Knox City Council

Civil Works Guidelines

For Development of Broad-acre Subdivisions

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1.0 ENGINEERING GUIDELINES FOR DEVELOPMENT OF SUBDIVISIONS

A. INTRODUCTION

Knox City Council, as the Responsible Authority, has developed a Guidelines setting out the design rules and conditions for the design of subdivisions within the municipality.

B. PRE-DEVELOPMENT DISCUSSIONS

Prior to submitting a Town Planning and/or Subdivision Application, the applicant/developer should investigate the existing traffic and drainage conditions, natural and developed environs, service infrastructures and other developments currently underway which may affect, or be effected by the development.

It is important that Council be consulted about these and any other contingent conditions prior to submission.

C. DESIGN POLICY

Developers are referred to the following associated Knox City Council documents that augment this, to describe Council policies and guidelines for the various aspects of Subdivisional Design and Documentation.

- Storm Water Drainage Guidelines
- Traffic Engineering Guidelines
- Landscape Works for Subdivisions
- Water Sensitive Urban Design
- Standard Drawings & Specifications
- Presentation of Construction Drawings

D. CONSTRUCTION DRAWINGS

Drawings are to be prepared in accordance with this and the associated documents.

The drawings must depict a development in accordance with the Planning Permit, this and associated documents, and the Certified Plan of Subdivision.

Construction drawings must be approved by Council prior to commencement of the works.

Council approval of the drawings will not be issued until the Plan of Subdivision is certified.

E. CONSTRUCTION SITE CONTROLS

1. Working Hours

Normal hours of work shall be between 7.00 am and 6.00 pm Monday to Friday and 9.00 am to 6 pm on Saturdays unless otherwise approved.

2. Protection of Environment

An Environmental Site Management Plan shall be submitted to Council for approval prior to commencement of works on site.

Noise levels shall not exceed those laid down by the EPA Regulations for Construction and Site Noise.

3. Occupational Health and Safety

A Site Safety Plan shall be implemented for the full duration of the works to ensure the safety of all workers/visitors to the site and the general public.

4. Site Facilities

Eating, storage and meeting facilities shall be provided as required by industry/union standards as required by the consultant.

The construction site must be provided with at least one chemical toilet for use by persons working on site.

2.0 DESIGN OF SUBDIVISIONS

This section is to assist the designer in the preparation of documentation and maintain uniformity in their presentation and construction.

1. Survey

a) The Plan of Subdivision

This is to be designed to suit the topography of the land, the existing features which are to remain, and all traffic considerations.

b) Pegging

The Plan of Subdivision shall be pegged out by a licensed Surveyor prior to commencement of works and repegged at practical completion of works.

c) Levels

All levels specified shall be related to Australian Height Datum (AHD).

2. Environment

Approval will be required from the Council Conservation Officer for alteration, removal or excavation of any significant existing features.

3. Design – Kerb and Channel, Footpath, Pavement

a) Street Pattern

Consideration must be given to the traffic pattern and layout to be adopted. Factors to be considered are:

(i) Subdivisional road width standards. Refer to Annexure A: Street Design Criteria.
(ii) Flaring streets at major intersections to improve turning movement.
(iii) The closure of one leg of a crossroad to eliminate a dangerous intersection.
(iv) The use of traffic islands at major intersections where road closure is not possible.
(v) The turning of one road in at right angles to the other at angled intersections.
(vi) The wandering of the pavement within the road reserve to avoid trees or add character to the area.
(vii) Requirements of the authority on fire hydrant location and access.
(viii) The provisions of the Disability Discrimination Act as they apply to pedestrian and traffic facilities.

b) Design Cross Section

Typical sections to be used will vary in accordance with the crossfall existing across the streets in question. Refer to the relevant Standard Drawing S200 series for details.

Excess cut or fill batters are to be stabilized by a retaining structure such as:

(a) Retaining walls
(b) Stone beaching
(c) Crib Blockwall

– see Standard Drawings for details.

c) Services

Alterations to services must be considered in selecting a suitable type cross section. Cut and fill over mains and cables and against poles will determine whether relocation or lowering is necessary. If not, they will dictate positions of kerb and channel, footpath and retaining walls.

- All service trenches under the footpath must be backfilled with compacted fine crushed rock.
- Telstra conduits must be aligned so as to avoid any Telstra pits situated in the footpath.

d) Kerb Grading

Design of streets will be by kerb line design with kerbs graded with a minimum number of straight grades with vertical curves of appropriate lengths where they meet. 'Sag' and 'summit' vertical curves will be of maximum length (in metres) = 15 x (% grade change). The allowable constant and maximum crossfall between kerb lines shall be as shown on the standard drawings for the appropriate width pavement (S200 series). The minimum kerb grade is to be 1 in 200 (0.5%).

Design grades must be within:-

1. Courts- 12% maximum (grades in excess of 12% may be allowed for short distances only).
2. Minor through roads- absolute maximum 11%. Above 8% is not desirable and should be avoided.
3. Major and feeder roads- absolute maximum 8%, ideally 6-7% maximum.
4. Desirable minimum grade 0.5%.

Where design grades exceed the values above, drainage must be upgraded if it is not possible to alter the grade.

Desirable minimum grade of kerb and channel in courtheads, intersections etc. is 1%.

At through road intersections there must be sufficient storage area on an acceptable grade (2%).

e) The Radii of Kerb and Channel Returns on Intersections

1. Minimum 8m radius for kerb returns
2. Minimum 9m radius (for 13m property line radius) for court bowls
3. Minimum of 18m x 6m for backs of kerbs in 'T' heads
4. For industrial subdivision, the above minimums are 12m or else gatic covers are required on pits at TP's.

f) Kerb Profiles

Use of universal roll-over kerbing is not permitted and semi-mountable kerbs are only permitted in certain cases.

g) Road Crossfalls

Cross sectional grades must be within 1:30 to 1:36.

Superelevation may be required on curves on major and feeder roads. No adverse crossfall is permitted around bends.

h) Fencing

Where fencing of brick, masonry or stone construction exists, every endeavour is to be made in design to preserve same without compromising sight distance and clearance requirements.

i) Through Roads

Selected roads within a subdivision are to be considered as 'through' roads with the pavement on intersecting roads being designed to match the through pavement. Examples of designing to these control-points are given in Appendix E.

j) Pavement

Subgrade testing is to be undertaken as per Sections 2 of A.R.R.B. Special report No. 41 – A Structural Design Guide to Flexible Residential Street Pavements.

Tests are to be conducted by a Specialist Consultant.

From the results, a pavement thickness is to be adopted from the Standard Drawings S200 Series. Adjustment shall be made by adoption of subgrade improvement to adjust the CBR of the in situ surface.

k) Parking Indents

Shall be a reinforced concrete slab as approved. Refer to Standard Drawing S322.1.

Coloured stencilling or faux brick finish of the concrete pavement is required.

l) No-through Roads

Road endings should be designed as a court bowl or hammerhead arrangement or approved variation that will allow a service vehicle adequate turning space. (Refer to Traffic Engineering Guidelines.)

m) T-Head Court Terminals

The minimum distance between backs of kerb shall be 18 metres.

The road reserve shall be no less than 20 metres.

n) Trees & Native Vegetation

Every opportunity is to be taken to preserve existing trees and native vegetation in a healthy condition within the subdivision.

A Town Planning permit will be required for the removal of any native vegetation unless an exemption applies. – Refer to Council Landscape Policy for further detail.

4. Storm Water Drainage Design

Refer to Stormwater Drainage Guidelines for general design information.

a) Pits

(i) Spacing

Pits are to be constructed at a maximum distance of 80 metres apart.

(ii) Inspection Inlet Pits

Inspection Inlet Pits shall be located at the upstream tangent point of any bends in the pipeline. They shall be constructed in accordance with Standard Drawing S150.1.

(iii) Surface Inlet Pits

To be provided over the main drain, where its alignment is such that a natural depression will still exist above it after backfilling (usually the old creek line).

(Refer Melbourne Water (Ex DVWPA.) standard drawings).

b) Pipe Layout

(i) Street Alignment

In general, pipelines in road reserves shall be laid on the high side so that house drains may be connected to them. Pipe offset is to be (D÷2 + 150mm) with a minimum of 400mm behind kerb.

(ii) Easement Alignment

Where the design of the drainage system necessitates the use of any easement through private property for an outfall drain, the normal offset to the pipe centre line is to be 1 metre from the building line irrespective of easement width. This may be varied to avoid trees or other obstructions provided it is economical to do so.

c) House Drain Connections

New connections are to be provided for properties draining to the road reserve at each existing house drain 6 metres from the low corner of each vacant allotment. Connection should be made to a pit or underground drain where possible. Connection direct to kerb and channel is not permitted.

d) Backfill of Pipe Trenches

Where the edge of the trench is less than 150mm from back of kerb, backfill of the trench will be Class 3 fine crushed rock, properly compacted.

e) Minimum Pipe Sizes

Along road reserve parallel with kerb alignment – 225mm diameter.

Under road pavement - 300mm diameter backfilled with crushed rock.

5. Services

a) Sewer and Water

Reticulation of the subdivision shall be to a layout as agreed by Council and laid underground in accordance with the requirements of the responsible water authority.

b) Power and Public Lighting

The cable reticulation and public lighting of the subdivision is to be to a layout as agreed by Council and laid underground in accordance with the requirements of the responsible energy authority.

- All poles and ferrous fittings to be hot dipped galvanised.
- Lighting layout, poles and fittings shall comply with AS 1158 and AS 3771. Council will not accept layouts that substantially exceed the minimum requirements outlined in AS 1158.

- Lighting must comply with the Energy Supply Authority's guidelines for non-standard public lighting equipment for Category B Lighting – Minor Roads and Category A Lighting – Main Roads.

Public lighting is to be activated without delay to meet the requirements of the electrical authority

c) Non-Standard Street Lighting in Residential Developments

To facilitate maintenance and replacement consistency, it is therefore necessary for Council to exercise control of the alternatives available for adoption.

Where non-standard lighting is preferred by developers, the following policy requirements are to be met:

(i) Operational Arrangements with Energy Authorities

Council will be required to pay the same lighting tariff as for standard lighting in accordance with the Victorian Electrical Supply Industry (VESI) guidelines (June 1996). The assets (cables, poles and luminaires) become the property of Council. These are maintained by the electrical authority for a fee paid by Council.

(ii) Developer Options

Non-standard light fitting alternatives are limited to the types itemised on Schedule One.

Subject to approval as set out below, developers must choose from Schedule One and provide the initial supply and installation of non-standard light fittings of one type throughout the entire subdivision. The selection of the type of poles/luminaires shall give due consideration to those already installed in the vicinity of the development.

(iii) Developer Non-Standard Lighting Contribution

In order to compensate Council for additional costs incurred for future maintenance and replacement of non-standard light fittings, the developer shall:

- Supply the initial stock of poles and luminaires.
- Arrange for and meet the cost of installation.
- Be responsible for all maintenance and replacement of all poles and lanterns commencing from the installation date of poles with lantern heads for a period of six (6) months, where the non-standard lighting is erected. Damaged poles or non-operational luminaires are to be repaired/replaced within forty-eight (48) hours of the report of the damage/malfunction.
- Lodge with Council prior to the issue of Statement of Compliance, a non-refundable payment of $320 (current for 2008) for every non-standard pole proposed for the estate. This is to cover Council's cost for their maintenance and future replacement.
- Lodge with Council a cash sum of $1240 being the approximate average value of two identical spares of the non-standard luminaires used within the subdivision. This is to fund the purchase of luminaires to replace those damaged in the future.

These payment amounts can be revised annually.

(iv) Approval

Approval for the use of non-standard lighting shall be at the discretion of the Development Engineer. Knox City Council will consider the size of the subdivision and type of lighting in surrounding streets, to ensure as much as possible that neighbourhood uniformity is retained. Approval will be subject to the developer obtaining written agreement from the Energy Supply Authority to:

- Design a suitable cabling and lighting layout as agreed with Council.
- Provide all on going maintenance.
- Supply electricity to power the installation for a standard tariff.

(v) Conformity

Conditional approval is subject to the compliance of the following:

- Poles shall be uniform in colour throughout an estate and all visible areas of pole and fittings shall be identical in colour.
- Minimum mounting height of proposed pole shall comply with the Victorian Electricity Supply Industry (VESI) Guidelines for Category B Lighting. (Page 7 June 1996 and its amendments.)
- Only ground set poles are permitted to be used.
- Light fittings will be the same colour as the poles.
- All light fittings to have integral photo electric cells and be manufactured in accordance with AS 3771.
- Only one type of pole and lantern is to be used within an estate or linked staged subdivision.
- For higher order streets and applications such as roundabouts and intersections, higher wattage luminaires and higher poles will be assessed for suitability of use.
- Painting of poles shall be in accordance with details prescribed in the Victorian Electricity Supply Industry (VESI) Guidelines for Category B Lighting – Minor Roads, June 1996 and its amendments.
- Non-standard light fitting alternatives are limited to the types listed below:

Specifications of Permissible Non-Standard Public Light Fittings

POLES:	Boulevard Manningham Sovereign
LUMINAIRES:	Candela - Toorak Sylvania - Bourke Hill

COLOUR: Hawthorn Green
Satin Black

PAINTING: Degrease galvanised surface
Prime with 'Wattyl Super Etch'
2 pack acrylic ('Wattyl Paracryl IFC')
2 coats applied by spray

Ref: Victorian Electrical Supply Industry (VESI) Standard for Public Lighting for Category 'B' Road Lighting

d) Electrical Substation (Kiosk) Location Guidelines

The following advice provides consultants guidance regarding the location of electrical substation sites in subdivisions.

(i) General Objectives

(a) The need for an electrical substation site should be identified and located as soon as possible on the functional layout plan as part of planning considerations.

(b) The location of an electrical substation shall be such that it does not have any detrimental effect on residential amenity or Council's open space reserves.

(c) Substations are not to be located in small reserves or walkways, as the substations would dominate the use of these small or narrow open spaces. (As a guide, the kiosk reservation should occupy less than 2% of the open space area and use less than 10% of the boundary dimension.)

(d) Electrical substation site size shall be as small as the authority will accept.

(e) Having regard to issues of access, amenity and maximum use of public reserves for recreation purposes, Council and the electrical authorities have agreed the following priorities should be used as guidelines when siting kiosks (refer to Annexure B):

Location Priority	Description
1	Rear of lots on side street boundary – fence required at rear and sides.
2	Adjoining the end of a right of way – fences on lot but not along either the road or the laneway.
3	Straddle the front corners of two adjacent lots – fence required at rear and sides (or retaining walls if on hill).
4	At the front corner of a large lot – side property boundary fence only; negotiate with future property owner about whether a front fence will be permitted (some restrictions).
5	On a Council Reserve, immediately adjacent to a side boundary of a lot and the road – no fences required. The area of the substation site shall not constitute open space.

The site location shall be the first of the above priorities that is deemed practicable by Council.

6. Final Completion Certificate

Prior to the issue of the Final Certificate and the hand over of the assets to Council for maintenance, the following items are to be lodged with Council:

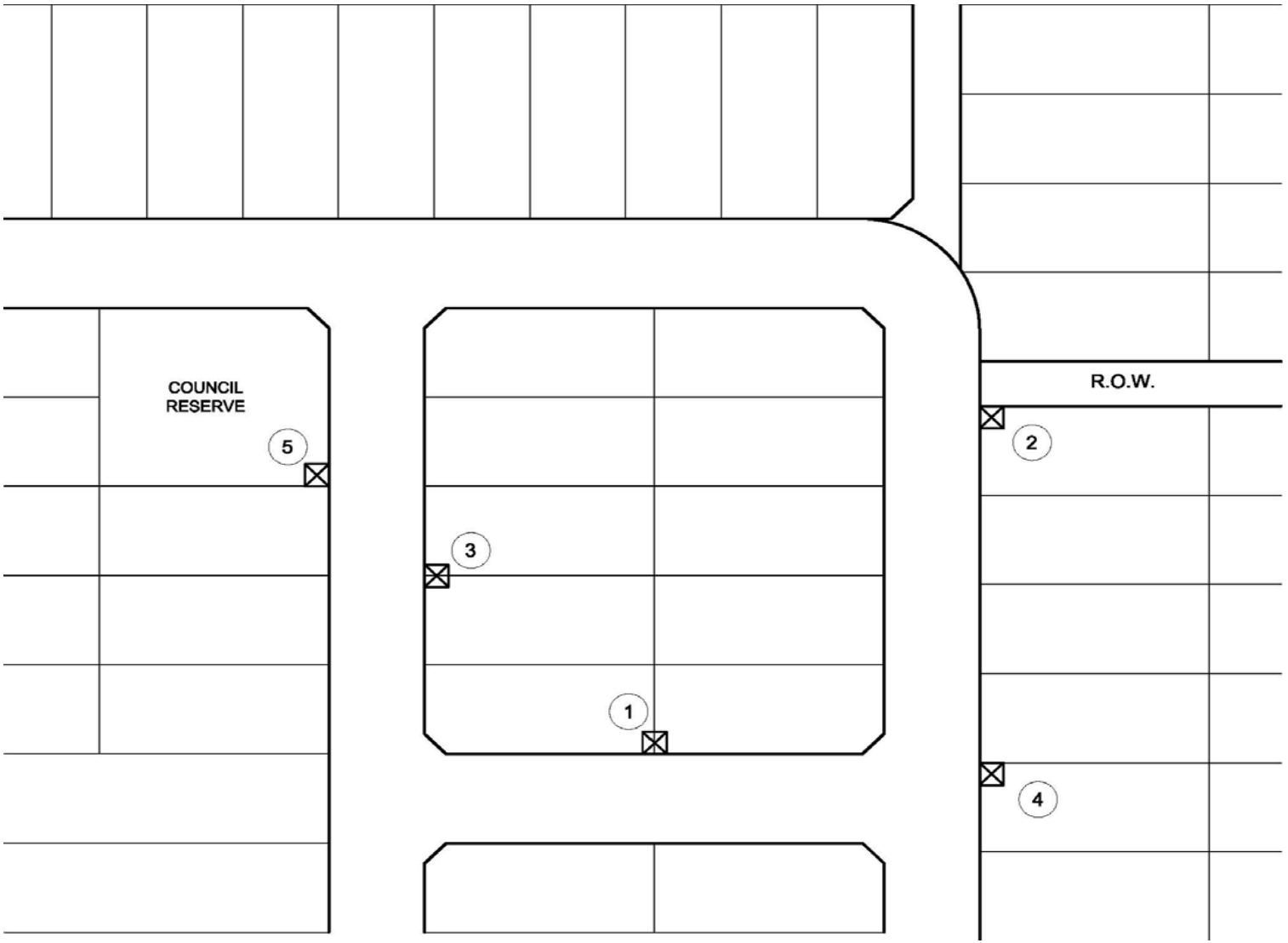
1. Transparencies of the construction drawings amended to depict the “as built” details of the subdivision.

2. Blue duplicates of the Titles for all reserves to be taken over by Council.

STREET DESIGN CRITERIA

STREET TYPE	RESERVE WIDTH (M)	WIDTH BETWEEN B.O.K (M)	INDENTED PARKING (1/LOT)	BUS BAYS	LANE PROVISION	DESIGN VEHICLE SPEED (KPH)	TRAFFIC CONTROL DEVICES	MAX. No. LOTS SERVED	TRAFFIC VOLUME (VTE/DAY)	KERB TYPE	F/PATH REQ'D (1.4M)	PAVEMENT TYPE REF. S200 SERIES STD DRGS.
ACCESS PLACE	15	6.3	END OF COURT ONLY IF HAMMER-HEAD OR <12.2M RADIUS BOWL	NO	1 TRANSPORT 1 PARKING	20	NO	15	150	ROLLOVER AND/OR PLINTH WITH REINFORCED PIT COVERS	1 SIDE IF MORE THAN 5 DWELLINGS ARE BEING SERVED	ASPHALT CONCRETE S 201.1
ACCESS STREET LEVEL 1	16.5	6.3 OR 7.6	YES NO	NO NO	2 TRANSPORT 2 TRANSPORT 1 PARKING	30 30	NO YES	100	1000	ROLLOVER WITH REINFORCED PIT COVERS	1 SIDE	ASPHALT CONCRETE S.201.2/S201.3
ACCESS STREET LEVEL 2	16.5	8.8	NO	NO	2 TRANSPORT PARKING	40	YES	200	2000	BARRIER	BOTH SIDES	ASPHALT S 201.4
COLLECTOR STREET	20	(I) 7.6 OR (II) 11.3	YES NO	YES YES	2 TRANSPORT 2 TRANSPORT 1 PARKING	40-60 40-60	YES YES	300	3000	BARRIER	BOTH SIDES OR ONE SIDE WITH 2.4m CYCLE-WAY WHERE REQ'D	ASPHALT S202.1 OR S202.2
TRUNK COLLECTOR STREET	20	(I) 2x5 WITH MEDIAN OR (II) 11.3	NO (LIMITED OR NO PARKING)	YES	4 TRANSPORT	60	NO	.33	3000-6000	BARRIER	BOTH SIDES OR ONE SIDE WITH 2.4m CYCLE-WAY WHERE REQ'D	ASPHALT S 202.3 OR S 202.2
INDUSTRIAL ZONE MAJOR ROAD		13.0								BARRIER		ASPHALT S203.1

ANNEXURE A



ANNEXURE B