

1. Introduction

To ensure the best possible outcomes for the City are achieved, it is important the City articulates the minimum acceptable standard for the planning and design of all road related infrastructure associated with the development and subdivision of land.

This procedure is designed to outline the minimum standards and technical information required to guide both applicants in the preparation of engineering drawing submissions, and the City in the assessment and determination of submissions.

2. Statement of Intent

This Planning Procedure applies specific rigor to the preparation and assessment of engineering drawings related to strategic and statutory proposals for residential, commercial, industrial or rural-residential development by:

- (a) Applying the objectives and requirements of Liveable Neighbourhoods (WAPC, 2009), WA State Government policies and guidelines;
- (b) Ensuring that the objectives and intent of the approved Structure Plan and Subdivision Applications are appropriately implemented; and
- (c) Ensuring that infrastructure is designed and constructed in accordance with adopted standards consistent with best management practice.

The Planning Procedure is to be read in conjunction with the following documentation:

- Planning Policy 3.3.15 - Bulk Earthworks
- Planning Procedure 3.4.1 - Public Open Space
- Planning Procedure 1.8 - Urban Water Management

3. Application

Prior to commencing civil construction, engineering drawings must be submitted to the City for assessment and approval to satisfy condition/s either imposed by the City or the Western Australian Planning Commission (WAPC). Drawings will be considered and assessed by the City having regard to development standards outlined in the following documents:

- Liveable Neighbourhoods (LN)
- WAPC Local Government Guidelines for Subdivision Development Nov 2017
- AustRoads - Guide to Road Design Parts 1-8
- MRWA supplement to AustRoads

Note: Liveable Neighbourhoods 2009 (LN) provides principles and guidance for designing integrated networks and individual street design and is not intended to be a traffic engineering manual. As such, reference to and consideration of, relevant traffic engineering standards and guidelines, including those of Austroads, Main Roads WA and the Public Transport Authority should be made when designing the transport networks to meet the objectives of Liveable Neighbourhoods.

The Engineering assessment will consider the proposal to ensure connectivity, amenity and integration achieves safe, efficient and attractive movement networks, which create a walkable neighbourhood, reduces car dependence and is suitable for use by people with disabilities.

Where a Structure Plan exists, the subdivision and development of land is to generally be in accordance with the Structure Plan and any associated provisions contained in Schedule No.9 of Town Planning Scheme No.2.

The City will assess and issue an Engineering Approval in the following circumstances:

- Where Engineering Drawings and specifications are required to be submitted to comply with conditions of subdivision approval imposed by the Commission.
- Where an approval of subdivision is determined by the Commission with reference to section 157(2) of the P&D Act and the determination specifically excludes the carrying out of works, including *Bulk Earthworks*.
- Where modifications or works are proposed within an existing road reserve in accordance with section 170 of the P&D Act.

Where an Engineering Approval is required, conditions may form part of the Approval. Conditions set out the circumstances in which the approved works may proceed. The purpose of conditions is to manage impacts on the environment and amenity, and to provide for quality infrastructure and deliverables to adequately service proposed development. Engineering Approval is required to be issued prior to the endorsement of a plan of survey, or prior to the issue of a Building Permit, as specified.

For subdivision involving the construction of roads or artificial waterways, the applicant is required to submit to the City the relevant information to support conditional approval as required under section 170 of the P&D Act. This includes acknowledgement of the outcomes identified in the Traffic Impact Assessment Report (required by the WAPC Transport Impact Assessment Guidelines 2016).

The engineering Information requirements for each type of application are as follows:

Structure Plan	Subdivision Applications	Development Applications	Engineering Drawing Assessment
Engineering/Infrastructure Servicing Report	Site Plan demonstrating lot layout, truncations and road reserve widths	Site Plan/Detail Design Drawings	Detailed Design Drawings in accordance with Subdivision Approval
Transport Impact Assessment (TIA) or Traffic Impact Statement (TIS)	Transport Impact Assessment (TIA) or Traffic Impact Statement (TIS)	Transport Impact Assessment (TIA) or Traffic Impact Statement (TIS)	Roads design to implement recommendations from Transport Impact Assessment (TIA) or Traffic Impact Statement (TIS)
Local Water Management Plan (LWMS)		Stormwater Management Plan	Urban Water Management Plan (UWMP)
Geotechnical Report			Geotechnical Report

Prior to commencement of construction works in circumstances as outlined above, the following documents, where appropriate or required, shall be submitted by the applicant to support conditional approval:

- A Pre-works Geotechnical Report certifying that the land is physically capable of development or advising of the required remedial works. Where necessary, a preliminary Acid Sulphate Soil Investigation is to be included;
- Dust Management Plan including a completed 'Site Classification Assessment Chart', as per the Department of Environment Regulation's '*A guideline for managing the impacts of dust and associated contaminants from land development sites, contaminated site remediation and other related activities*' ('DER Guidelines');
- Urban Water Management Plan (UWMP) prepared in accordance with Local Water Management Strategy (LWMS);
- A Preliminary Site Investigation (if the site is known or suspected on being contaminated);
- Documentation to support any prior to the commencement of works conditions imposed by the Commission;
- Subdivision pre-calculation plan;
- Earthworks layout and grading plan;
- Retaining wall layout plan;
- Services plan (electricity, water, telecommunications, gas and sewer);
- Roadworks and drainage layout plan, including service crossings;

- Roadworks and drainage longitudinal profile drawings;
- Roadworks typical cross section drawings;
- Stormwater catchment and management plan;
- Stormwater drainage calculations;
- Standard drawings and details;
- Signage and Linemarking Drawing;
- Construction cost of the works and specification for the works;
- Environmental management plan;
- Plan of existing significant vegetation;
- Street lighting plan; and
- Pavement Investigation Reports where an existing road is to be upgraded.

Two copies of drawings shall be submitted in hard copy format (A1s) as well as an electronic copy (PDF) via email, disc or USB.

4. General Requirements

4.1 Earthworks

Note: This section should be read in conjunction with Planning Policy 3.3.15 Bulk Earthworks.

Earthworks within a subdivision may include:

- ground improvement works or the provision of sand fill in areas where the existing soils contain plastic and/or reactive soil conditions;
- filling for the provision of stormwater drainage systems which flow to the street drainage system or other discharge points;
- works providing lot elevation compatible with adjoining developed lots; and
- providing clearance from habitable floor levels to accommodate the 100 ARI (Annual Recurrence Interval) storm event.

Where a geotechnical report is required in support of works associated with a proposed subdivision, the report is to be submitted to the City as a condition of approval to be considered prior to the issue of the engineering approval and/or clearance of titles. Works are to be certified by a professional Geotechnical Engineer prior to endorsement of the plan of survey.

All filling material is to be properly consolidated clean, coarse, clay-free sand that is free from foreign matter. Please refer to filling specification provided in the WAPC Local Government Guidelines for Subdivision Development Nov 2017 section 2.3.1

Finished ground levels at the boundaries of the lot are to match or integrate with the existing or proposed finished ground level of the land abutting.

Earthworks in areas containing vegetation which has been nominated for retention require careful approach. Neither cut nor fill is allowed within the Tree Protection Zone (TPZ). Compliance with Australian Standards AS 4970 - Protection of Tree in Development Sites is required. Temporary fences must be erected at the perimeter of the root zones of all trees nominated for retention clearly marking and protecting trees.

The applicant shall be responsible to control sand drift and wind borne dust from the site until the land ownership is transferred.

4.2 Retaining Walls

Earthworks may cause the need for a retaining wall to avoid encroaching or adversely affecting adjoining land (including the verge area).

A Building Permit is required for any retaining wall that retains ground more than 500mm in height. Failure to obtain the required approval may result in prosecution in accordance with Section 374 of the Local Government (Miscellaneous Provisions) Act 1960.

The retaining wall shall be located entirely within the future lot boundary. Retaining walls shall not overlap common boundaries between lots (walls and associated structure are to be constructed 25mm to 150mm from the boundary and contained fully within the allotment which is being serviced).

Retaining walls abutting existing or proposed road reserve, proposed public open space, parkland, or bushland areas are to be contained within the proposed allotments serviced (must not straddle common boundaries).

All materials used in the construction of the retaining walls are to have a minimum design life of 100 years.

Retaining walls between residential lots shall not exceed 2.5m in height. Where it is proposed to retain heights in excess of 2.5m, retaining walls shall be terraced and landscaped. The height of the lower-level terrace shall not exceed 1.5m to assist with access for maintenance. The height of the upper level terrace shall not exceed 2.5m. The width of the terrace shall be a minimum of 1.5m.

4.3 Roads

The road design must reflect features that provide for a safe and practical road system that can be maintained to the satisfaction of the City. .

General road layout, intersections, road hierarchy, major pedestrian and cycle path locations, road reserves, pavement widths, embayment parking and footpath locations are to be identified on engineering drawings.

Relevant geotechnical investigations are required to identify sub-grade conditions prior to pavement design. Presumptive sub-grade values can be used in situations where detailed investigations are unwarranted (for example sandy subgrades of suitable depth).

4.3.1 Design - Urban

All road pavements are to have a minimum design life of 40 years with a minimum dense graded asphalt design fatigue life of 20 years.

Desirable minimum longitudinal grade of 1 in 100 (1%) for all roads that are to be kerbed or likely to be kerbed at some time with an absolute minimum longitudinal grade of 1 in 200 (0.5%).

Maximum longitudinal grade shall be 1 in 10 (10%). In extreme cases, the City may give approval to the use of steeper grades, but such approval will only be given when all other possible alternatives have been fully investigated, and proven to be impracticable.

All changes of grade of more than 1 in 100 (1%) shall be joined by a vertical curve in accordance with AustRoads Guidelines.

The crossfall on the cross-section of the road pavement shall generally be three per cent each way from the road crown/centre line. Depending on the natural contour of land there may be instances where one way crossfalls should be considered to reduce earthworks on adjacent land. Inverted crowns are to be designed for laneways.

Verge grading should be 1 in 50 (+2%) from the top of kerb to the property boundary.

All roads are to be kerbed. A minimum 12m radius is required at intersections. A 9m radius will be accepted at intersections between laneways and access streets.

Traffic control devices shall be installed where required to properly regulate traffic flows or where traffic problems are anticipated to occur in the future. Traffic control devices shall comply with appropriate Austroads standards and other relevant industry standards and guidelines.

Longitudinal crossfall transitions are to be constructed over 30m.

4.3.2 Design - Rural

Rural Road pavements are to have a minimum design life of 40 years with a wearing course design life of 15 years.

4.3.3 Wearing Course

Urban

The wearing course on all urban roads shall be a minimum thickness of 30mm asphalt on a primer seal.

Neighbourhood Connector Roads shall be surfaced with 40mm AC14 Asphalt.

All roundabouts are to have a wearing course of 50mm AC14 Asphalt.

Red Asphalt

Red asphalt shall be produced in the same manner as black asphalt except that aggregate shall consist of 55% laterite and 45% granite with 0.9% oxide.

Brick Paving

Heavy duty trafficable bricks with a minimum thickness of 76mm may be considered to replace the wearing and base courses where deemed appropriate (i.e. intersection treatments, traffic calming and/or car parking embayments). Coloured or surface treated asphalt is preferred where a contrasting surface treatment is desired.

Rural

The minimum wearing course for rural roads is to be two coat seal consisting of either a two coat emulsion seal with 10mm and 7mm basalt aggregate (access roads only) or hot bitumen prime with 5mm metal aggregate and seal coat with 14mm basalt aggregate for collector roads or 10mm basalt aggregate for access roads. Based on traffic volumes the second coat may be applied within a twelve month period.

The wearing course for rural road intersections and cul-de-sacs shall be 30mm asphalt on a primer seal.

Intersections and cul-de-sacs shall be kerbed unless otherwise approved.

4.3.3 Typical Pavement Details

The below pavement profiles are generally the accepted minimum by the City within sandy soil conditions.

Road Hierarchy	Sub Base (Limestone)	Road Base	Primer Seal	Asphalt Course	Wearing
Integrator Roads	300mm	100mm	7mm	40mm AC14	
Neighbourhood Connector Roads	170mm	100mm	7mm	40mm AC14	
Access Streets	150mm	100mm	5-7mm	30mm	
Rural Roads	150mm	100mm		Asphalt (with primer seal) or two coat emulsion seal (10mm/7mm)	

4.3.4 Parking

On-street parking is to be maximised within road reserves adjacent to schools, neighbourhood centres and high density areas. On-street embayment parking is to be designed in accordance with AS2890.5 and line-marked to the City's requirements.

4.3.6 Temporary Turnarounds

A sealed temporary turnaround with a 9m radius shall be constructed where the design will construct roads which terminate but are proposed or likely to be extended in the future. Temporary turnarounds are to be located entirely within the road reserve or balance lot created as part of the subdivision. For temporary turnarounds chevron signs need to be installed to indicate the termination of the road.

Roads less than 20m in length do not generally require temporary turnarounds.

4.3.7 Road Crossings within Existing Pavements

The City of Rockingham's preference is for all road crossings to be mechanically bored beneath existing roads. 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 boring is not suitable then the following reinstatement measures are to be implemented:

- Straight Saw cuts are to be made through the full depth of the pavement on all edges of the proposed trench.
- Any unsuitable backfill material is to be disposed of off-site.
- City of Rockingham Officers are to inspect construction prior to backfill and on completion of each pavement layer.
- Backfill - Clean sand backfill to 300mm below subgrade level compacted to 95% MDD (Perth Sand Penetrometer - 8 blows).
- Subgrade - 300mm 3-5% cement stabilised clean sand subgrade.
- Sub base - 150mm 75mm limestone compacted to 95% MDD performed in accordance with AS1289 Methods for testing soils for Engineering Purposes.
- Base course - 100mm road base compacted to 98% MDD performed in accordance with AS1289 Methods for Testing Soils for Engineering Purposes.
- Seal - Emulsion tack coat.
- Asphalt - 30mm AC7 - Ensure final surface is uniform to existing pavement tolerance +5mm/-0mm.

- Any disturbed areas are to be reinstated to the same standard or better than existing on completion of works.
- 12 Month Defect Liability Period will apply to each road crossing.

4.4 Kerbs

All kerb return types must be appropriate for the location.

Kerb radii minimums are to be in accordance with AustRoads turning templates.

4.5 Footpaths

Minimum footpath width is to be 2.0m. Shared or Dual-Use Paths are to be constructed to a minimum width of 2.5m.

Access streets must have a footpath constructed on one side of the road. Integrator Roads and Neighbourhood Connector Roads must have footpaths or shared paths on both sides (2.0m and 2.5m).

Longitudinal Grade should not exceed 1 in 14 (7%) design.

Where longitudinal grade is greater than 1 in 33 (3%), rest areas are to be provided at no greater than 25m intervals. At 1 in 20 (5%), rest areas are to be provided at no greater than 15m intervals. Rest areas are not required for gradients less than 1 in 33.

Footpaths with a gradient steeper than 1 in 20 are to be considered as ramps for design purposes. Rest areas at intervals of 9m are required for gradients up to 1 in 14.

Footpath crossfall is not to exceed 1 in 40 (2.5%).

Vertical clearance along paths is to be a minimum of 2500mm.

Directional and Tactile Ground Surface Indicators are to be provided per AS1428.

Footpaths shall be constructed in concrete to a minimum thickness of 100mm with edge thickening of 150mm where required. Compressive strength to be minimum 25MPa at 28 days with 20mm aggregate with a maximum slump at delivery of 75mm.

The interface between any pram ramps and the road surface are to be smooth and flush to reduce trips and falls by all path users.

4.6 Street Lighting

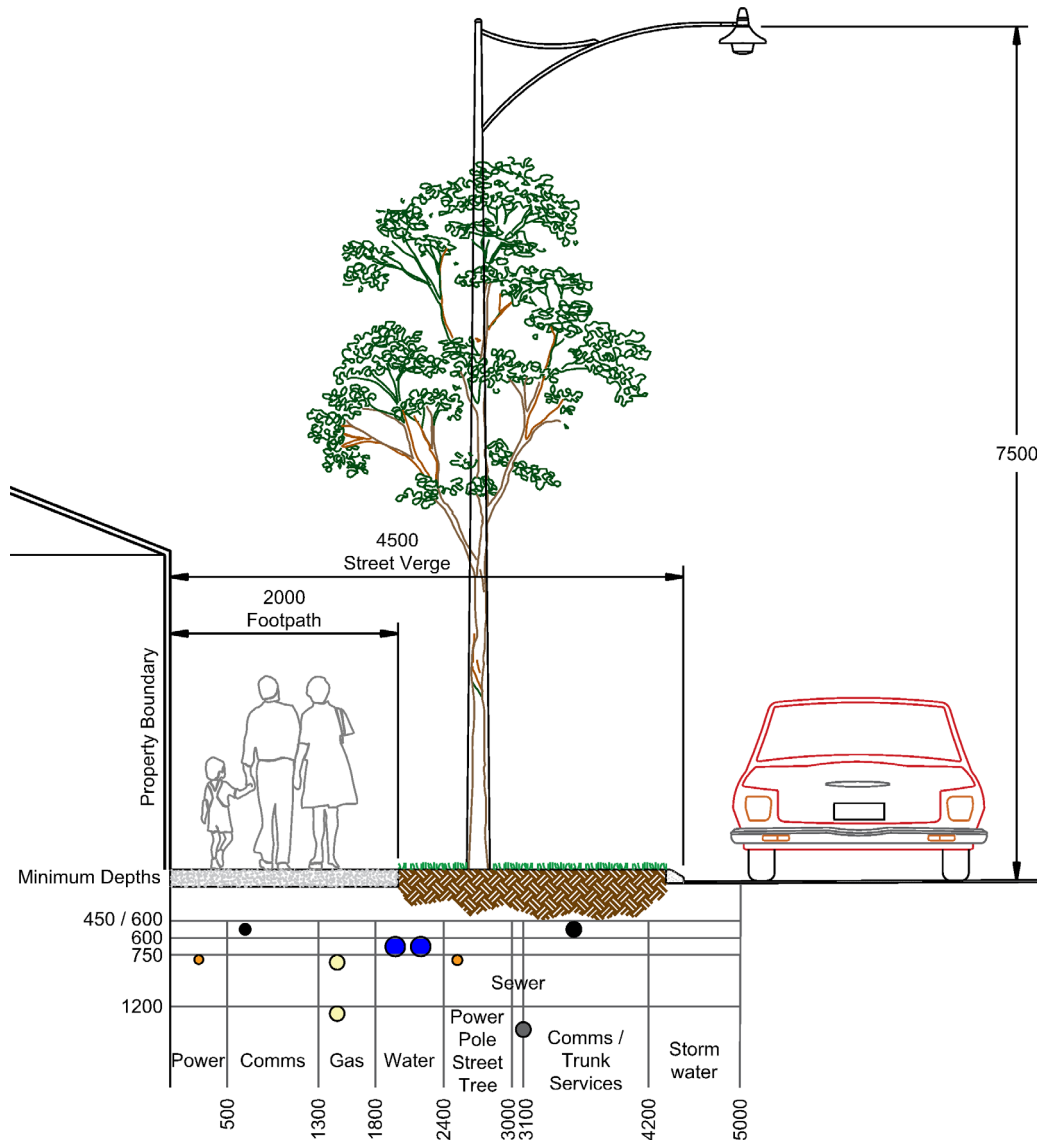
Street lighting shall be provided in all new development and shall comply with the requirements of AS/NZS1158 and City of Rockingham Street Lighting Handbook.

The below table provides the minimum lighting standards required for a particular road category.

Road Categories	Indicative Design VPD (Vehicles per day)	AS1158 Categories
Integrator A	15,000-35,000	V3
Integrator B	7,000-15,000	V5
Neighbourhood Connectors	3,000-7,000	P3
Access Roads	>3,000	P4
Laneways	>500	P5
Public Areas	-	P6 to P12

Street light pole locations for Category V Roads shall be set back 1.5m from the face of kerb in accordance with MRWA Lighting Design Guideline for Roadway and Public Space.

Category P Roads (Local Streets) shall be setback 1.0m from face of kerb.



Typical Geometry Category P Roads

Lighting poles shall not be located in medians, raised islands, except where unavoidable due to site conditions. The pole set back requirements shall comply with Clause 6 of Appendix B of AS/NZS 1158.1.3. It is recommended that poles not be located within central median islands less than 2m in width.

Note: An exemption to this requirement may be considered for Town Centre Development.

Lighting poles shall not be installed in the centre of roundabouts or around the periphery of the raised island of the roundabout. If it is unavoidable, then AS/NZS 1158.1.3 shall be strictly followed.

City recommends standard Western Power street light poles and luminaries are used. The City will support the use of decorative street lights selected from the Western Power decorative range. Non Western Power poles and luminaries are not supported.

4.7 Stormwater

Applicants subdividing land for urban and rural residential, commercial or industrial developments are required to provide a stormwater drainage system.

Stormwater systems are to be designed in accordance with the urban water management plan (UWMP) for the development and incorporate water sensitive urban design principles into the design where suitable.

The stormwater drainage system shall be designed to be readily and economically maintained by the City, and shall incorporate appropriate access for maintenance.

4.7.1 Design

Stormwater discharge to the drainage system must be at or below pre-development rates. Post-development flow rates are to be attenuated to pre-development flow rates through the provision of adequate detention and/or retention systems. "Pre-development" state of infill developments refers to the original undeveloped state of the block and appropriate runoff coefficients will apply.

For frequently occurring small rainfall events up to and including the first 15mm, lot runoff should be managed within lots and road runoff should be managed within road reserves. Where site conditions do not allow for the full runoff to be managed at source, the site is to manage as much as practical at-source. The remaining runoff should be conveyed from a lot or road reserve via overland flow wherever practical.

For minor events up to and including 20% AEP (residential) and 10% AEP (high density residential, commercial and industrial), stormwater management systems must be designed to provide appropriate levels of serviceability, amenity and road safety.

Minimum habitable floor levels must be consistent with the criteria specified in the *Local Government Guidelines for Subdivisional Development* (WAPC, 2017) and *Decision Process for Stormwater Management in WA* (DWER, 2017), and should be set:

- (i) At least set at 0.3m above the adjacent 1% AEP flood level of the urban drainage system (roads, drainage basins), or;
- (ii) At least 0.5m above the 1% AEP flood level of natural waterways, living streams or open drainage channels.

For major events, protect people and property from flooding by constructing residential, commercial and industrial building habitable floor levels at least 0.3 m above the 1% AEP flood level of the urban drainage system and at least 0.5 m above the 1% AEP flood level of waterways or based on advice from the Department of Water and Environmental Regulation (DWER). Overland flow paths utilising the road network must be provided whilst avoiding trapped low points.

4.7.2 Pipe Systems

All piped drainage lines shall be designed in accordance with the recommendations of the pipe manufacturers and the appropriate Australian standards. The minimum pipe diameter shall be 300 millimetres and Class two concrete or equivalent pipes are the minimum standard to be used in the road reserve. Minimum cover to pipes to be 600mm unless approved otherwise by the City.

Stormwater drainage lines in road reserves shall generally be aligned in accordance with the *Utility Providers Code of Practice for Western Australia*.

Systems must be designed to prevent entry of sediments into piped sections and transmission through the piped system. Minimum velocity of flow in pipes is to be 1.0m/s. Pipes shall be designed to flow full under no head.

Maximum length between entry/junction pits is to be 60m. Drainage structures must be located where they can be accessed for maintenance.

Grated gullies shall be designed to be safely traversed by cyclists. Manhole lids within active frontages are to be heavy duty to withstand vehicle loadings.

Pit bases are to be benched where a 600mm trap will be below the controlled groundwater level. Where benched pits are proposed, a silt trap will be required prior to the gross pollutant trap (GPT).

A Gross Pollutant Trap is to be provided prior to discharge into bio-retention areas and/or detention basins. The GPT design is to allow ease of maintenance while meeting the performance requirements outlined within Australian Runoff Quality.

4.7.3 Bio Retention Areas and Flood Storage Areas/Detention Basins

Bio-retention structures or systems (also referred to as rain gardens) are to be sized at a minimum of two per cent of connected constructed impervious areas and other WSUD methods included in the *Stormwater Management Manual for Western Australia*.

Drainage infrastructure (including basins, swales, living streams and drainage channels) should be designed so that flood depths do not exceed 0.5m for 1 Exceedances per Year (EY) event, 0.9m for 20% AEP event and 1.2m for a 1% AEP event. The Consulting Engineer shall design the drainage network using a recurrence interval of 5 years, except in the case of commercial and industrial areas, where a recurrence interval of 10 years shall be used.

A minimum of 0.3m clearance should be provided between the invert of the infiltration area and the maximum or controlled groundwater level.

The required emptying time for minor events shall be 0.5 days and for major events shall be 3.0 days.

To reduce health risks from mosquitoes, retention and detention treatments should be designed to ensure detained immobile stormwater is fully infiltrated in a time period not exceeding 96 hours.

4.7.4 Subsoil

Where development proposals require subsoil drainage to control groundwater levels, the City requires the following design and construction standards to be met:

- (i) Imported fill must be tested in a NATA accredited laboratory to ensure the groundwater management system design criteria are met e.g. saturated hydraulic conductivity.
- (ii) A minimum pipework specification of DN150 mm slotted PVC (Class SN8).
- (iii) A minimum subsoil pipe grade of no less than 1 in 500.
- (iv) Maximum subsoil lengths of 100m between manholes/chambers.
- (v) Subsoil outlets are to be free draining with a minimum invert level of 150mm above the base of the system into which it discharges.
- (vi) Flushing points must have a water tight screw cap and be protected by a suitable lid and chamber.
- (vii) Subsoil drainage alignment should be considered along with any other common service infrastructure requirements.
- (viii) Gravel packs must consist of 20mm granular material with a minimum 100mm cover to pipe on all sides and wrapped in an approved geotextile fabric.
- (ix) Groundwater quality must be maintained or improved prior to offsite discharge into local and regional watercourses.
- (x) Subsoils along lot boundaries or within lots should be avoided.
- (xi) City's preference is for subsoil system to be independent from the road side system.

4.7.5 Drainage Design Rural Areas

Drainage is to be accommodated by unlined open drains where grades and soil types permit or alternatively piped to a downstream detention area.

The maximum velocity of flow shall be considered by the consulting engineer to ensure erosion does not occur. The longitudinal slope of open channels may be adjusted by means of bed control (riffle or drop) structures to minimise velocity to limit erosion. Scour protection should be given consideration in changes in direction of flow.

The top water level for the design water flows shall be greater than 300 millimetres below the level of the road shoulder.

Appropriate safety devices such as guide posts shall be provided at the road shoulder to protect and/or advise road users of the presence of the drain.

4.8 Standard Details

Refer to the Standard Drawings in Appendix A.

5. Interpretations

12 Month Defect Liability Period

Annual Exceedance Probability (AEP) - the probability of an event occurring or being exceeded within a year expressed as a percentage.

Controlled Groundwater Level (CGL) - The controlled (i.e. modified) groundwater level (measured in metres Australian Height Datum) at which drainage inverts are set. This level must maintain the hydrologic regimes of groundwater dependent ecosystems, such as wetlands, that are to be protected.

Council - means the Council of the City of Rockingham.

Developer - Applicant

Maximum Groundwater Level (MGL) - must be determined through modelling and/or measurement. Where this information is not available from the DoW, local studies and investigations shall be undertaken.

Geotechnical Report - information on the physical properties of soil and rock which determines approach to earthworks design and foundations for proposed structures.

Local Water Management Strategy (LWMS) - a water management document prepared by a proponent to support a land-use planning proposal at the local level (local planning scheme amendment or local structure plan).

Water Sensitive Urban Design (WSUD) - The philosophy of achieving better water resource management outcomes in an urban context by using an integrated approach to planning and incorporating total water cycle management objectives into the planning process. The key elements of this design include protection from flooding; management of water quantity and quality to achieve ecological objectives; and water conservation, efficiency and re-use.

Wearing Course - the upper layer in road design.

6. Authority

Following the process of assessing the Engineering Drawings submitted for consideration, conditions will be established and issued to the applicant or recommended to the WAPC as part of the City's acceptance for the works to occur.

7. References

WAPC (2017) Local Government Guidelines for Subdivisional Development

WAPC (2008) Better Urban Water Management

Australian Standard AS 4970 - Protection of Tree in Development Sites

Australian Standard AS 2890.1

Australian Standard AS 1428

8. Adoption

This Planning Procedure was endorsed by the Director, Planning and Development Services on 29 March 2019.