
Banksia polycephala	Many-Headed Dryandra
Banksia praemorsa	Cut-Leaf Banksia
Gastrolobium bilobum	Heart-Leaf Poison
Hakea cucullata	Hood Leaved Hakea
Hakea ferruginea	
Hakea linearis	
Hakea pandanicarpa	
Kunzea ericifolia	Spearwood
Adenanthos sericeus subsp *sericeus*	Coastal Woolybush
Banksia grandis	Bull Banksia
Chorilaena quercifolia	Chorilaena
Clematis pubescens	Common Clematis
Banksia sessilis	Parrot Bush
Hakea baxteri	Fan Hakea
Melaleuca viminea	Mohan
Persoonia longifolia	Snottygobble
Spyridium globulosum	Basket Bush
Taxandria linearifolia	
Callistachys lanceolata	Wonnich
Melaleuca cuticularis	Saltwater Paperbark
Melaleuca lateriflora	Gorada
Persoonia elliptica	Spreading Snottygobble
Melaleuca preissiana	Moonah
Melaleuca rhaphiophylla	Swamp Paperbark
Agonis flexuosa	Peppermint
Banksia attenuata	Slender Banksia
Hakea oleifolia	Dungyn

Scientific name	Common name
Banksia littoralis	Swamp Banksia
Allocasuarina fraseriana	Sheoak
Eucalyptus rudis	Flooded Gum
Eucalyptus cornuta	Yate
Eucalyptus wandoo	Wandoo
Corymbia calophylla	Marri
Eucalyptus marginata	Jarrah
Hardenbergia comptoniana	Native Wisteria
Billardiera fusiformas	Australian Bluebell

For more information on suitable plant species contact the City of Albany's Reserves Officer.

6.3.3.10 Inspection and Testing

Page 130 Clause 6.3.3.10

Add new Clause as follows:

Test results are required to ensure that the material supplied and the work carried out conforms to the approved specification. Inspections of construction are required to be carried out by the Developer and the City's Parks and Gardens Officer at the following stages:

- Site regrading and clearing
- Installation of erosion control measures
- Preservation measures installed for trees, vegetation or heritage sites as determined
- Irrigation line installation; and
- Practical completion.

The Contractor shall allow for uninterrupted access for City of Albany Officers or their representatives at all times. In the case of playground equipment, the final handover documentation shall include a safety audit that demonstrates that the equipment is in good working order and meet the appropriate Australian Standards.

6.4.2 Land or form - earthworks

Page 133 Clause 6.4.2

Add new paragraphs as follows:

Future mowing requirements shall be considered in the design and construction of the surface of the site, with grades accommodating the effective and safe operation of ride-on mowers.

The preferred maximum grade for grassed areas is 1 in 8, with an absolute maximum grade of 1 in 6 subject to prior approval from the City. Where possible, paths should form the border between

grassed areas and vegetated areas. In lieu of a path barrier, extruded kerbing with root barrier mesh shall be used.

Where fill is required in POS, it shall comprise of clean, free draining sand and be placed in layers not exceeding 200mm in thickness and be watered and rolled to achieve a minimum compaction of 90% of the maximum dry density obtained from modified maximum dry density tests conducted in accordance with AS 1289-2003: Methods of Testing Soils for Engineering Purposes (Pt. 5.2.1). Any underlying impervious soil is to be graded to prevent sub surface pooling of water. Subsoil drainage is to be installed where drainage of the site is problematic.

6.4.4 Irrigation

Page 134 Clause 6.4.4

Delete 5th paragraph and *substitute* as follows:

As-constructed information of the irrigation system is required in accordance with Albany Spatial Data Specification.

Add new paragraphs as follows:

Irrigation water supply can be provided by means of using storage or bores. Reticulated scheme water shall not be used.

Constructed lakes may be used for this purpose only in exceptional circumstances, with prior approval from City of Albany. Detailed justification for such lakes is required. A report shall be submitted by the Developer that includes, but is not limited to, such items as:

- Other alternatives
- Capital cost
- Maintenance programme
- Annual maintenance cost
- Replacement cost
- Comprehensive environmental report
- Indicate how much POS shall be irrigated
- Break-up of irrigated area (area of verges, medians, POS)
- Monitoring programme
- Safety aspects
- Contingency response plan.

Constructed lakes shall only be approved by City of Albany where the Developer agrees to enter into a 5 year maintenance and monitoring period following Practical Completion and a suitable defects liability bond is lodged to ensure the lake is maintained and to cover any defects.

Any proposed artesian and shallow bores may only be installed where approved by the appropriate approval authorities, contacting Department of Water in the first instance.

All bores shall be fitted with flow meters.

Plans and specifications of bores, including site location, shall be submitted for prior approval.

6.4.4.1 Design and specification

Page 134 Clause 6.4.4.1

Add new paragraph as follows:

Where irrigation is provided, the irrigation system shall be designed in consultation with the City of Albany's Parks and Gardens Officer. Where an irrigation controller is installed the device must be approved by the City's Parks Reticulation Technician and conform with current practice within the City of Albany. Any device not conforming to this requirement will need to be replaced before handover. Sprinklers shall mainly consist of:

- *Hunter* I-31(Large gear drive)
- *Hunter* PGP(Medium gear drive)
- *Hunter* PS Series
- *Hunter* sprayers
- *Nelson* MP Rotors; or
- *Toro* Flood bubblers (for street trees).

All PVC joints should be primed and glued and should consist of class 9 PVC or better.

Ball valves shall be fitted before solenoid valves in all instances. Wiring from each valve to the controller shall be a continuous single colour.

Plans and specifications of the irrigation system shall be submitted with the landscape plans for approval. These must include the source of water.

6.4.4.2 Irrigation System Operation and Maintenance Manual

Page 134 Clause 6.4.4.2

Add new Clause as follows:

A manual detailing the automatic irrigation system shall be provided to City of Albany prior to handover. The manual shall include the following:

- Introduction
- Contact details
- Sprinklers, risers and other emitters
- Solenoid valves, value boxes, wiring, mainline isolation valves and air release valves
- Controller
- PVC pipes and fittings
- Pump unit
- Electrical works and services warranties, quality assurance and 'as constructed' drawings at handover (ASDS format); and

- Design parameters.

6.4.7 Specifications for access tracks

Page 136 Clause 6.4.7.1

Add new paragraph as follows:

Trails shall comprise of a 2m cleared width with minimum 150mm compacted depth of crushed limestone or approved equivalent material.

Paths in POS shall comprise of shared paths and trails. The provision of paths in POS is to be in accordance with the City of Albany's Pathways Master Plan.

Shared paths in POS must be a minimum of 2.5m wide and shall be constructed to the same specifications as for paths constructed in road reserves.

Tactile pavers are required at the top and bottom of stairs or stepped amphitheatre. Please refer to AS1428.4 2002.

Paths in POS areas shall be constructed to minimise damage to any retained trees and vegetation.

Where possible, paths shall be utilised as edging to turf/garden areas. Location of paths through grassed areas should not negatively impact on the informal active use of those grassed areas. Path alignments shall be shown on the detailed landscape drawings.

The vertical path alignment design shall consider and accommodate the steepness and length of grades, changes of grade, sight distance and the nature of the path, i.e. commuter or recreational. Where practicable, paths should be constructed to a maximum grade of 1 in 20 to allow for disabled access.

7.0 ADDENDUM TO MODULE NO.7 – STANDARD DRAWING GUIDELINES

Standard Drawings for new developments and subdivisions within the City of Albany shall generally be in accordance with Module 7 of the latest edition of Local Government Guidelines for Subdivision Development (LGGSD) by the Institute of Public Works Engineering Australia (WA Division Inc).

The following City of Albany specific modifications to the LGGSD include:

7.5.10 'As-constructed' drawings

Page 150 Clause 7.5.10

Add new paragraphs as follows:

Developers are required to provide as-constructed information whenever assets are created to be handed over to the City of Albany. Refer to the checklist in Appendix A for the City of Albany requirements.

8.0 ADDENDUM TO MODULE NO.8 – CONSTRUCTION GUIDELINES

Construction Guidelines for new developments and subdivisions within the City of Albany shall generally be in accordance with Module 8 of the latest edition of Local Government Guidelines for Subdivision Development (LGGSD) by the Institute of Public Works Engineering Australia (WA Division Inc).

The following City of Albany specific modifications to the LGGSD include:

8.1.6 Proposed infrastructure crossing existing roads

Page 153 Clause 8.1.5

Add new clause as follows:

Where infrastructure is proposed to cross a City of Albany road, approval is required. All road crossings require a detailed notification to the City of Albany a minimum of 10 working days prior to works commencing.

An application for infrastructure to cross an existing road must be accompanied by:

- Detailed plans of the intended works certified by a Civil Engineer; and
- A traffic management plan prepared and signed by an accredited professional.
- All residents that could be affected must be notified at least 3 days prior to works commencing.
- The City of Albany's preference is for all road crossings to be mechanically bored beneath existing roads and the following applies:
- All underground crossings of roads and footpaths should be made at right angles to the road alignment
- All pits excavated for the locating of boring equipment are to be set back a minimum of 0.5m from the back of kerb; and
- All bored crossings are to comply with the Utility Providers Code of Practice, and all verge reinstatements are to comply with IPWEA's *"Restoration and Reinstatement Specifications for Local Governments in Western Australia".*

If it is demonstrated that boring is not suitable, subject to prior approval from City of Albany, the following applies:

- Straight saw cuts are to be made through the full depth of the pavement on all edges of the proposed trench
- Remove any unsuitable backfill material from the site, and dispose of legally
- Before the general backfill of the trench is commenced, the work is to be inspected by a City of Albany Officer
- Manholes, and spaces around the utility installed, shall be carefully compacted with hand rammers. The minimum depth of initial hand compaction above the crown of the pipe is not to be less than 150mm
- The backfill material is to be stabilized with 1-3% cement content, based on site conditions, to achieve a Maximum Dry Compressive Strength of 1700 kN. Increased cement content may be added at the Superintendent's discretion, subject to providing evidence to the City of Albany supporting the increase

- Compaction of the remaining backfill shall be carried out in layers. Compaction shall be achieved by mechanical means with water to a density of not less than 95% of the modified maximum dry density when tested in accordance with AS 1289-2003
- The road base pavement is to be compacted to not less than 98% of the modified maximum dry density when tested in accordance with AS 1289-2003
- Install surface treatment to the same standard or better than existing
- A bitumen seal is required under all asphalt patches and reinstatements; and
- Ensure final surface is uniform to existing pavement, tolerances +5mm -0mm.

8.3.1.15.4 Expansion Joints

Page 175 Clause 8.3.1.15.4

Add new paragraph as follows:

Where concrete paths are required, Lock Joint contraction joints shall be used to the manufacturer's recommendation.

A summary of these requirements are:

- Spacings for Lock Joint joints are to be a maximum of 1.5 times the width of a path.
- Where the path is adjacent to a kerb, spacings shall line up with kerb joints.
- Joints such as saw cuts, or dummy joints, to create control joint are not necessary when Lock Joint is used in a path, as Lock Joint is a contraction/control joint. The Lock Joint joint shall be smooth and appear as a continuation of the path, with the concrete flush with the top of the rubber cap. The Lock Joint is not edged with an edging tool.
- An expansion joint should be placed every 50m in a straight, unhindered path or at the start of a deviation of a curve in the path.
- An expansion joint must be used where the new path meets a fixed object such as another path, a kerb edge or a building.

Where paths are required in rural developments, asphalt is usually appropriate, and will generally be guided by the development approval process.

APPENDIX A – STANDARD FORMS

SUBDIVISION CLEARANCE REQUEST

WAPC Number:	
Subdivision name and stage:	
Property address:	

	Date	Account Number	Receipt Number	Amount	Trust Number
Clearance Fee		1124830		$	
Supervision Fee		1142430		$	
Incomplete Works Bond Fee		1142430		$	
Contribution		1133950		$	
Defects Bond		0020		$	
Soil Stabilisation Bond		0020		$	
Landscape Maintenance Bond		0020		$	
Incomplete Works Bond		0014		$	

As constructed information has been submitted (y/n) _____ Date: _____

Date of Practical Completion: _____

Developer Endorsement:

On behalf of _____, I _____

of _____, certify that the requirements for all the conditions on the subdivision approval have been completed and that the attached Subdivision Clearance Checklist is correct.

_____ _____

Developers Representative Date

City of Albany Office Use Only					
Clearance approval recommended:					
Officer:		Date:		Manager:	
As-con record number:					
PC approval record number:					
All conditions on WAPC approval have been satisfied:					

SUBDIVISION PAYMENT FORM

Payee Name:	
Payee Address:	
Property Owner Name(s):	
Property Address:	
WAPC Number:	

Please provide a separate cheque for Subdivision Fees, Contributions and one cheque for Bonds.

SUBDIVISION FEES AND CONTRIBUTIONS ***(Non-refundable)***

Type of Fee	***Date***	***Account #***	***Receipt #***	***Amount***
Clearance Fee		1124830		
Engineering Supervision Fee		1142430		
Bond Fee: Incomplete Works		1142430		
Contribution to Works		1133950		
Comment:				
TOTAL:				

BONDS ***(Refundable)***

Type of Fee	***Date***	***Trust type***	***Receipt #***	***Trust #***	***Amount***
Defects Bond		0020			
Soil Stabilisation Bond		0020			
Landscaping Maintenance Bond		0020			
Incomplete Works Bond		0014			
Comment:					
TOTAL:					

The return of Defects Bonds, Soil Stabilisation Bonds, Landscaping Maintenance Bonds and Incomplete Works Bonds are subject to the works being completed to the satisfaction of the City of Albany.

INCOMPLETE WORKS BOND APPLICATION

Prior to completing this form, please contact the City to establish if your bond request is likely to be acceptable. The City may only consider a bonding arrangement for incomplete works once it has been demonstrated that the request meets the outlined requirements.

WAPC Number:	
Subdivision name and stage:	
Name and address of person(s) responsible for payment of the bond:	
Subdividers Name / Company:	
Reasons for requesting the bonding of incomplete works:	
Total bond amount proposed:	

Please attach relevant documentation and details of the works for which the bond shall cover. Bonds shall be provided in the form of cash or cheque. The application may be refused on the basis of insufficient information.

The following information must be provided with the application:

- A plan/drawing depicting the location and the area of the specific works to be covered by the bond.
- A schedule of the bond amount referring to all items for which it shall be utilised (inc. GST). A copy of the awarded contract schedule of costs shall also be submitted.
- Endorsement of the bond amount by the Consulting Engineer.
- A committed timetable or program for the completion of the outstanding works.
- The incomplete works bond shall include a contingency amount of 30% of the contract value.
- Written confirmation that the Local Government engineering supervision fees, defects bonds and any required contributions have been paid.
- Payment of Bond Fee (2% of bond amount, minimum $110.00 fee inc. GST).

Signature of Applicant: _____ **Date:** _____

SUBDIVISION DRAWING SUBMISSION CHECKLIST

This form is to be completed and submitted with the subdivision design drawings. For more information refer to section 4.2.

WAPC Number:	
Subdivision name and stage:	
Details of the Consulting Engineer and person responsible for the subdivision drawings submission:	Name: _____ Company: _____ Contact Number: _____
Subdividers Name / Company:	

	Transmittal document has listed all the items sent to City of Albany.
	Two copies of all drawings.
	Drawings have been certified by a practicing Civil Engineer.
	The Consulting Engineer has confirmed in writing that the drawings have been prepared in accordance with Subdivision and Development Guidelines and other relevant standards.
	Certification by the designer that each of the relevant conditions have been satisfied.
	Where conditions have not been satisfied, additional documentation is attached explaining the reasons why.
	A staging plan is provided.
	All management plans required by WAPC conditions are submitted.
	Copy of specifications is supplied.
	Traffic impact studies have been attached.
	Drainage calculations are included.
	Dust nuisance/site assessment submitted.
	Road pavement calculations included.
	Street lighting design and certification.
	Structural certification where appropriate.

Signature of Applicant: _____ **Date:** _____

STORMWATER FOR INFILL DEVELOPMENT
INFILTRATION DESIGN REQUIREMENT CHECKLIST

This form is to be completed and submitted with the subdivision design drawings. For more information refer to section 12.

WAPC Number:	
Subdivision name and stage:	
Details of the person responsible for the subdivision drawings submission:	Name: _____ Company: _____ Contact Number: _____
Subdividers Name / Company:	

	Demonstrate the site is located within the area shaded in drawing 08079/1-3.
	Demonstrate course free draining sand is to a depth of 1.5m.
	Confirm that the area is not susceptible to water logging or high winter groundwater levels.
	The proposed system is sized to detain and infiltrate the 1 year ARI event.
	Statement of Undertaking is completed and a copy of the advice to purchasers is submitted.

Signature of Applicant: _____ **Date:** _____

SUBDIVISION CLEARANCE CHECKLIST

Condition No.	Description	Demonstrate how the condition was fulfilled	City of Albany Comment	Signed & dated by City Officer

SUBDIVISION PRE-START UP CHECKLIST

WAPC Number:	
Subdivision name and stage:	
Subdividers Name / Company:	
Details of the Superintendant:	
Name: _____ Company: _____ Contact Number: _____	

Disruption to local neighbourhoods caused by work activities associated with the subdivision shall be minimised. Written authorisation to commence works by a City Officer will be given once the following pre-requisites are satisfied.

	Current WAPC approval and City of Albany approved construction drawings (copy issued to Engineering Officer).
	Site assessment completed and appropriate dust and sand drift management plan in place in accordance with DEP's Dust Control Guidelines.
	Noise and vibration management plans completed.
	Traffic management plan prepared.
	Complaints register and complaints procedure in place.
	Neighbourhood consultation completed.
	All equipment required for implementation of Management Plans is on site.
	Dewatering areas specified with Department of Water approval.
	Building Licence obtained for retaining walls (required prior to construction of walls).
	Demolition licence for existing structures.
	Hours of operation (Mon-Fri: 0700-1800 & Sat: 0730 – 1300). No work is permitted outside these hours without prior approval from the City..
	Appropriate method of disposal of cleared vegetation has been agreed (Note that the burning of cleared vegetation from subdivisions is not permitted).
	Environmental management plan is supplied.
	Destination of spoil, source of fill and road pavement material.
	A sign is erected at the entry to the subdivision.
	Areas or features identified as not to be disturbed are confirmed and barricading/signage inspected.
	Source of construction water is identified.
	Site access details have been discussed.

The above items have been duly completed and works authorised to commence (City of Albany use).

Name: _____ Signed: _____

Position: _____ Date: _____

AS-CONSTRUCTED INFORMATION SUBMISSION CHECKLIST

WAPC Number:	
Name and stage:	
Property address:	
Surveyor:	
Contractor:	
Consulting Engineer:	

Documentation Required

- ☐ The Contractors marked up set of construction drawings in PDF or hardcopy (signed by the Contractor and endorsed by the Consulting Engineer/Superintendent)
- ☐ Surveyor data in accordance with the Albany Spatial Data Specification (ASDS).
- ☐ The Surveyors as-constructed plan in electronic format (dwg or dxf, GDA 94 MGA Zone 50) and PDF.

Information provided on as-constructed plan

- ☐ Pit type, size and location relevant to GDA 94 MGA Zone 50
- ☐ Pipe invert levels and pit surface levels (top of lid and bottom of pit) referenced in AHD
- ☐ Pipe length, diameter, type and class
- ☐ Sub soil drainage, HCP's, spigots and basins
- ☐ Surrounding cadastre, including lot numbers
- ☐ Road centreline and kerb alignment plan referenced to GDA 94 MGA Zone 50
- ☐ Road centreline and gutter lines levels (referenced to AHD, shown at 20m intervals along the centreline)
- ☐ Footpath locations, width and surface type
- ☐ BBQ's, gazebos, seats, tables, taps, fountains and play equipment
- ☐ Reticulation (sprinkler heads, reticulation pipes and solenoids)
- ☐ Garden edging and lawn area

The following is an example of an endorsement stamp which is required on all as-constructed drawings submitted to the City of Albany