WANNEROO

DEVELOPMENT DESIGN SPECIFICATION

WD15

PROPERTY DEVELOPMENT DESIGN

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GENERAL

WD15.01 SCOPE

1. This specification outlines the design aspects for development of individual properties other than single residential development. The specification outlines standards traditionally applied throughout the City for issues relating to vehicular access, parking and stormwater drainage.

2. Controls for property development are contained in the City's Town Planning Scheme and are administered by the City's Approval Services Section. ***Development Assessment Unit***

3. This specification is to be read in conjunction with Councils standards relating to pavement design, storm water drainage and vehicular crossovers.

WD15.02 OBJECTIVES

1. This specification aims to set standards and document requirements related to the development of individual properties other than individual residential development in order that there is a consistent approach to meeting desired standards across the City .

WD15.03 REFERENCE AND SOURCE DOCUMENTS

(a) Council Specifications

D1, WD1	-	Geometric Road Design
D2, WD2	-	Pavement Design
D5, WD5	-	Storm Water Drainage
WD11	-	Vehicular Crossovers

(b) Australian Standards

AS 2890.1	-	Off Street Parking Facilities
AS 1428	-	Design for Access & Mobility

(c) Standard Drawings

TS 07-11-0	-	Industrial / Commercial Concrete Crossover
TS 12-1-0	-	Disabled Bay – Layout and Pavement Marking
TS 12-2-0	-	Flush Kerbing Transitions in Carparks for ACROD Bays
TS 12-3-0	-	Tree Wells for Carparks
TS 18-1-0	-	Typical Carpark Layout Commercial/ Office Development
TS 18-2-0	-	Typical Crossover and Driveway Construction for Vacant Lot Strata Development
TS 18-3-0	-	Reversing Bays for Long Driveways
TS 19-1-0	-	Lighting for Carparks

WD15.04 CONSULTATION

1. The Designer is encouraged to consult with Council, and relevant authorities prior to and during the preparation of the property development design. ***Authorities***

WD15.05 ACCESS

1. Layout of accessways shall be in accordance with AS2890-1 - Off Street Parking. ***Australian Standard***

2. Council By-laws require accessways in caravan parks to be 6.0 metres wide for entrances and not less than 4.0 metres wide for internal roads.

3. Crossovers shall be constructed in accordance with Council's Standard Vehicle Crossings Specifications. Access to duplexes is to conform with Council's Standard Drawings (See Vehicular Crossover Specification) ***Vehicular Crossover***

4. Where applicable, accessways shall be designed to accommodate service vehicles and rubbish trucks. ***Service Vehicles***

WD15.06 PARKING

1. The number of carbays required is laid down in the City's Town Planning Scheme and designers should consult with the Council's Town Planning Department in the early stages of the design process. ***Town Planning Scheme***

2. Standard bay layout and sizes shall be in accordance with AS2890-1. As a general guide, the details of typical layout are given in Council's Standard Drawings. Carparks are to be sealed, marked and drained to Council's satisfaction. ***Standard Bay Layout***

3. Disabled parking bays shall comply with Australian Standards. Council's Standard Drawings prescribe those standard details. Maximum grades across carparks is 2.5% for disabled bays and 6% in other than disabled bays. ***Disabled Parking Bays***

4. Bays and accessways shall be designed to clear eaves overhangs and protuberances off buildings or walls. Where a bay is in front of or immediately adjacent to an emergency egress door, then a bollard shall be installed so as to ensure the egress is not obstructed by parked vehicles. ***Buildings***

5. New roads alongside school boundaries are to be widened to 9.0 metres to allow for parking embayments for parents at peak times. Also off street parking is to be provided for buses at schools. ***Schools***

6. Duplexes shall provide one covered bay and one other hard standing bay per unit. Where there is a shared driveway a minimum crossover width of 3.5m shall be provided. ***Duplex Development***

7. Multi storey carpark proposals shall be assessed independently. ***Multi Storey Carparks***

WD15.07 PARKING DESIGN DETAIL

1. The City has adopted AS 2890.1 and AS 2890.2 for carpark design of commercial sites within the City. All parking areas to be sealed, marked and drained to the satisfaction of the Council ***Australian Standards***

2. Typical minimum parking bay dimensions (for 90 degree bays) are as follows : ***90^{O} Parking***

- All bays to be a minimum 5.5m long (front end overhang may be permitted)
- Internal bays to be 2.5m wide
- End bays generally 2.8m wide
- End bays in a blind aisle 3.5m wide
- Disabled parking bays 3.8m wide
- Parking aisles should be a minimum 6m wide.
- End bays should be protected by an island at least 1.5m wide

3. Although 90 degree parking bays are preferred, it may be possible to use 30, 45 or 60 degree parking configurations. Such arrangements must only be used where a one-way system will be operated ***Angled Parking***

4. Parallel parking bays may be accommodated using the following minimum dimensions : ***Parallel Parking***

- Minimum width of bay to be 2.1m plus 300mm clear of obstructions
- Length of intermediate bay 6.3m
- Length of obstructed end bay 6.6m
- Length of unobstructed end bay 5.4m

Designers must refer to the Australian Standards AS 2890.1 in relation to the limitations set on the use of these minimum dimensions. These dimensions may vary depending on other design factors.

5. Pavement grades within a parking area should be between 1% and 6%. Pavement grades for a disabled parking bay should be between 1% and 2.5%. ***Pavement Grades***

6. A minimum 1% of the parking bays should be installed to disabled bay standards. At least one disabled bay is required per development. This number may need to be increased depending upon the type and use of the development. ***Number of Disabled Bays***

7. Typical minimum widths for roadways or ramps (with *no* parking bays) are as follows: ***Roadway Widths***

- one-way road or ramp - 2.9m between kerbs plus 300mm each side clear of obstructions (total of 3.5m)
- two-way road or ramp - 5.5m between kerbs plus 300mm each side clear of obstructions (total of 6.1m)

8. If the roadway or ramp is on a curve, then the width for a one-way road should be increased to give a total width of 4.4m (3.6m + 300mm inside + 500mm outside). The width of a two-way road should be increased to give a total width of 8.6m (7.8m + 300mm inside + 500mm outside).

9. Maximum ramp grades are as follows: ***Ramp Grades***

- 20m long or more - 16.7% (1 in 6)
- less than 20m long - 20% (1 in 5)

WD15.08 ROOF & CARPARK DRAINAGE

1. All stormwater run-off from the site shall be disposed of on site using approved methods.

Stormwater Drainage Storage Requirements & Calculations

2. Stormwater drainage calculation shall be undertaken in accordance with the requirements of Council's Standards D5 and WD5. The following is a guide for the determination of stormwater drainage storage requirement.

The onsite storage facility shall be able to contain the stormwater runoff generated by the 1 in 100 year ARI, 24 hour storm event. This equates to, in simple terms,

Storage capacity required = 1330 X EIA m^3
where EIA is Equivalent Impervious Area in hectares

Storage facilities can be in the form of soakwells, underground tanks or pipes or within carpark and landscape areas with the ability to allow soakage of stormwater into the underlying soil. Designers will be required to to demonstrate with proposed contour levels to ensure that the stormwater system can accommodate the required volume. Consideration shall be given to how these storage facilities are to be accessed for maintenance.

Designers will also be required to demonstrate, should the drainage system fail, what mechanisms are there to indicate to the owner that the system is failing without overflows surcharging onto adjoining properties or street (eg. Regular flooding of a carpark area prior to surcharging into the street will give an indication that the drainage system is not functioning efficiently). Failure of the internal drainage system should inconvenience the property owner before impacting upon the surrounding area.

Minimum Design Criteria

3. The following requirements outline traditional standards used throughout the City for drainage of properties other than residential developments. Designers are encouraged to incorporate these requirements into their development proposals.

- All bends and junctions in pipe lines to be at junction pits (drainage pit) or gullies
- Minimum pipe size to be 150mm diameter.
- Drainage Pits to be a minimum 1.0m (approximately) diameter and gullies a minimum of 750mm diameter and are to have a soak hole in their bases.
- Gully grates are to be a minimum 500mm x 500mm in size with 3 steel straps (30mm x 4.5mm approx) welded transversely across the bars .
- No oils, chemicals, food wastes etc shall be deposited into the stormwater drainage system. Where stormwater is to be disposed of from a service area, it is to be via a trapped gully. Roof runoff may be discharged via downpipes directly to sealed carpark areas or piped to the carpark drainage system.
- To ensure the continued satisfactory operation of the drainage system, careful attention should be paid to the required maintenance and access. This particularly applies to soakwells or other underground structures.
- Drainage runoff is calculated using 100% runoff from all impervious surfaces on the development.
- Pipe design is based on the Rational Method, assuming a full pipe flow not under head.

Soakwells

4. On-site soakage areas are designed in accordance with sump design criteria outlined in Council's Standard D5/WD5. The depth of the soakwell should not be greater than its diameter.

The use of drainage soakage system is based upon sandy soils of high permeability, slotted sides and open bases surrounded by bluemetal and crushed limestone surrounds to the soakwell.

REFUSE COLLECTION AND STORAGE

WD15.09 COMMERCIAL BIN ENCLOSURES

1. Council has adopted a commercial refuse collection service using front lift trucks (up and over). All commercial properties should have an appropriately designed bin enclosure for this type of collection.

2. Bin enclosures shall be located as shown on the **approved** Building Licence drawings. Construction should match that of the main building and incorporate the following requirements

- Minimum **internal** dimensions shall be 3.5m wide and 2.5m deep and 1.8m high, with no internal projections (eg. meter boxes).
- A minimum opening of 2.7m shall be provided to the bin enclosure and where the opening is visible from the frontage road, outward swinging gates shall be fitted to the opening. The gates shall be fitted with drop bolts so as to secure the gates open during servicing. The bin store shall be located so as to ensure that the open gates do not impede vehicle movement.
- A rigid restraining bar shall be fitted to the floor of the enclosure so as to prevent bins striking the rear wall. As a guide the restraining bar should be 2m long and stand 200mm above the base of the enclosure and 150mm clear of the rear wall and be constructed of 50mm galvanised iron pipe or similar.
- The floor of the bin enclosure to be at least 100mm thick concrete (min.20MPa strength) graded at 1% to a drain.
- Where food or 'wet waste' is to be stored, Council's Health Department shall require a washdown facility, consisting of a water supply and a trapped waste to sewer.

3. The roadway leading to the bin storage area must be constructed to road standards outlined in Council's specification D1/WD1 and be not less than 3.5m wide.

4. The portion of the driveway immediately in front of the bin loading area must have a straight run-in of at least 10m to allow the vehicle to drive straight on to the bin. Maximum grades shall be 3% to pavements within 10m of any bin store**.**

5. All radii along the driveway shall be capable of accommodating service vehicles having an internal turning radius of 6.0m and an external turning radius of 12.0m.

6. There shall be a height clearance of 4.0m along the full length of the driveway, and 6.5m height clearance above the bin enclosure and above the 10m run-in area.

7. Should Council and the developer decide a bin enclosure is not required at the initial building stage, then a 100mm thick concrete pad of sufficient dimensions shall be provided to accommodate an enclosure, should one be required in the future.

WD15.10 RECYCLE BINS AT SHOPPING CENTRES

1. Council has adopted a commercial refuse collection service using front lift trucks (up and over). All commercial properties should have an appropriately designed bin enclosure for this type of collection.

2. All shopping centres must make provision for recyclable bin enclosures which are designed as follows

- Enclosure must be easily accessible for both public and collection vehicles and be located so as not to cause disruption to traffic utilising the shopping centre.

- Where practicable, the enclosure shall have exposure to the road frontage of the shopping centre.
- Minimum dimensions of enclosure to be 8.0m x 3.0m or as the Council.
- Construction shall be hardstanding with a brick/masonry wall on three sides and no less than 500mm in height.
- No receptacles shall be placed outside the enclosure.
- A refuse bin shall be provided within, or in close proximity to, the enclosure.

WD15.11 GROUP DWELLINGS

1. Grouped dwellings may arrange to have domestic refuse collected by the following methods:

Method 1 : A 240 litre cart at each dwelling unit to be collected from the frontage road verge.

Carts to be kept at each unit, and positioned on the street verge on collection day. The distance between the normal place of storage and the street verge shall not be more than 40 metres. Grades should not be so steep as to increase difficulty of moving carts. The developer shall provide a written undertaking that bins will be positioned on the verge on collection day by the residents or by management.

Method 2 : A 240 litre cart at each dwelling unit to be collected from the verge of an internal service road in dwelling site.

Carts to be kept at each unit, and positioned alongside the service road circulating around the site. This method is only suitable where the site is large enough to accommodate a road designed to take a standard 10 metre long refuse vehicle, with an inside turning radius of 7.0 metres and an outside turning radius of 12.5 metres. The developer shall provide a written undertaking that bins will be positioned on the verge on collection day by the residents or management.

Method 3 : A 240 litre cart for each dwelling unit kept in a bin storage structure within the dwelling site and placed on the frontage road verge for collection.

Carts to be kept in a centrally located bin storage area, but shall be positioned on the street verge on collection day. The bin store shall be a minimum of 2.5 metres wide so as to accommodate two rows of bins with a central aisle. The developer shall provide a written undertaking that bins will be positioned on the verge on collection day by the residents or by management.

Method 4 : A bulk bin located in an approved bin storage structure within the dwelling site.

A centrally located bulk bin store may be used, (one bulk bin to service 20 units/maximum 40 metres from units). This method is only suitable where the site is large enough to accommodate a road designed to take a standard 10 metre long refuse vehicle, with an inside turning radius of 7.0 metres and an outside turning radius of 12.5 metres. Refer to the City's Bulk Bin Enclosure information sheet for details regarding construction of the bin store. The developer shall provide a written undertaking that bins will be positioned on the verge on collection day by the residents or by management.