

Development Control Plan 2013

Amendment No. 2

17 December 2014

Further information email council@midwestern.nsw.gov.au or telephone 1300 765 002



www.midwestern.nsw.gov.au

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PART 1 INTRODUCTION

1.1 PURPOSE OF THE PLAN

This Plan contains more detailed guidelines to complement the provisions contained in the Mid-Western Regional Local Environmental Plan 2012 which applies to all land within the Mid-Western Regional Local Government Area.

1.2 AIM OF THE PLAN

The aims of this Plan are to:

- Implement and support the objectives of the Local Environmental Plan (Mid-Western Regional LEP 2012);
- Define development standards that deliver the outcomes desired by the community and Council;
- Provide clear and concise development guidelines for various forms of development;
- Encourage innovation in design and development by not over-specifying development controls;
- Expedite development approvals by providing clear direction of Council's intent and criteria; and
- Provide certainty of development outcomes for developers and the community.

1.3 HOW THE PLAN WORKS

The Development Control Plan (DCP) provides specific criteria for local development within the Mid-Western Local Government Area, including the “deemed-to satisfy” criteria that will facilitate *fast – tracking* of certain development applications (DA).

The four different assessment streams for development are outlined in figure 1.

Under Section 79c of the Environmental Planning and Assessment Act 1979 (EP&A Act), Council is required to consider a range of issues in the evaluation of a DA including the DCP. Therefore compliance with this DCP does not guarantee development approval will be issued. However, in relation to certain development types, Council has adopted “non-discretionary” development controls that establish a “deemed-to satisfy” standard of development. Where this standard is achieved, Council will not:

- Further consider those standards in determining the DA; or
- Give weight to objections received relating to those standards; or
- Refuse the DA on the grounds that the development does not comply with those standards; or
- Impose a condition of consent that has the same, or substantially the same, effect as those standards but is more onerous than those standards.

Where the “deemed to satisfy” standard is not achieved, the DA cannot be *fast-tracked*, and the DA must provide justification in line with the Discretionary Development Standards.

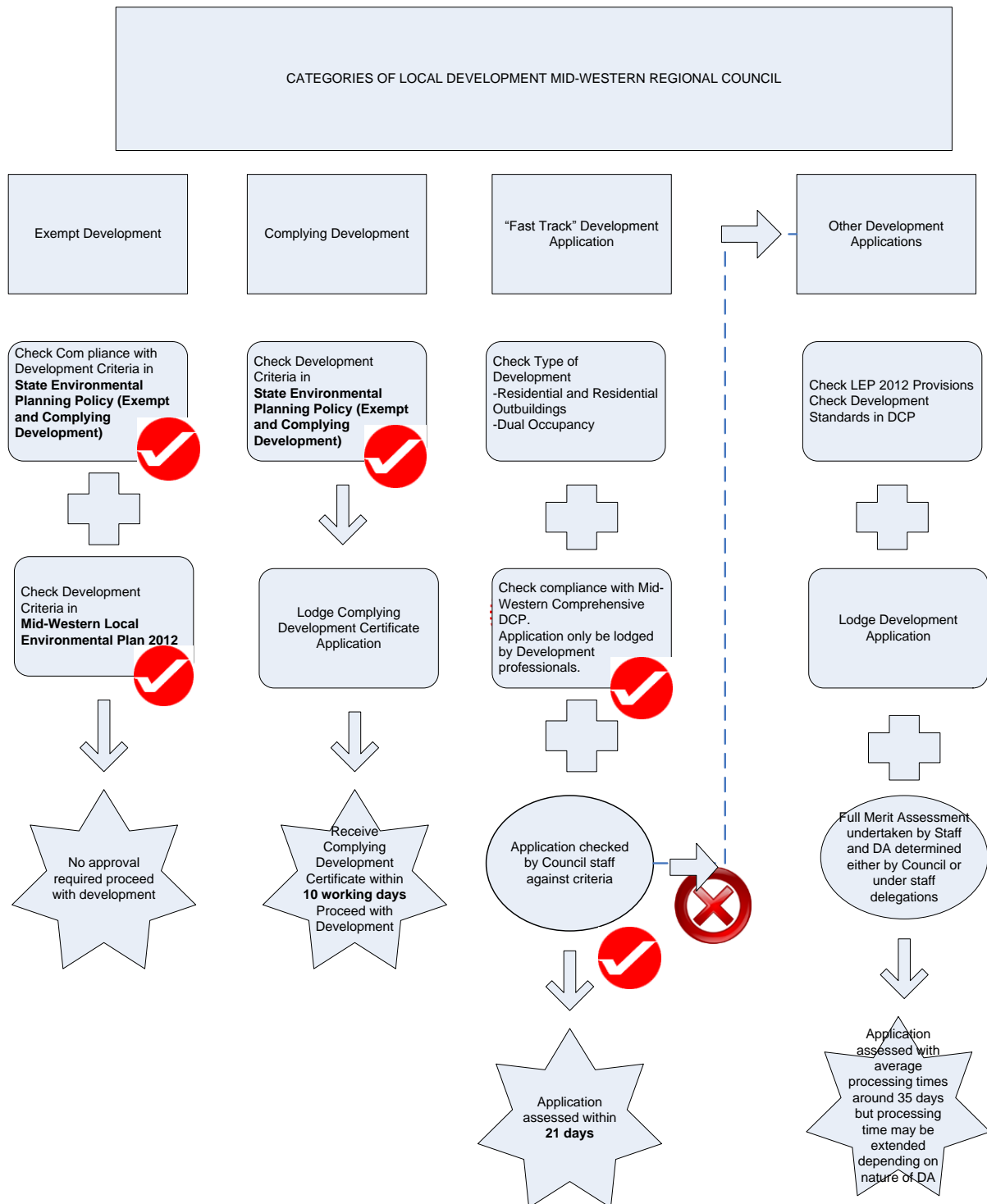
1.4 TRANSITION PROVISION

Where a development application is lodged prior to the commencement of this Development Control Plan the applicant must nominate if the application is to be assessed under this Development Control Plan or the Development Control Plans in place prior to the adoption of this Development Control Plan.

Where no development control plan is nominated an application will be assessed in accordance with the Development Control Plans in place prior to the adoption of this Development Control Plan.

1.5 FAST TRACK DETERMINATIONS

The *fast-track* process allows specific types of development to be determined more quickly than a standard DA where the proposal meets the “deem-to satisfy” provisions of this DCP. Where a proponent certifies that the minimum standards are met, determination should be issued within 21 days.



The new “deem-to satisfy” process is a simpler, faster approval pathway. Still merit-based, the process streamlines the assessment of common forms of development that can be clearly quantified as achieving outcomes sought by the community, the development industry and Council.

The following types of development may be fast-tracked where the proponent certifies that the development complies with the minimum DCP controls:

- **Residential (General Housing including ancillary structures such as pools and carports.**
- **Dual Occupancy**
- **Fast-tracking does not apply to residential and dual-occupancy development on flood prone land or bushfire prone land.**

***Fast-tracking* does not apply to any other development.**

Development Applications lodged under the fast track process will need to be accompanied by signed certification.

Council will only accept applications certified by suitably qualified persons (such as planners, architects, engineers, draftsman and surveyors).

Where plans are subsequently found to not meet a standard, the application will be removed from the *fast-track* system and the development professional who provided the certification will not be eligible to claim fast track determinations for a period of at least 6 months.

1.6 DOCUMENTATION REQUIRED TO ACCOMPANY A *FAST TRACK* DA

The documentation required to be prepared for a *fast track* DA is the same as for a regular DA. Schedule 1 of the Environmental Planning and Assessment Regulations 2000, specify this information,

A *Fast Track Certification Checklist* must also be completed to confirm that the proposal complies with all the “deemed –to satisfy” controls applicable to that form of development.

Separate checklists are provided for each development type in Council’s website – Midwestern@nsw.gov.au .

1.7 DON’T MEET THE “DEEMED TO SATISFY” STANDARDS?

If your proposal does not meet the “deemed to satisfy” standards, your application must provide justification as the variation of the deemed to satisfy provisions and address the relevant performance standards in this DCP.

Applications that do not meet the “deemed-to-satisfy” criteria WILL NOT be processed under the *fast track* stream.

1.8 RELATIONSHIP TO OTHER PLANS

The DCP is only one of the matters that must be considered by Council in determining a DA.

The proposal must also be considered with regard to the other matters contained in Section 79c of the Environmental Planning and Assessment Act 1979, including relevant environmental planning instruments, the likely environmental effects, suitability of the site, any submissions received and the public interest.

Where inconsistency arises between this DCP and any environmental planning instrument applying to the same land, the provisions of the environmental planning instrument prevail.

1.9 DEVELOPER CONTRIBUTIONS

As a consequence of development it is likely that an increase in the demand for public amenities and services (such as community facilities, local open space etc) will occur. In this regard, a contribution under Section 94 of the Environmental Planning and Assessment Act 1979 may be required as a condition of the development consent in accordance with Mid-Western's Contributions Plan.

Council required developers to contribute towards the augmentation of water and sewerage works to meet the additional demands of the new development. In this regard, approval must be sought from Council under the Water Management Act 2000 to determine the required contributions.

1.10 PRIVATE COVENANTS

Where inconsistency arises between this DCP and any private covenant, the provision of the DCP will prevail. Council is not required to have regard to private covenants in the assessment of development applications. Clause 1.9A of the Mid-Western Regional LEP 2012 outlines the full legal context associated with this provision.

1.11 SEWER INFRASTRUCTURE

Council does not permit the following types of development over an existing sewer main or easement for sewer;

- erection of permanent structures,
- cut or fill of land,
- the planting of trees, or
- Concrete structures.

1.12 COMMUNITY CONSULTATION

Advertised Local Development

The following kinds of development will be **advertised**:

- Demolition of a building identified as a heritage item in Schedule 5 of the Mid-Western Regional LEP 2012.
- Major Council projects (not including utility service infrastructure) with a value exceeding \$1,000,000 or likely to be of significant community interest;
- Non-residential uses in or adjacent to the R1 General Residential, R2 Low Density Residential, or RU5 Village Land Use zones.
- Subdivision creating 20 or more allotments.
- Sex services premises
- Within the R1 General Residential, R2 Low Density Residential, or RU5 village land use zones, development applications for the purposes of:

Multi dwelling housing; residential flat buildings; senior housing; hostels; boarding house; group homes; tourist and visitor accommodation (excluding B&Bs); boarding houses; caravan parks; exhibition villages; child care centre

NOTE: Application for residential forms of development lodged as *fast track* DAs will not be advertised.

- Any development identified by Senior Council staff that should be advertised in the public interest.

Process for Advertised Development

- Notice of the development in a local Newspaper, containing the same information as required to be given in the written notice;
- Written notice of the proposal to be given to all adjoining landowners;
- Period of exhibition to comprise a minimum of 14 days from the date notice is published (plus an additional 7 days where the period coincides with public holidays.)

Notified Development Applications

Apart from the exceptions listed below or where a development is advertised development, all other development applications, that involves a use that requires development consent, alteration to the external configuration of a building, the erection of a new building, variation to an adopted building line will be notified to adjoining owners in accordance with this DCP. The kinds of development that will **not** require notification are:

- Single storey dwelling;
- Single storey additions to a house
- Minor dwelling additions such as carports, pergola and verandahs;
- Private swimming pools;
- Detached garage or shed associated with a dwelling to be used in conjunction with the dwelling (ie not for commercial/industrial use)
- Any building on land within RU1 Primary Production, RU4 Primary Production Small Lots, which has an area greater than 2 hectares (land);
- Subdivision creating less than 5 lots
- Commercial or industrial development within a business or industrial zone that does not adjoin a dwelling.
- Attached dual occupancy within the R5 Large Lot Residential zone.

Despite the above exclusion, following site inspection of the site and consideration of such factors as the character of the existing development, slope of the site and local amenity, Council may determine that notification should occur and the appropriate fee will be applied.

Process for Notified Development

- Written notice of the proposal to be given to all adjoining landowners;
- Period of exhibition to comprise a minimum of 7 days from the date of the notice (plus an additional 3 days where the period coincides with public holidays.)

PART 2 FAST TRACK DEVELOPMENT APPLICATIONS

2.1 GENERAL HOUSING AND ANCILLARY STRUCTURES “DEEMED TO SATISFY” PROVISIONS

The following criteria must be met to qualify for the “fast track” application process.

Building Setbacks

Zone	Street	Side/Rear	Secondary Frontage for Corner Lots *
R1, R2 and R3 where Lot size is less than 900m ²	4.5m to building line or average of adjoining properties 5.5m to the garage	900mm	0m for garages in laneways 2m to side boundary
R1, R2 and R3 where Lot size is greater than 901m ² less than 1,999m ²	6.5m to building line or average of adjoining properties 7.5 to the garage	900mm	2m
R2 where 2000 m ² to 1 ha	15m	5m	7.5m
R5 Less than or equal to 5 ha. in area	30m	20m	15m
RU1, RU4 and R5 Greater than 5 ha. in area	60m	20m	15m
RU5	7.5m	BCA	3m

*Applicant to nominate front and secondary setback.

- Where the lot is located on a Classified Road such as Ulan or Cope Road the front setback is 100m and side and rear setback is 20 metres.
- Where the lot is located on the State Highway (Castlereagh Highway) the front setback is 200 m and the side setback is 20 metres.
- Garages – the aggregate width of the garage door or carport shall not exceed 45% of the front elevation of the dwelling.

Building height

- Single storey (Single storey dwelling is one that has only one storey (as defined by the BCA) and the Finished Floor Level (FFL) is less than 1 metre above natural ground level.

Privacy

- Single storey development achieving setbacks do not require specific privacy controls.

Design

- 75% of the Private open space and internal living areas should have access to sunlight for 3 hours a day between 9 am and 3 pm with direct access to the

	<p>main living areas.</p> <ul style="list-style-type: none"> • 80m² of private open space is provided with a minimum dimension of 5 metres. • No windowless facades at the street frontage(s). • Street elevations are to include at least 5% of openings including windows, doors. • Garages – the aggregate width of the garage door or carport shall not exceed 45% of the front elevation of the dwelling. • For corner allotments no fences, structures or landscaping exceeding 1 metre in height are to be located within the triangle formed by a sight line 12 metres x 6 metres from the intersection of the two street boundary lines. • Cannot be a transportable or relocated building.
Parking	<ul style="list-style-type: none"> • Provision for parking of two vehicles behind the building line including at least one space undercover.
Utilities	<ul style="list-style-type: none"> • Buildings and structures are to be located clear of utility infrastructure. • No building can be located within an easement for the purposes of utility infrastructure. • Structures are to be located 1,500 mm for the centre line of the water or sewer main. • Details of water supply and sewer reticulation are to be provided. <ul style="list-style-type: none"> ❖ If available within 500 m connected to reticulated network. ❖ Where no water supply is available, a minimum tank storage of 60,000 litres is required, of which a minimum of 20,000 litres is retained for fire fighting purposes. • Where there is no reticulated sewer system than approval is required for onsite disposal in accordance with Section 68 of the Local Government Act 1919 • Stormwater shall be designed to flow to a gravity system. Alternatives are not acceptable. • No building on overland flow paths
Fencing	<ul style="list-style-type: none"> • Front fences to be open panels not to include “Colorbond” and are restricted to a maximum height of 1.2 metres. • Where a street fence is proposed, the section of side fence located in front of the building setback shall be open or a combination of open panels and masonry columns to match the front fence. • Dividing fences is not to adversely affect the flow of surface of surface water or create flooding problems to adjoining properties. • Maximum height of side and rear fences behind the building line to be 1.8 metres.
Access	<ul style="list-style-type: none"> • All weather two wheel drive access • Driveways to be located a minimum of 6m from an intersection. • For rural area the minimum sight distances-is 250m in the 100km/hr speed zone and 180km/hr for the 80km zone • Where the driveway exceeds a slope of 6 % appropriate erosion and sediment control is to be incorporated into the design of the access.

**Garages
Outbuildings
and Carports**

Maximum size of garages and outbuildings in urban areas shall be as follows:

Lot size m2	Shed Size m2
<750	50
750-1000	80
1000-2000	100
>2000	120

Ridgelines

- Development roofline must not project above the ridgeline where visible from any public road or place.

**Slope & Cut
and Fill**

- The slope of the development site cannot exceed 15degrees.
-
- Cut is to be limited to 1,000 mm.
- Fill is restricted to 600 mm. It must be clean fill and a geotechnical assessment issued for the fill to demonstrate compaction to the Australian Standard.
- Any cut and/or fill must be provided with retaining walls, drainage and must be setback a minimum of 300 mm from any boundary.
- Fill must not direct stormwater onto adjoining properties and drainage pits for overland flow paths are to be provided.
- Cut and fill is not permitted within water or sewer easements

Pools

- Pools and fencing to be located behind the building line.
- Where visible from a public place or road, details of screening to be provided with DA
- Any associated retaining walls tor decks not to exceed 1.0 m above the natural ground surface.
- Pool pump enclosure to be placed greater than 15 m from a habitable room in any dwelling adjoining the property or within a sound proof enclosure.
- Compliance with the relevant Australian Standards – please check with Council to ascertain the correct standard.
- Pools over 40,000 Litres require a BASIX Certificate to be provided with application

**Energy
Efficiency**

- New Dwelling – Has a BASIX Certificate
- Alteration and Additions that do not exceed \$50,000 in value shall provide R3 Ceiling insulation and R1.5 wall insulation (to be shown on the plans)

Permissibility

- The lot is to comply with the minimum area as designated on the LEP 2012 Lot Size Map.
- Dwellings in rural zone must have a staged dwelling approval or comply with the minimum lot size.

Heritage

- Heritage items are excluded from the fast track provisions.

2.2 DUAL OCCUPANCY DEVELOPMENT “DEEMED TO SATISFY” PROVISIONS

The following criteria must be met to qualify for the “fast track” application process.

Minimum	Attached Dual Occupancy –minimum area 600m ²
Lot Size	Detached Dual Occupancy – minimum area 800m ²
	Detached dual occupancy is PROHIBITED in the R2 Low Density Residential Zone.

Building Setbacks

Zone	Street	Side/Rear	Secondary Frontage for Corner Lots *
R1, R2 and R3 where Lot size is less than 900m ²	4.5m to building line or average of adjoining properties 5.5m to the garage	900mm	0m for garages in laneways 2m to side boundary
R1, R2 and R3 where Lot size is greater than 901m ² less than 1,999m ²	6.5m to building line or average of adjoining properties 7.5 to the garage	900mm	2m
R2 where 2000 m ² to 1 ha	15m	5m	7.5m
R5 Less than or equal to 5 ha. in area	30m	20m	15m
Ru1, RU4 and R5 Greater than 5 ha. in area	60m	20m	15m
RU5	7.5m	BCA	3m

*Applicant to nominate front and secondary setback.

- Where the lot is located a Classified Road such as Ulan or Cope Road the front setback is 100m and side and rear setback is 20 metres.
- Where the lot is located on the State Highway or Goolma Road the front setback is 200 m and the side setback is 20 metres.

Building Height	<ul style="list-style-type: none"> • Single storey (Single storey dwelling is one that has only one storey (as defined by the BCA) and the Finished Floor Level (FFL) is less than 1 metre above natural ground level.
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Design	<ul style="list-style-type: none"> • Council will <u>not</u> consider mirror reversed or duplication of design for the two dwellings when fronting streets. • 75% of Internal living areas shall receive at least three hours effective sunlight between the hours of 9.00 am and 3.00 pm on 21 June (Winter solstice). • For attached and detached dual occupancies, any separation between the two dwellings is to be a minimum of 3 metres apart; • Compliment the appearance of the streetscape through the replication of the
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scale, spacing, fenestration, articulation, roof forms, setbacks and landscaping of dwellings on adjoining and surrounding lots. All dual occupancies must have direct street frontage; that is no dual occupancy can be developed in a battleaxe arrangement.

- No windowless facades at the street frontage(s).
- Street elevations are to include at least 5% of openings including windows, doors.
- The dwellings shall not be relocated or manufactured homes.
- Garages – the aggregate width of the garage door or carport shall not exceed 45% of the front elevation of each dwelling.
- Cannot be a transportable or relocated building

Slope & Cut and Fill

- The slope of the development site cannot exceed 15 degrees
- Cut is to be limited to 1,000 mm.
- Fill is restricted to 600 mm. It must be clean fill and a geotechnical assessment issued for the fill to demonstrate compaction to the Australian Standard.
- Any cut and/or fill must be provided with retaining walls, drainage and must be setback a minimum of 300 mm from any boundary.
- Fill must not direct stormwater onto adjoining properties and drainage pits for overland flow paths are to be provided.
- Cut and fill is not permitted within water or sewer easements

Open Space

- Private open space should be on the northern or eastern side of the dwelling with direct access to the main living areas. Cannot be forward of the building line.
- Each dwelling shall have one principal private open space with a minimum area of 80 square metres and a minimum dimension of 5 metres (depth and width).
- For the purposes of this clause, living area means any room or rooms within the dwelling which are generally available for day-to-day use by residents and visitors and include such rooms as lounge, dining and kitchen.
- Decks, balconies and alfresco areas at or near ground level may only be counted as principal private open space area where they have direct northerly aspect and are no more than 25% of the private open space requirement.
- Council may consider private open space within the front setback.
- Where courtyards in the front setback are permitted, these shall be located behind a suitably landscaped area with a minimum width of 1.5 metres to the front boundary.

Such landscaping shall be maintained at all times to Council's satisfaction. Fencing of such areas will be incorporated into the landscaped area. The use of 'Colorbond' or similar fencing of such areas is prohibited in favour of timber or masonry materials.

- At least 75% of each required private open space area, courtyard, balcony, terrace or the like shall receive at least three hours effective sunlight between the hours of 9.00 am and 3.00 pm on 21 June (Winter solstice).
- Council may require submission of shadow diagrams to demonstrate

compliance with the requirement above

Site Coverage

- Maximum site coverage of 35%.

Parking

- Each dwelling to have two car parking spaces, at least one being a garage. The second space may be provided in a stacked arrangement in front of the garage providing the space is contained wholly within the subject site.
- All parking and manoeuvring areas to be hardstand.
- Driveways to be located 6m from an intersection.

Utilities

- Buildings and structures are to be located clear of utility infrastructure (Minimum 1m from light/power poles)
- No building can be located within an easement for the purposes of utility infrastructure.
- Structures are to be located 1500mm from the centre line of the water/sewer main.
- Details of water supply and sewer reticulation are to be provided. If the development is within 500 m of the reticulated water and sewer network it must connect to that reticulated network.
- Dual Occupancy will not be permitted on allotments less than 5 ha where reticulated water and sewer is not connected.
- Where no water supply is available, a minimum tank storage of 60,000L is required, of which a minimum of 10,000L is retained for fire fighting purposes for each dwelling.
- Where there is no reticulate sewer system than approval is required for onsite disposal in accordance with Section 68 of the Local Government Act 1919
- Stormwater shall be designed to flow to a gravity system. Alternatives are not acceptable.
- No building over flow paths, no increase in flows.

Fencing

- All dual occupancy developments are required to provide a 1.8m high fence on the boundary of the development site and between private open space areas of individual units (all residential zones excluding R5 zone). All fencing is to be provided at full cost to the developer. All fencing which is in front of the building line shall be constructed of timber and/or masonry materials.
- Dividing fences is not to adversely affect the flow of surface of surface water or create flooding problems to adjoining properties.
- For corner allotments no fences, structures or landscaping exceeding 1 metre in height are to be located within the triangle formed by a sight line 12 metres x 6 metres from the intersection of the two street boundary lines.
- Maximum height of side and rear fences behind the building line to be 1.8 m.

Heritage

- Heritage items are excluded from the fast track provisions.

PART 3 DISCRETIONARY DEVELOPMENT STANDARDS

Where a development does not comply with the “Fast-track” criteria a normal development application may be lodged. In lodging the development application justification must be given to the variation from the fast track criteria by addressing the objectives outlined in the discretionary standards relevant to the particular type of development.

The discretionary standards represent the standard that Council wishes to apply to development. Variation to these standards will only be considered in extraordinary circumstances and will need to be fully justified due to the unique circumstances of a particular case.

3.1 RESIDENTIAL DEVELOPMENT IN URBAN AREAS (SINGLE DWELLINGS AND DUAL-OCCUPANCIES)

Buildings Setbacks

- a) Setbacks must be compatible with the existing and/or future desired streetscape.
- b) Side or rear building setbacks are to demonstrate no unreasonable adverse impact on the privacy or solar access of adjoining properties.
- c) Garages are to be setback a minimum of 5.5 metres from the front boundary.
- d) Side and rear walls within 900mm and eaves within 450mm of boundaries are to comply with the BCA requirements for fire rating

Deem to satisfy

Zone	Street	Side/Rear	Secondary Frontage for Corner Lots *
R1, R2 and R3 where Lot size is less than 900m ²	4.5m to building line 5.5m to the garage	900mm	0m for garages in laneways 2m to side boundary
R1, R2 and R3 where Lot size is greater than 901m ² less than 1,999m ²	6.5m to building line 7.5 to the garage	900mm	2m
R2 where 2000 m ² to 1 ha	15m	5m	7.5m

Building Height

- a) Elevated housing developments must minimise the impact on areas of predominantly single storey housing.
- b) Building height must ensure that adjacent properties are not overlooked or overshadowed.

Deem to satisfy is a single storey building with a FFL of less than 1 metre above Natural Ground Level.

**Site
Coverage**

- a) Stormwater runoff must not exceed infrastructure capacity.
- b) Development must be an appropriate bulk and scale for the existing residential surrounds.
- c) Dual occupancy development is not to exceed 50% site coverage.

Note: Site Coverage means:

The proportion of a site area covered by buildings. However, the following are not included for the purpose of calculating site coverage:

- Any basement,
- Any part of an awning that is outside the outer walls of a building and that adjoins the street frontage or other site boundary,
- Any eaves
- Unenclosed balconies, decks, pergolas and the like.

Deem to satisfy is 35% site coverage

**Solar
Access**

- a) Development must have reasonable access to sunlight and must not unduly impede solar access of neighbouring dwellings.
- b) Dwellings are to be positioned to maximise solar access to living areas.
- c) Shadow diagram must include:
 - Location, size, height and windows openings of buildings on adjoining properties;
 - Existing shadow-casting structures such as fences, carports, hedges, trees etc.; and
 - Topographical details, including sectional elevations where land has any significant slope.
- d) Living areas and gardens should be orientated to the north to maximise solar access to these areas.
- e) North-facing pitched roofs should be incorporated where possible to provide opportunity for solar energy collectors.
- f) Solar access should be controlled within buildings to allow warm winter sun to penetrate rooms while excluding hot summer sun by:
 - Using horizontal projecting screens such as balconies, awnings, verandah roofs, pergolas and wide eaves; and
 - Use of ceiling insulation.

Deem to satisfy
Living areas and private open space areas are to be located with a northerly aspect (ie on the north or eastern side of the building).

Privacy

- a) Development must ensure that reasonable privacy is achieved for new dwellings and existing adjoining residences and private open space.

Deem to satisfy
Dwellings must be single storey and have a finished floor level less than 1,000 mm above the natural ground level.

Parking

- a) Development must provide adequate off-street parking to maintain the existing levels of service and safety on the road network.
- b) Parking areas and access driveways must be functional in design.
- c) Parking areas should be visually attractive and constructed, designed and situated so as to encourage their safe use.
- d) The number of spaces is determined based on the occupation potential. Note: rooms capable for use as a bedroom, e.g. 'study' are counted as a bedroom.
- e) Any vehicle entering or leaving the driveway must be visible to approaching vehicles and pedestrians.
- f) Driveway access to a major road should be avoided where possible.

Deem to Satisfy
Two (2) spaces per dwelling

**Land
scaping**

- a) Landscaping must enhance the quality of the built environment.
- b) Species selection and location should improve energy efficiency through reducing heat gain through windows and deflecting winter winds.
- c) Plants with low maintenance and water requirements should be selected.

**Open
Space**

- a) Sufficient open space must be provided for the use and enjoyment of the residents.
- b) A plan shall be submitted which demonstrates that the dimensions of the open space provides for functional space, including placement of outdoor furniture.
- c) Open space areas provided must be suitably located and landscaped to obtain adequate sunlight and protection from prevailing winds.
- d) Private open space for dual occupancy development is to be a minimum area of 80m² and have a minimum dimension of 5 metres (depth and width).
- e) Private open space for dual occupancy development is to be located behind the front building line and on the northern, eastern or western side of the dwelling.

Deem to satisfy
Private open space to be on the northern or eastern side of dwelling with direct access to living areas. Area to be 80m² with a minimum dimension of 5 metres.

- Corner lots**
- a) Development must address both street frontages.
 - b) Utility windows are not permitted on either elevation with frontage to the street unless they are integrated into architectural features of the development.

- Fencing**
- a) Fencing facing the street or forward of the building line must avoid extensive lengths of 'Colorbond' as it presents a barrier to the street.
 - b) Solid fencing of a length greater than 30% may be permitted where landscaping is provided to soften the visual impact on the streetscape.

Deem to Satisfy
1.8 metre high fence to all boundaries including private open space areas.
All fencing forward of building line cannot be 'Colorbond' (All Residential zones excluding R5 zone).

- Infra structure**
- a) Surface infrastructure (e.g. tanks, clotheslines) must not be located within front setback.
 - b) Surface infrastructure must not be visible from the street.
 - c) Garbage storage locations must be included in landscape plan and show how they will be screened.

- Out buildings**
- a) Outbuildings must not negatively affect the amenity of the streetscape or adjoining properties. The following standards apply for urban areas.

Lot size m2	Shed Size m2
<750	50
750-1000	80
1000-2000	100
>2000	120

Development near Ridgelines

- a) A ridgeline is considered an elevated section of land, visible from beyond the individual property boundary.
- b) Development shall protect key landscape features, being the dominant ridgelines and slopes and the intermediate ridges forming a visual backdrop to existing and future urban localities and places of special landscape amenity.
- c) Development should not be visually intrusive or degrade the environmental value, landscape integrity or visual amenity of land.
- d) The dwelling-house and associated buildings must not be visible above the existing skyline or any prominent ridgeline or local hill top.
- e) The dwelling-house and associated buildings will be constructed from low reflectivity building materials and incorporate colours which are visually unobtrusive in relation to the surrounding environment.

Slopes

- a) Development maximises retention of natural ground levels and contours. b) Drainage is to avoid erosion of gullies, slopes and drainage lines in the locality.
- c) Cut and fill, earthworks, retaining walls, unprotected embankments and terraces etc are setback from boundaries such that there is no impact on the privacy or visual amenity of adjoining dwellings and their private open space. d) Cut and fill, earthworks, retaining walls, unprotected embankments and terraces etc are setback from boundaries such that they do not redirect the flow of surface water onto adjoining properties.

Deem to Satisfy

- Cut is to be limited to 1,000 mm.
- Fill is restricted to 600 mm. It must be clean fill and a geotechnical assessment issued for the fill to demonstrate compaction to the Australian Standard.
- Any cut and/or fill must be provided with retaining walls, drainage and must be setback a minimum of 300 mm from any boundary.
- Fill must not direct stormwater onto adjoining properties and drainage pits for overland flow paths are to be provided.
- Cut and fill is not permitted within water or sewer easements
-

Access

- a) All weather vehicle access is required to ensure that emergency services (fire, ambulance, police) are able to access the dwelling at all times.

Relocated Dwellings

- a) Dwellings proposed to be re-sited must be of a suitable standard both aesthetically and structurally.

Adaptability

- a) Adaptable housing design must incorporate practical and flexible features to meet the changing needs of residents of different ages and abilities over time. For example,

hobless shower area, space for wheelchair access, height of light switches, arrangement and size of rooms,

**Design
Principles**

- a) Design should maximise surveillance with clear sightlines between public and private places, effective lighting of public places and landscaping that makes places.
- b) Physical and symbolic barriers should be used to attract, channel or restrict the movement of people to minimise opportunities for crime and increase the effort required to commit crime.
- d) Must be sympathetic with existing adjoining and surrounding developments in relation to bulk and height.
- e) Well-proportioned building form that contributes to the streetscape and amenity.
- f) Density appropriate to the regional context, availability of infrastructure, public transport, community facilities and environmental quality.
- g) Design must demonstrate efficient use of natural resources, energy and water throughout its full life cycle, including construction.
- h) Landscape design should optimise useability, privacy and social opportunity, equitable access and respect for neighbours' amenity, and provide for practical establishment and long term management.
- i) Optimise amenity (e.g. appropriate room dimensions and shapes, access to sunlight, natural ventilation, visual and acoustic privacy, storage, indoor and outdoor space, efficient layouts and service areas, outlook and ease of access for all age groups and degrees of mobility).
- j) Optimise safety and security, both internal to the development and for the public domain.
- k) Design must demonstrate response to the social context and needs of the local community in terms of lifestyles, affordability, and access to social facilities.
- l) Council will not support dual occupancy development where both dwellings are pre-manufactured or relocatable homes in urban zones.

PART 4 SPECIFIC TYPES OF DEVELOPMENT

4.1 MULTI DWELLING HOUSING

The provisions of this section apply to multi dwelling housing, residential flat buildings, villa and town house forms of development.

The location of multi-dwelling housing is only permissible on lots with an area of at least 1,200 m² and should comply with the following:

- Be located within the Heritage Conservation Areas of Mudgee or Gulgong and or within a Village Zone; or
- Be on a lot with two street frontages; or
- Be on any residential lot with a frontage width greater than 25m; or
- Must not be located on a lot which adjoins a lot which is approved for or contains multiple dwellings outside the Heritage Conservation Areas of Mudgee or Gulgong and or within a Village zone.

It is Council's intent to strictly apply this criteria to manage expectations of residents and developers.

Built Form

Design

- (a) Where existing buildings are to be retained as part of an overall proposal, those structures are to be upgraded to integrate with the new development.
- (b) Verandahs, steps in the roof line or other architectural features should be incorporated in the design to provide visual relief and to minimise the bulk and scale of development.
- (c) The design of the proposal must:
 - Optimise solar access and lot orientation; and
 - Be consistent with the appearance of the streetscape - the scale, spacing, setbacks and landscaping of buildings; and
 - Positively enhance the streetscape.

Building Scale Height and Bulk

- (a) Development, particularly when viewed from the street should be compatible with the scale of buildings in the immediate locality, consistent with the objectives of the zone and should not be visually obtrusive as a consequence of their height.
- (b) In determining appropriate building heights Council shall have regard for the scale of future development for which provision is made in the locality.
- (c) The maximum height of the building at any point shall be measured as the vertical distance between the ground level (existing) and the highest point of the building, including plant and lift overruns, but excluding communications devices, antennae, satellite dishes, masts, flagpoles, chimneys, flues and the like.
- (d) Buildings shall not exceed two storeys and generally should not exceed 8.5 metres in height.

- (e) Each development or building will be assessed on its merits in terms of its visual impact on the streetscape and impact on the amenity, privacy, views and solar access of the surrounding properties.
- (f) Council may require an applicant to prepare and submit to Council shadow diagrams in order to determine the impact of a proposal on buildings and landscaped areas.
Such diagrams should be based on a survey of the relevant site and adjoining development. It is essential that shadow diagrams be based on such detailed information in view of the fact that the shadows are the result of the relative height of structures and not just the height of a structure above ground level. In this regard the resultant shadow cast by a structure can vary greatly depending whether the structure is uphill or downhill of the area in question.

Setbacks

- (a) 4.5 metres to street frontage
- (b) 3 metres to side and rear boundaries
- (c) 3 metres to secondary frontages

Development Density

- (a) The number of units accommodated on a specific site shall be as follows;
- (i) These density standards apply to the towns of Kandos and Rylstone and to the areas of Mudgee and Gulgong outside the conservation areas, on lots with a single frontage of at least 25m or lots with two street frontages.

Unit Type	Site Area
1 Bedroom unit	1 dwelling unit per 300m ² of site
2 bedroom unit	1 dwelling unit per 380m ² of site
3 bedroom unit	1 dwelling unit per 450m ² of site

- (ii) These density standards apply to the Gulgong and Mudgee Conservation areas:

Unit Type	Site Area
1 Bedroom unit	1 dwelling unit per 250m ² of site
2 bedroom unit	1 dwelling unit per 280m ² of site
3 bedroom unit	1 dwelling unit per 310m ² of site

- (b) the minimum floor area (excluding balconies and garages) for multi-dwelling housing are as follows;

Unit Type	Floor Area m ²
1 Bedroom unit	55
2 bedroom unit	70
3 bedroom unit	85

A residential flat building may contain any combination of one, two and three bedroom units.

Landscaping	<ul style="list-style-type: none">(a) Site landscaping must not be less than 40% of the site area.(b) Landscaping shall consist of well advanced trees and shrubs, preferably with a predominance of native species.(c) The area of the site between the front building line and the street frontage must be landscaped as common property to a depth of at least 5m.(d) landscaping is to be completed prior to the release of the Construction Certificate.
Site Coverage and Private Open Space	<ul style="list-style-type: none">(a) The maximum site coverage (excluding driveways) for residential development on land identified for medium density development, as a percentage of the total site area, shall not exceed 40%.(b) Each dwelling shall have a principal private open space with a minimum area of 40 square metres and a minimum dimension of 5 metres (width and depth). These areas must be directly accessed from the living areas. For the purposes of this clause, living area means any room or rooms within the dwelling which are generally available for day-to-day use by residents and visitors and include such rooms as lounge, dining and rumpus rooms.(c) Rainwater tanks are not to be located within the principal private open space.(d) Patios, decks, balconies at or near ground level may only be counted as principal private open space, under the same roof, when they have a direct northerly aspect and are less than 25% of the overall private open space requirement.(e) Wherever a dimension is less than 5 metres, it will not be counted as part of the calculation for a principal private open space.(f) Where principal private open space in the front setback is permitted, these shall be located behind a suitably landscaped area with a minimum width of 1.5 metres to the front boundary. Such landscaping shall be maintained at all times to Council's satisfaction. Fencing of such areas will be incorporated into the landscaped area. The use of 'Colorbond' or similar fencing of these is prohibited in favour of timber or masonry materials.(g) For all forms of development, at least 75% of each required principal private open space area and internal living areas shall receive at least three hours effective sunlight between the hours of 9.00 am and 3.00 pm on 21 June (Winter solstice). Council may require submission of shadow diagrams to demonstrate compliance with the requirement above.

Vehicular Access and Parking

- (a) The table for calculating the total number of car parking spaces required is shown below. One space only is to be allocated as resident parking for each dwelling with the remainder of the total requirement to be provided as visitor car parking, which is to remain available for use at all times. The second space required for a unit must be provided as general visitor parking or as an open space associated with the unit.

Type of Parking	Spaces provided
Residential Parking	1 space per 1 bedroom flat 2 spaces per 2 bedroom flat (other than in the Conservation Areas of Mudgee and Gulgong and Village Zones ion Rylstone and Kandos where the provision is 1 space per 2 bedroom flat) 2 spaces per 3 bedroom flat or cluster dwelling
Overflow Parking	1 space per 5 units – not required for developments of 3 or less units

Note: Car parking calculations shall be rounded up to the nearest whole number.

- (b) For dwellings above commercial premises, car parking shall be provided at the above mentioned rates, except in the case of a single dwelling, which requires one car parking space only.
- (c) Car parking must be designed so that either ingress to or egress from each space can be achieved in one movement.
- (d) Parking shall be located so that vehicles can enter and leave in a forward direction.
- (e) All geometric standards applicable to site access and car parking layout are to be in accordance with Council's Development Control Plan - Car Parking.

Vehicular Access Design.

- (f) Driveways are not to be continuous straight lines and are to be offset by landscaped sections and/or unit layout.
- (g) Driveways are to be designed as follows:
- A pavement width of 3 metres is required for developments of 3 to 4 dwellings.
 - A pavement width of 6 metres is required for developments of 5 or more dwellings.
 - Where the length of driveway exceeds 30m, the width of pavement must be 6m

at intervals. This width may be varied along its length subject to provision being made for passing along the driveway.

- (h) Where access is to a major road a pavement width of not less than 6 metres for the first 5 metres of the driveway adjoining the road boundary is to be provided.
- (i) Driveways are to be offset a minimum of 2 metres from any side boundary for the full length of the required front setback (ie. 6 metres or 7.5 metres). The setback area should be suitably landscaped to screen the hardstand driveway surfaces and to provide visual appeal to the streetscape.

Privacy and Amenity

Where windows or balconies of dwellings are within 6 metres and facing windows or balconies of adjacent dwellings, windows must be offset by a minimum of 1 metre from the edge of the opposite window and balconies be screened or oriented to ensure visual privacy.

Window openings at first floor level and above should be orientated or designed to minimise the potential for overlooking of adjacent properties and the consequent loss of privacy.

Windows which are orientated towards adjoining properties and do not adequately restrict overlooking will be required to be opaque finish or located at appropriate heights above floor level to minimise overlooking of adjoining properties.

All developments are required to provide a 1.8m high fence on the boundary of the development site and between private open space areas of individual units.

All fencing is to be provided at full cost to the developer. All fencing which is in front of the building line shall be constructed of timber and/or masonry materials.

Acoustic Privacy

- (a) Site layout should separate active recreational areas, parking areas, vehicle accessways and service equipment areas from bedroom areas of dwellings.
- (b) Development adjacent to high levels of uncontrollable external noise shall incorporate a building design and external wall treatments to minimise the entry of that noise.

Waste Disposal

Development applications should provide details of an appropriate means of waste disposal via the provision of individual 240 litre mobile garbage, recycling bins to each dwelling.

All dwellings should provide an external access to the rear of the development (private open space area) to enable garbage bins to be taken to the street without the need for moving the bins through the dwelling. A garage can be used for this purpose if it provides direct access to the rear courtyard. All garbage bins should be stored within the private open space or garage of the dwelling.

Waste disposal collection points should not compromise the amenity of future residents in terms of noise, odour or aesthetic impact.

4.2 AFFORDABLE MULTI DWELLING HOUSING

State Environmental Planning Policy (Affordable Rental Housing) 2009 [SEPP]

This SEPP provides incentives for the development of affordable housing in its various forms and should be used as the guideline for development for the purpose of affordable in-fill development, secondary dwellings, multi dwelling housing and residential flat buildings. The policy applies to the Mid-Western Region, however, the SEPP **only** applies where development is within **400m of a B2 Local Centre or B4 Mixed Use Zone**.

The purpose of this part of the DCP is to provide guidelines for the development of affordable multi dwelling housing on land that is further than the 400m prescribed by the SEPP.

Definition

“affordable housing”

In these provisions the definitions in the SEPP Affordable Rental Housing apply

Affordable Housing Principles

- (a) Affordable housing is to be created and managed so that a socially diverse residential population representative of all income groups is developed and maintained in a locality.
- (b) Affordable housing is to be made available to a mix of very low, low and moderate income households.
- (c) Affordable housing is to be rented to appropriately qualified tenants and at an appropriate rate of gross household income.
- (d) Land provided for affordable housing is to be used for the purpose of the provision of affordable housing.
- (e) Buildings provided for affordable housing are to be managed so as to maintain their continued use for affordable housing.
- (f) Rental from affordable housing, after deduction of normal landlord's expenses (including management and maintenance costs and all rates and taxes payable in connection with the dwellings), is generally to be used for the purpose of improving or replacing affordable housing or for providing additional affordable housing.
- (g) Affordable housing is to consist of dwellings constructed to a standard that, in the opinion of the consent authority, is consistent with other dwellings in the vicinity.

Application

The following provisions apply to development for the purposes of dual occupancies, multi dwelling housing or residential flat buildings if:

- (a) the development concerned is permitted with consent under another environmental planning instrument, and
- (b) the development is on land that does not contain a heritage item that is identified in an environmental planning instrument, or an interim heritage order or on the State Heritage Register under the *Heritage Act 1977*.

Location

The following provisions apply to land with two street frontages or a single frontage of 25m and:

- Land Zoned R3 Medium Density Residential in Mudgee,
- Within the Conservation Area of Gulgong , and
- Within the Village Zones in Kandos and Rylstone
- Land within 400m of a Business Zone

Landscaping (a) in the case of a development application made by a social housing provider—at least 35 square metres of landscaped area per dwelling shall be provided, or
(b) in any other case—at least 30 per cent of the site area is to be landscaped,

Solar Access living rooms and private open spaces for a minimum of 70 per cent of the dwellings of the development shall receive a minimum of 3 hours direct sunlight between 9am and 3pm in mid-winter.

Parking Parking is to be provided at the following rates:

Type of Parking	Spaces provided
Residential Parking	1 space 1 bedroom flat 1 space per 2 bedroom flat 1.5 spaces per 3 bedroom flat or cluster dwelling
Overflow Parking	1 space per 3 units

Dwelling size

Floor areas are to be as follows:

Unit Type	Floor Area m ²
1 Bedroom Units	45
2 bedroom units	70
3 bedroom units	85

A residential flat building may contain any combination of one, two and three bedroom units.

Development Density The following development density applies

Unit Type	Site Area
1 Bedroom unit	1 dwelling unit per 250m ² of site
2 bedroom unit	1 dwelling unit per 280m ² of site
3 bedroom unit	1 dwelling unit per 310m ² of site

Design A consent authority must not consent to development to which this section applies

Requirements	unless it has taken into consideration the provisions of the <i>Seniors Living Policy: Urban Design Guidelines for Infill Development</i> published by the Department of Infrastructure, Planning and Natural Resources in March 2004, to the extent that those provisions are consistent with this Policy.
Character of Local Area	A consent authority must not consent to development to which this section applies unless it has taken into consideration whether the design of the development is compatible with the character of the local area.
Must be used for affordable housing for 10 years	<p>A consent authority must not consent to development to which this section applies unless conditions are imposed by the consent authority to the effect that:</p> <ul style="list-style-type: none">(a) for 10 years from the date of the issue of the occupation certificate:<ul style="list-style-type: none">(i) the dwellings proposed to be used for the purposes of affordable housing will be used for the purposes of affordable housing, and(ii) all accommodation that is used for affordable housing will be managed by a registered community housing provider, and(b) a restriction will be registered, before the date of the issue of the occupation certificate, against the title of the property on which development is to be carried out, in accordance with section 88E of the <u><i>Conveyancing Act 1919</i></u>, that will ensure that the requirements of paragraph (a) are met. <p>(2) Subclause (1) does not apply to development on land owned by the Land and Housing Corporation or to a development application made by, or on behalf of, a public authority.</p>
Subdivision	Land on which development has been carried out under this Division may be subdivided with the consent of the consent authority.

4.3 SEX SERVICES PREMISES (BROTHELS)

Location	<ul style="list-style-type: none">a) Council will not consider an application for a brothel within view or within a 100 metre radius of a church, hospital, school, community facility, residential zone, or any other place regularly frequented by children for recreational activities or cultural activities.b) An entrance to or exit from a brothel is not to be within 300 metres of the entry to any other approved brothel.c) The interior of the premises is not to be visible from a public place.d) Brothels shall not be located in a building that contains a dwelling(s).
Size Layout and Design	<ul style="list-style-type: none">a) An adequate reception/waiting room with a minimum area of 20m² is to be provided per premises.b) The premises is to be located on an allotment with a minimum size of 900m².c) A brothel shall be restricted to a maximum of five (5) rooms where sexual services are provided at any one time.d) The brothels appearance shall be discrete and sympathetic with adjoining premises.
Car Parking	<ul style="list-style-type: none">a) Provision for 2 car parking spaces per room used for prostitutionb) Disabled parking to be provided close to the building entrance in accordance with the AS 2890.1 1993c) Car parking areas to be well lit.
Signs	<ul style="list-style-type: none">a) Signs do not display words or images which are sexually explicit or otherwise sexually suggestive.b) The sign identifies only the name of the person who conducts the business or the registered name of the business and be limited to 0.3m x 0.6 m lit by a single globe.c) A clearly visible street number must be displayed.d) There is only one sign per premises.e) The content, illumination, size and shape of the sign is well integrated and compatible with the building it is attached to.
Security and Public Safety	<ul style="list-style-type: none">a) Development Applications are to provide details on measures to be undertaken to safeguard workers, clients and the general public. Such details are to address the number of hours of security personnel and the lighting of access ways and car parking areasb) A private security company is to be engaged to monitor and regularly check entrances and exits.
General Requirements	<ul style="list-style-type: none">a) The hours of operation nominated with the development application form part of any approval and businesses will be bound by those hours unless a

specific condition of consent is imposed by Council to the contrary.

- b) Should the specified operator change, Council must be notified prior to the business operating.
 - c) If the number of sex workers, hours of operation or signage are proposed to be changed, it will be necessary to modify the consent or lodge a new application depending on the scale of the changes.
 - d) Persons under the age of 18 years are not to be engaged in the business or permitted on the premises.
 - e) No alcohol to be provided or offered for sale.
-
- a) All development consents granted to a brothel application shall be initially limited to a period of 12 months. At the completion of this period, Council will re-evaluate the proposal in terms of any complaints received regarding the operation of the business, and in terms of compliance with conditions of consent.

If Council is satisfied that the brothel has operated in an orderly manner with minimal impact upon nearby uses, and in compliance with conditions of consent, it may approve a modification to the consent under the Section 96 of the Environmental Planning and Assessment Act, 1979, to extend the consent.

Council may also impose conditions of consent relating to the hours of operation. This will also be subject of review after the 12 month trial. If, after the 12 month trial, any hours of operation are shown to be causing a nuisance or disturbance in the neighbourhood, the approved hours of operation may be further restricted.

**Limit on
Development
Consent**

4.4 SIGNS

GENERAL REQUIREMENTS

Full details of sign type, size, lettering, location, colours etc. must be provided with a development application.

All advertising must relate to the lawful uses or activities carried out on the same land on which the advertising sign is to be erected.

Types

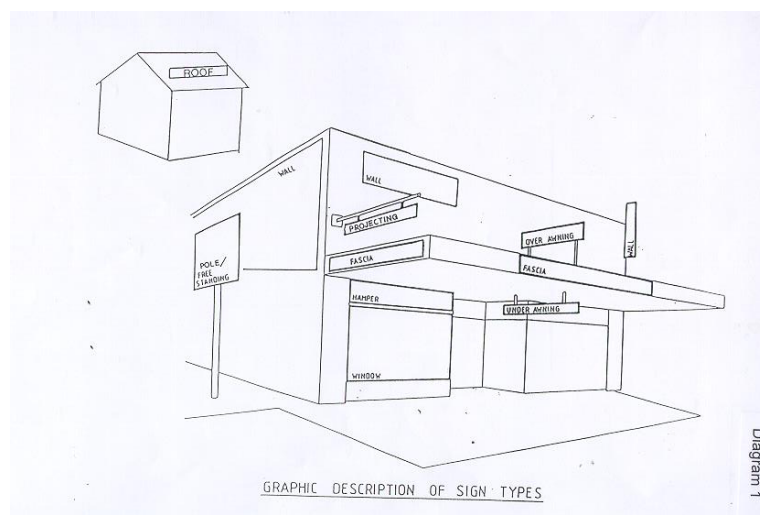
Fascia Sign	Attached to the fascia or return end of an awning.
Pole or Pylon Signs	A sign mounted on a single pole independent of any building or other structure.
Projecting Wall Sign	Attached to the wall of a building and projecting horizontally from the wall.
Roof Sign	A sign mounted on the roof of a building but do not project above the ridge cap. Roof signs will generally not be approved in business or residential zones.
Under Awning/Verandah Sign	A sign attached underneath the awning or verandah at right angles from the façade of the building.
Wall Sign	A sign attached directly to the wall of the building or painted directly onto the wall excluding signs including the parapet of the building.
Window Sign	A sign applied on or inside the glass of windows and doors, or etched, painted or attached to the glass or displayed directly behind the surface.
Flags	supported by a freestanding flag pole and not necessarily displaying any words or logos.
Vertical Projecting Wall Signs	Attached to the wall of a building.
Wine Barrel Signs	Signs which use a wine barrel as the template or mounting.
Floodlit Sign	Illuminated by an external source of artificial light.
Post Supported Signs	A signs supported by a post on either side pole independent of any building or other structure.
Sandwich Board or A-Frame Sign	A free standing sign within the property boundary.

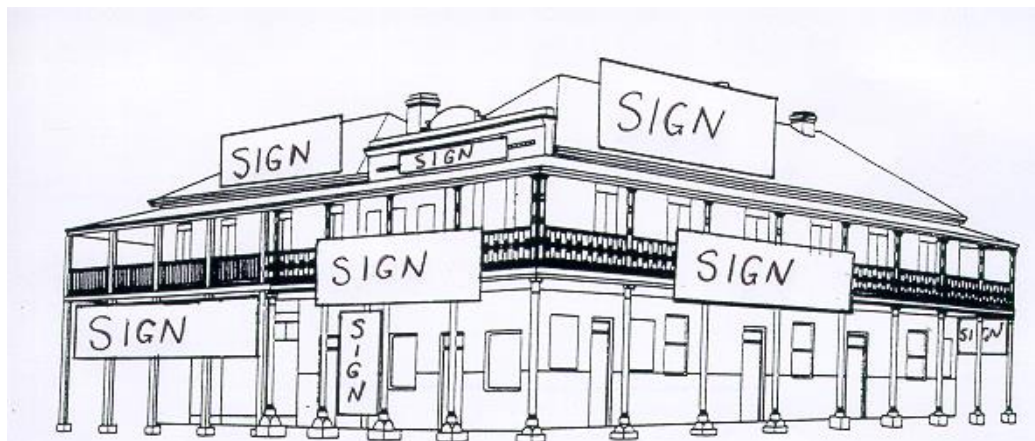
Prohibited Signs

The following types of signs do not contribute to the character of the towns or rural areas and are prohibited.

Advertising Fixed to Trees	Any sign that uses a tree as a pole for mounting.
Above Awning Signs	Signs mounted above the awning or verandah of a building.
Billboards	Additional billboards where the structure is erected for the express purpose of displaying advertising not associated with the use of the land are prohibited.

Bunting	Small flags attached to a single siring mounting between posts or poles usually associated with Motor Vehicle Retailing.
Illuminated Wall Signs	Signs mounting directly onto the building above the level of the verandah or awning.
Corporate Building Signs	Painting buildings to reflect corporate colour schemes as a method of drawing attention to the building is considered to be an extension of advertising signage and will not be permitted.
Flashing Signs	Illuminated at frequent intervals by an internal source of light.
Novelty Signs	Odd shaped signs often three dimensional incorporating items such as cars, wine barrels, "big" product samples etc. Generally will not be permitted in business or residential and rural zones. Council may consider the use of wine barrels in association with wineries and cellar doors.
Sandwich Board Signs	Free standing sandwich board and A frame signs on public land including footpaths other than in the business areas of Mudgee, Gulgong, Kandos and Rylstone.
Under awning Flags	Small flags projecting from the front facade of a building often associated with newsagencies and photographic studios.
Vehicle Signs	Cars, trailers or equipment bearing advertising material do not make a positive contribution to the area and should not be parked for the express purpose of advertising or providing direction to a business.





Above : Unacceptable display of Signs

Below: Acceptable display of Signs



Signs in Towns and Villages

HERITAGE CONSERVATION AREAS

- (a) The streetscapes in the business areas of Mudgee, Gulgong, Rylstone and Hargraves are within a heritage conservation and particular attention is paid to the preservation and enhancement of the character and appearance of these areas.
- (b) Corporate identification should be carefully selected and amended where necessary to

retain the character of individual buildings and the surrounding locality.

- (c) Generally signs on individual buildings or within areas of special significance should be discreet and should complement the building or area. An important element of Council's planning policies involves the careful control of all advertisements, and external building colours in the main business areas.

GULGONG HERITAGE CONSERVATION AREA

- (a) **No new signs or changes to the outside of buildings in this area are permitted without development approval.** This provision also applies to repainting, replastering and/or other external redecoration of buildings.
- (b) Council is required to assess the colour, size, style and architectural/aesthetic impact of proposed works in the Conservation Area.
- (c) Internally illuminated advertisements are not permitted in the Gulgong Conservation Area. External illumination such as spot lighting is encouraged, provided the intensity of illumination is not obstructive in the surrounding area.
- (d) In Gulgong lettering should conform, where possible, with the style used in the 1850 - 1900 period (the most common types were Egyptian (antique), Ionic (Fat Clarendon) and Grotesque (Sans Serif).

Business Areas

- (a) Generally a maximum signage area per commercial building (regardless on number of tenancies) of 25% of the frontage is permitted per building.
- (b) **Under-awning/verandah signs** must have a minimum height of 2.6 metres distance from the pavement to the bottom of the sign and protrude no further than a maximum length of 3.5 metres as measured from the front wall of the commercial building and will not protrude beyond the line of the awning/verandah.
- (c) **Additional pylon signs, projecting wall signs, above awning signs, illuminated wall signs located above the verandah or awning and roof signs** are not permitted in both Mudgee and Gulgong business areas.
- (d) **Wall signs** should be either painted directly onto the building or constructed of painted wood, or coated at point of manufacture or powdercoated flat metal sheets. Wall signs utilising plastic or modern metal materials are not favoured. Specific consideration should be given to buildings that are Heritage Items or within a Heritage Conservation Area. In those instances it is recommended that you discuss your proposal with the Town Planning Section or Heritage Advisor prior to finalising the design.

Industrial Areas

- (a) **Non-Illuminated Pole/pylon** signs and directory boards shall be limited to a maximum of 6m² advertising area and a maximum overall height of 5 metres. In general the bottom of a pole or pylon signs should be at least 3 metres above ground level.
- (b) **Illuminated Pole or pylon** signs must have a maximum area of 4m².
- (c) A maximum of one pole or pylon sign can be erected without Council approval if the above requirements are met.
- (d) A maximum of two (1) pole or pylon signs shall be permitted per site frontage.
- (e) In the case of an **industrial multi unit complex**, one (1) directory sign board of up to 8m² in any area may be permitted with approval. Each industrial unit may have a sign at the entrance of each unit having the maximum dimensions of 2000mm by 600mm without approval.

Business Activity Centres

- (f) One **sandwich board** sign per site is permitted without approval however must be located inside the property boundaries and weighted and securely fixed so that it will not blow over. A maximum area of 2m² per side applies.
- (g) Council will not approve the use of flashing lights, bunting and other devices to attract attention to a business.
- (h) Individual directional signage will not be permitted

Business Activity Centres are areas where a number of businesses exist which are not on the main traffic routes and can demonstrate a need to provide direction for customers to the site.

These areas include:

- Gulgong Industrial Estate
- George Street Mudgee Industrial Area
- Depot Road Mudgee Industrial Area
- South Mudgee Shops
- Industrial Avenue, Mudgee
- Cooper Drive, Rylstone

Council will allow the erection of one major directory sign for each business activity centre, on land not necessarily utilised by the businesses.

Development Approval is required for these signs.

Residential Areas

There are a number of businesses outside traditional shopping centres and industrial estates as well as many home industries.

Businesses in residential areas must have special controls to maintain the residential amenity of the neighbourhood.

The following criteria must be met for businesses in residential areas:

- (a) The sign shall only display the name and nature of the business, including address, hours of business, telephone number and the like;
- (b) The sign shall not be larger than one metre long and 300mm high;
- (c) The sign shall not be erected higher than one metre above ground level;
- (d) The above provisions apply to signage on the building or site of the business. Advertising signage on other land will not be permitted.
- (e) Council will not approve the use of flashing lights, bunting and other devices to attract attention to a business.
- (f) Any other signs to be erected on a property shall be considered in accordance with the type of business and whether there are any “existing-use” rights for signage.
- (g) Generally, only one sign will be allowed for home industries and home occupations.

Rural Areas

The following criteria must be met for businesses in rural areas and includes signs relating to Landcare and Community Projects:

- (a) Advertising signs must describe premises and be located on private land, not in the road reserve.
- (b) Maximum of one sign only per site.
- (c) Maximum height of 2.5m

- (d) Maximum area 2m²
- (e) Made of Non-reflective material.
- (f) Must be free standing post sign
- (g) Must be set back 3m if located on a corner or intersection of a road
- (h) Not illuminated

Tourist Signage

Tourist related development includes winery and cellar door facilities, restaurants, accommodation and other businesses catering for tourists.
Signs on private land must relate to the business contained on the land itself.

IDENTIFICATION SIGNS

These are post supported or wall structures located at the front of the site with the express purpose of identifying the business or facility to the travelling public.

- (a) Post supported structures max. height of 3m above ground level or an advertising area of more than 3m² with typical dimensions being 1.2m x 2.5m.
- (b) Identification signs must relate to a lawful or approved use of the land and be located on private land, not in the road reserve.
- (c) The size, colour and shape of the signs will generally be left to the discretion of the business but should not include the use of bright or fluorescent colours or highly reflective or illuminated materials.
- (d) Each property shall be allowed **two Identification signs** (which may be double sided). In circumstances when the property has two road frontages Council will consider a third sign on the secondary frontage where that frontage has a minimum of 250m.
- (e) In circumstances where there are two or more businesses operating from a site, Council will consider increasing the maximum sign face area from 3m² to 4m².

ENTRANCE SIGNS

Signs incorporated into the primary entrance of the site and may include fencing or walls. Advertising incorporated into the entrance structure is restricted to the name of the premises. In circumstances where the business operates after sunset, Council will consider low intensity external illumination of entrance signage.

VINEYARD IDENTIFICATION SIGNS

These signs can be erected when the vineyard name has been used on a wine bottle label. The maximum dimension of such signs shall be 3.0m². They shall contain only the company and vineyard name and the design of the sign face should reflect the design on the bottle label.

INTERNAL SIGNAGE

This includes signs that direct visitors within the site and include entry/exit signs, toilet and parking facilities, picnic areas and the like. These signs only require approval if they can be viewed from a public road.

LARGE SCALE TOURIST DEVELOPMENT

Council will consider an integrated approach to signage for large scale tourist developments outside the dimensional requirements identified above. Large scale developments must lodge a development application that details a signage theme for the property as part of the overall landscape design. In assessing such an application consideration will include;

-
- (a) Surrounding landscape
 - (b) Impact on the rural character of the locality
 - (c) Integration of the signage with buildings and other landscape characteristics.

**Maintenance
and Illegal
Signs**

- (a) Signage is a reflection on the community as a whole. Council will not tolerate amateurish and poor quality signage.
- (b) A person intending to erect a sign should refer to a qualified sign writer for advice in relation to size, colour, location and design.
- (c) Unprofessional signs will be resisted. In circumstances where, in the opinion of Council, signs become unsightly or unsafe, Council will require the removal, repair or replacement as appropriate under the particular circumstances.
- (d) In circumstances where signs have been erected without prior approval of Council, a notice will be issued requesting the landowner to remove the subject sign. After a reasonable period, Council may pursue legal action where such a request has been ignored.
- (e) Signs that have been erected or placed on public land or within a road reserve without the approval of Council will be impounded without notice and administrative fees levied for their release. After 3 months signs may be sold to offset Council's costs.

**Temporary
Signage**

- a) Temporary signage for the purpose of advertising a major or charitable event is permitted to be erected on any land (with the owner's consent) for a period of one (1) week prior to the event,
- b) This type of signage may include Variable Message Boards,
- c) This does not permit local businesses advertising particular sales or the like,
- d) Only one sign is permitted per event (multiple signs around a town are not permitted).

4.5 COMMERCIAL DEVELOPMENT

Building Setbacks	<ul style="list-style-type: none">(a) No minimum front setbacks apply.(b) Side and rear must comply with Building Code of Australia (BCA)
Signage	Refer section 4.4 Signs
Design	<ul style="list-style-type: none">(a) The LEP includes provisions relating to active street frontages. All premises on the ground level of a building facing the street are used for the purposes of business premises or retail premises.(b) All premises on the ground level of a building facing the street shall be comprised of windows and doors to encourage the interaction between pedestrians and the retail space(c) Building facades shall be articulated by use of colour, arrangement of elements or by varying materials(d) Consider elements within established heritage buildings and how its application may be applied to new development(e) Consider the pattern of built form, scale, use of verandahs, fenestration, colour and materials.(f) Design of new development should seek to be sympathetic to heritage items not reproduce them.(g) Plans must include details of all external infrastructure (air conditioning ducts, plant rooms) and how it will be screen from view form a public road.(h) Development on a corner must include architectural features to address both frontages.(i) Where the development will adjoin the residential, village and mixed use zones, sufficient setbacks in the form of landscape buffers and access ways should be incorporated.
Scale form and height	<ul style="list-style-type: none">(a) The LEP controls the height of buildings to a maximum of 8.5m(b) Consistent with the existing heritage character of the town centres of Gulgong, Mudgee and Rylstone.(c) Gulgong has a building height limit to a maximum of 5m
Mortimer & Church Street Mudgee	<ul style="list-style-type: none">(a) Development fronting Mortimer and Church Streets in Mudgee should enhance and maintain the streetscape established in Church street between Market and Mortimer Streets by encouraging a coherent double storey pattern of development adopting zero front and side property setbacks.(b) Where possible the use elements that emphasis the horizontal form of development established in the Town Centre, for example through the use of verandas.(c) Any new development should provide for a visual treatment to minimise visual bulk and maintain established pattern of building frontage widths, by providing variance particularly on upper floor levels , every 20-25m. Variance may be provided through change in building materials, fenestration, or changes in parapet height etc.

**Articulation
and Facade
Composition**

- (a) To break visual bulk and create interest, use secondary vertical elements such as fenestration or detail such as changes in materials and colour.
- (b) Excessive length of blank walls are not supported in the front facade.
- (c) Where blank walls are unavoidable (alongside or rear boundaries), break the visual impact through the provisions of landscaping, or by creating visual interest through patterning of the facade, signage or public art.

**Post
supported
verandahs
and
balconies**

- (a) Setback a minimum 600mm from edge of kerb
- (b) Compliment the elements of the building to which it is attached
- (c) Public liability insurance and approval for works on public land will be required
- (d) Not interfere with the operations of or access to public utilities or infrastructure
- (e) The use of bollards at the base of posts to protect from rear parking vehicles will be required.

**Residential-
Commercial
Interface**

- (a) Provision of landscaping buffers to provide visual screening along residential boundaries that adjoin development sites in the Mortimer Street precinct (in particular .
- (b) Ground and first floor development should not overlook residential properties
- (c) Maintain acoustic privacy through the use of acoustic fencing, where vehicular movement adjoins property boundaries to reduce visual bulk of the proposed development.
- (d) Reduce visual bulk by locating buildings and structures away from residential boundaries, or where buildings must be located along property boundaries ensure that sufficient landscaping is provided
- (e) A development should not reduce the sunlight received by the north-facing windows of living area, private open space areas, or clothes drying areas of adjoining properties to less than 3 hours between 9 am and 3pm at the winter solstice.

**Utilities and
services**

- (a) Documentation to demonstrate that the development is able to be services with water, sewer and drainage and adequate provision has been made for handling and disposal of solid waste
- (b) Trade Waste Application is required where liquid waste (other than water from wash basins, toilet or bathrooms) will be discharged into Council's sewerage system.
- (c) Building and structures are to be located clear of infrastructure
- (d) For new sewer mains structures are to be located 1m plus the equivalent inverted depth, whichever is greater) of the centreline of the main.

**Traffic and
Access**

- (a) All vehicles must be able to enter and exit the site in a forward direction
- (b) All vehicle movement paths are to be sealed
- (c) Driveways must comply with Australian Standard AS 2890.1 Parking Facilities
- (d) For new commercial development all loading facilities are to be located within the

site with no loading to occur from the public road system.

- (e) All loading facilities shall be designed to complying with Australian Standards.
- (f) Where the truck delivery paths extend through car parking areas due consideration should be given to the separation of truck, pedestrian and car traffic. Where separation cannot be achieved then the application it to address traffic flow and safety issues.

**Pedestrian
Access**

- (a) Maintain existing covered pedestrian access within the town centres
- (b) Convenient and safe access through parking areas
- (c) Convenient and safe disabled access through parking areas and where relevant focus on improving links with the existing retail areas.

Parking

Refer Specific Provisions relating to parking section 1.3.

Landscaping

- (a) Landscaped areas within the car parks should be provided incorporating the use of canopy trees and buffer planting to residential boundaries.
- (b) Landscaping to comprise low maintenance, drought and frost tolerant species

4.6 INDUSTRIAL DEVELOPMENT

The following standards are applicable to all development within industrial zones and industrial development generally.

Setbacks

Site Area	Street	Side/Rear*	Secondary Frontage for Corner Lots *	Site Coverage
Less than 2000m ²	6m	nil	4m	60%
2,001 to 5,000 m ²	12m	nil	10m	55%
Over 5,001m ²	15m	nil	12m	50%

*Subject to compliance with fire rating requirements of BCA

Landscaping

- (a) In the front 5 metre where the site adjoins Sydney Road and in the front 3 metres on other sites.
- (b) Landscaping should be provided in front of the building line to increase the visual presentation of the development to the street
- (c) In the side and rear setbacks where it provides visual relief from a public street or area.
- (d) Landscaping to consist of mature trees and lawn which are low maintenance, drought and frost tolerant in nature.
- (e) Landscaping shall be provided in outdoor car parking areas where >10 spaces are required to provide shading and soften the visual impact of large hard stand area.

Design

- (a) Low scale building elements such as display area, offices, staff amenities are to be located at the front of the premises and constructed in brick or finished concrete.
- (b) Roof materials are to be non-reflective.

Fencing

- (a) All security fencing is to be pre-coloured or power coated.
- (b) Open work areas or storage areas visible from a public place or street must be fenced by masonry material or pre-coloured metal cladding of minimum 2m height. This fencing is to be only located behind the front setback.
- (c) Where perimeter fencing is proposed, any access gates are to be setback from the boundary by the length of the largest vehicle accessing the site.

Utilities

- (a) Statement of servicing to be provided to demonstrate the availability and feasibility of providing water, sewer, and stormwater appropriate for the scale of the development.
- (b) Applications must demonstrate adequate provision for storage and handling of solid waste.
- (c) Liquid Trade Waste Application and facilities are required where liquid

	<p>wastes (excluding domestic waste from a hand basin, shower, bath or toilet) are to be discharged to Council's sewer system</p> <p>(d) No building can be located within an easement for the purposes of utility infrastructure.</p> <p>(e) For water and sewer mains structures are to be located 1500mm for the centre line of the main.</p>
Traffic and Access	<p>(a) A traffic assessment report to be submitted that demonstrates:</p> <ul style="list-style-type: none"> i. Site Access ii. Loading and unloading facilities (to be contained within the site and to be able to cater for largest design vehicle. iii. Safe on-site manoeuvring area for the largest design vehicle <p>(b) Unsealed vehicle movement areas are not acceptable due to environmental impacts</p> <p>(c) All vehicles must be able to enter and leave in a forward direction.</p> <p>(d) The number of access points from a site to any one street frontage is limited to 1 ingress and 1 egress .</p> <p>(e) No vehicular access will be permitted to a Main Road where there is an alternate access point.</p> <p>(f) Driveways must be provided in accordance with AS2890.1 Parking Facilities</p> <p>(g) A separate sealed hardstand loading area which is capable of accommodating trucks that service the site.</p> <p>(h) The loading area is to be provided behind the building line at the side or rear of the building.</p>
Car parking	<p>Refer section 5.1 Car Parking</p> <p>Customer parking should be provided convenient to the public entrance</p>
Signage	<p>(a) Refer section 4.4 Signage</p> <p>(b) Single occupant industrial site:</p> <ul style="list-style-type: none"> i. one free standing advertisement within the 5m landscaped setback; and ii. one advertisement integrated within the facade of the building, but no higher than the building roof line. <p>(c) Multiple unit industrial site:</p> <ul style="list-style-type: none"> i. one index board near site entrance or within the 5m landscaped setback; and ii. one advertisement integrated within the facade of each unit, but no higher than the building roof line.
Outdoor lighting and noise	<p>(a) Must comply with <i>AS4282 Control of Obtrusive Effects of Outdoor Lighting</i>.</p> <p>(b) Windows, doors and other wall openings shall be arranged to minimise noise impacts on residences where proposed within 400m of a residential zone.</p> <p>(c) External plant (generators, air conditioning plant etc.) shall be enclosed to minimise noise nuisance where adjoining residential area.</p>

Subdivision

- (a) Minimum 30 metre frontage for lots.
- (b) Roads to be designed to AusRoads standards for B-Doubles.
- (c) Lots are to be provided with reticulated water and sewer.
- (d) Stormwater drainage and water quality standards are to be implemented – see Section 5.3 – Stormwater Management
- (e) All lots are to be provided with services for telecommunications and underground electricity
- (f) Lots are to be designed to be B-double accessible.
- (g) All roads with new subdivisions are to be constructed with bitumen.

4.7 TREE PRESERVATION ORDER

A Tree Preservation Order exists in two forms, one being a significant tree register applying to the LGA and the second being specific approval for certain trees in the Village zone in Rylstone, Kandos, Charbon, Clandulla and Ilford.

Mudgee and Gulgong

Mudgee and Gulgong Town and Environs – Specific trees have been identified as significant with in accordance with the table below:

LOCATION	SPECIES	SINGLE / GROUP
Tramp Café, Market Street, Mudgee	Betula pendula - Silver Birch	Single
Lot 671 Rifle Range Road, Mudgee	Angophora floribunda - Apple Gum	Group
Kelletts Carpark, Mudgee	Eucalyptus camaldulensis - River Red Gum	Single
158 Robertson Street, Mudgee	Eucalyptus cladocalyx - Sugar Gums	Group 16
Lot 2 Barigan Road, Wollar	Eucalyptus melliodora - Yellow Box	Single
472 Ridge Road, Cooks Gap	Ficus macrophylla - Morton Bay Fig	Single
Roadside Vegetation along Whitehorse Road between Spring Creek Rd & Henry Lawson Drive (including Snelsons Ln from Whitehouse) to form "T" shaped area of bush	Various Eucalyptus species - roadside vegetation	Various
Flirtation Hill, Mudgee	Eucalyptus calophylla - Marri, Port Gregory Gum	
49 Church Street Mudgee	Sebal plametto - Cabbage Palm	Two
Hospital Grounds Mudgee	Eucalyptus maculata - Spotted Gum	Group 84
Police Station Mudgee	Eucalyptus camaldulensis - River Red Gum	Single
Wilbetree Road	Eucalyptus camaldulensis - River Red Gum	Single

The consent of Council is not required For any tree not identified on the register.

Rylstone, Kandos, Charbon, Clandulla and Ilford

- (1) This provision applies to all land within Zone RU5 Village in Rylstone and Kandos.
- (2) A person shall not, ringbark, cut down, top, lop, remove, injure or wilfully destroy any tree without the consent of Council.
- (3) The consent of Council is not required:
 - i. for any tree having a height not exceeding 4m and a trunk diameter not exceeding 150mm (measured 1m above ground), or

-
- ii. for the pruning of any tree for the purpose of its regeneration or shaping, or
 - iii. where the action proposed with respect to the tree is necessary to prevent imminent personal injury or imminent damage to property, or
 - iv. where the tree has otherwise become dangerous, or
 - v. for the removal of noxious plants.

PART 5 DEVELOPMENT STANDARDS

5.1 CAR PARKING

Spaces shall be provided to the next highest whole number. Floor space areas refer to gross internal spaces, excluding stairs, amenities and corridors, except as noted in the schedule. Car parking requirements are based on the net increase in demand for parking created by a development. A reference to staff parking includes staff and management. Parking requirement rates are to be pro-rated in accordance with the proposed gross floor area (GFA) and rounded-up.

Where it is proposed to change the use of an existing retail premises/ floorspace to a restaurant, dining, and/or take food bar, additional car parking shall not be required where car parking cannot be provided on site.

Land Use	Car Parking Requirement
Dwellings (including dual occupancy)	2 spaces per dwelling – 1 space to be a garage, 1 space may be provided in a stacked arrangement in front of the garage provided that the space is contained wholly within the site.
Multi Unit Housing <ul style="list-style-type: none"> Resident Parking Over flow parking Parking 	1 space per 1 bedroom flat 2 spaces per 2 bedroom flat (other than in the Conservation Areas of Mudgee and Gulgong and Village Zones ion Rylstone and Kandos where the provision is 1 space per 2 bedroom flat) 2 spaces per 3 bedroom flat or cluster dwelling 1 space per 5 units – not required for developments of 3 or less units
Offices and Business Premises	1 space per 30 m ² gross floor area (gfa)
Bulky Goods Manufacturing Warehouse	1 space per 50m2 GFA 1 space per 75m2 GFA 1 space per 100m2 GFA
Restaurants or cafes or Take away food and drink premises	1 space per 7 m ² gfa or 1 space per 3 seats whichever is the greater (Restaurant). 1 space per 4m2 for licensed floor including outdoor seating or dining
Drive thru food service	10 spaces, either in queue or as normal parking
vehicle body repair workshops, and vehicle repair stations	5 spaces per vehicle workbay
Recreation facilities indoor	3 spaces per court or lane

including Squash Courts, Tennis Courts and Bowling Alleys	
Other Recreation Facilities	As determined by Council, but generally a minimum of 20 spaces plus spectator parking.
Vehicle sales or hire premises	1 space per 50 m ² of display area
Hospitals	1 space per 3 beds, plus 1 space per 2 staff (day shift)
Pub	Within the Commercial Core B3 zone, car parking study required. All other areas, 1 space per 5m ² of public/licensed area plus 2 spaces per 3 guest rooms plus 2 spaces per 3 employees.
Tourist and Visitor Accommodation	1 space per unit, plus 2 spaces per 3 employees plus if restaurant included: 1 space per 7 m ² gfa or 1 space per 3 seats whichever is the greater (Restaurant). 1 space per 4m ² for licensed floor including outdoor seating or dining
Service Stations and Highway service centres	6 spaces per service bay (including automatic car wash bay), plus 2 driveway spaces per fuel bowser
Educational Establishments	1 space per staff member, plus adequate pickup space, plus 1 space per 10 senior students (Year 11 and up), plus Provision for at least three (3) parking spaces for buses.
Shops	1 space per 30 m ² gfa
Places of Public Worship, Entertainment Facilities, Community facilities,	1 space per 4 seats or 1 space per 10m ² of gfa whichever is the greater.
Amusement Centres	1 space per 4 machines
Bulky Goods Retailing, rural supplies, hardware and building supplies	1 spaces per 50m ² gfa
Garden Centres, landscape material supplies and plant nurseries	1 space per 500m ² of site area (minimum of 5 spaces) plus 0.5 spaces per staff member.
Child Care centre	1 space per 4 children.
Surgeries and Medical Centres	3 spaces per consulting room, plus staff parking.
Other Uses	Other uses not listed in this Development Control Plan shall be assessed individually heaving regard to the expected traffic generation.
Varying of Standards	Where site conditions warrant, Council may vary the above standards by up to 10% provided the applicant lodges a formal objection, including reasons, against the subject standard. This is likely to require a car parking and/or traffic impact assessment as means of justification for the variation.

Hours of Operation	<ul style="list-style-type: none"> a) Off-Peak development is development which operates or carries out its business outside the peak demand periods for parking which is generally between 9.00 am and 5.00 pm weekdays. b) Development of this type will be assessed in accordance with DCP and have regard to the characteristics of the proposed development, its hours of operation and the availability of publicly accessible parking in walking distance of the development site.
Change of Use	<p>Where existing premises are proposed to be redeveloped or their uses changed, the following method of calculating car parking requirements shall apply.</p> <ul style="list-style-type: none"> a) determine the parking requirement of the previous or existing premises in accordance with the parking rates contained in this plan; b) determine the parking requirement of the proposed development in accordance with the parking rates contained in this plan; c) subtract the number of spaces determined in (a) above from the number of spaces calculated in (b) above; and d) the difference calculated in (c) above represents the total parking spaces to be provided. <p>For a re-development or new development or any additional floorspace in excess of 100m² car parking shall be calculated and provided in accordance with the Development Control Plan.</p>
Car Parking Credits	<p>Historic parking credits for lawfully established uses are recognised under this clause and evaluated in accordance with the DCP.</p> <p>Frontage credits related to parking availability on-street. The parking frontage credit calculation is the subject lot width reduced by the extent of driveways and no-parking zones.</p> <p>The parking credit available is the historic credit and the frontage credit.</p>
Heritage Incentive	<p>The Mid-Western Regional Council may exempt development involving the restoration and/or conservation of a heritage item from part or all of the subject developments parking demand. The applicant shall make a claim for the exemption and the justification thereof in the development application.</p> <p>The Heritage Incentive will only be applied where the applicant can demonstrate that the conservation of the building depends upon the use of this clause.</p>
Landscaping	<ul style="list-style-type: none"> a) Parking facility design shall consider the likely visual impact of the parking facility in the locality and provide an integrated landscape design addressing amenity impacts.

-
- b) A landscaping plan including details of species selection of mature shade trees, species condition, size of beds, under storey and ground cover planting, irrigation provision shall be submitted to Council for approval.
 - c) Landscaping shall be provided to separate pedestrian and vehicle conflict points where possible.
 - d) Landscaping provision for sun control (shading) shall be provided at the rate of 1 shade tree for every 6 car parking spaces.
 - e) Existing trees on site are to be retained where possible.

Note: Design and layout including manoeuvring, provisions of accessible spaces and access reference should be made to AS 2890.1 Parking Facilities

5.2 FLOODING

Definitions	<p><i>Flood compatible materials</i> include those materials used in building which are resistant to damage when inundated. A list of flood compatible materials is attached in Appendix A.</p> <p><i>Flood evacuation strategy</i> means the proposed strategy for the evacuation of areas during periods of flood as specified within any policy of Council, the Floodplain Management Plan, the relevant (SES) Flood Plan, by advices received from the SES or as determined in the assessment of individual proposals.</p> <p><i>Flood prone land</i> means land indicated on the map marked “Flood Prone land” deposited in the office of Council and amended from time to time.</p> <p><i>Freeboard</i> is a height above the design floor level or ground level which compensates for factors such as wave action, localised hydraulic effects and construction variations.</p> <p><i>Note: Reference to freeboard in this Plan refers to an increased height of 0.5 metres except adjacent to Redbank Creek (within the Mudgee Township and Environs Floodplain) where it refers to an increased height of 1.0 metres.</i></p> <p><i>Probable Maximum Flood (PMF)</i> means the flood calculated to be the maximum likely to occur.</p>
Flood Risk Precincts	<p>Each of the floodplains within the local government area which have been subject to flood investigations have been divided based on different levels of potential flood hazard. The relevant Flood Risk Precincts (FRP’s) are outlined below.</p> <ul style="list-style-type: none">• High Flood Risk <p>Land that is below the 100 year ARI flood that is subject to high hydraulic hazard (ie provisional high hazard in accordance with the Floodplain Management Manual) or areas that are isolated in a 100 year ARI flood due to evacuation difficulties.</p> <ul style="list-style-type: none">• Medium Flood Risk <p>Land below the 100 year ARI flood level that is not subject to high hydraulic hazard and where there are no significant evacuation difficulties.</p> <ul style="list-style-type: none">• Low Flood Risk <p>All other land within the floodplain (ie. within the PMF extent) but not identified as either in a high flood risk or medium flood risk precinct.</p>
Development controls	<p>The development controls apply to all known potentially flooded areas (that is up to the largest estimated flood including the PMF when known). The type and stringency of controls have been graded relative to the severity and frequency of potential floods, having regard to categories determined by the relevant Floodplain Management Study and Plan. The categories applicable to each floodplain are depicted on the planning matrices in Appendix A as follows:</p>

- **Matrix 1** – Urban Floodplains
- **Matrix 2** – All other floodplains.

Performance Criteria

- The proposed development should not result in any increased risk to human life.
- The additional economic and social costs which may arise from damage to property from flooding should not be greater than that which can reasonably be managed by the property owner and general community.
- The proposal should only be permitted where effective warning time and reliable access is available for the evacuation of an area potentially affected by floods, where likely to be required.
- Development should not detrimentally increase the potential flood affectation on other development or properties.

Fill Earthworks that change the nature of a watercourse and have the potential to affect upstream or downstream properties is not permitted.

This standard applies to watercourses in the high hazard flood risk precinct.

Development Application Applications must include information which addresses all relevant controls listed above, and the following matters as applicable.

Minor Additions Applications for minor additions (refer to the Land Use Categories in Appendix A) to an existing dwelling on Flood Prone Land shall be accompanied by documentation from a registered surveyor confirming existing floor levels.

Survey plan required Development applications for Flood Prone Land shall be accompanied by a survey plan showing:-

- The position of the existing building/s or proposed building/s;
- The existing ground levels to Australian height datum around the perimeter of the building and contours of the site;
- The existing or proposed floor levels to Australian height datum; and
- A reliable access route, with regular levels to Australian Height Datum along the centreline of this route, wherever development is within a high or medium flood risk precinct.

Applications for earthworks, filling of land and subdivision shall be accompanied by a survey plan (with a contour interval of 0.25m) showing relative levels to Australian height datum.

Flood Study

For large scale developments, or developments in critical situations, particularly where an existing catchment based flood study is not available, a flood study using a fully dynamic one or two dimensional computer model may be required. For

smaller developments the existing flood study may be used if available and suitable (eg it contains sufficient local detail), or otherwise a one dimensional steady state flood model would normally suffice.

A flood study must demonstrate that the cumulative impact of a development on flood levels for up and downstream properties is negligible.

5.3 STORMWATER MANAGEMENT

All development will need to address the issues associated with managing water on the site. Specific design and specification is attached as Appendix B.

PERFORMANCE TARGETS

Table 1 Development Categories, Performance Targets & Relevant references

Development Categories	Performance Target(s)	Requirements (refer below)	Section in the Technical Guidelines – Appendix B1
Single dwelling and Dual occupancy development	I. BASIX II. Quantity Management During Operation III. Quality Management During construction	A	0
Multi Dwelling housing	I. BASIX II. Quantity Management During Operation III. Quality Management During construction	A B C	0 3 4
Residential development in areas of high ground salinity	I. BASIX II. Quality Management During Construction III. Quality Management During Operation IV. Salinity prevention	A C D F	0 4 5 7
Roads in urban areas and Car Parks (> 5 cars) including new roads on subdivisions and road widening	I. Quality Management During Construction II. Quality Management During Operation III. Salinity Prevention (where applicable)	C D F	4 5 7
Commercial, Industrial Developments & Mixed Use	I. Quality Management During Construction II. Quality Management During Operation III. Water conservation IV. Salinity Prevention (where applicable)	C D E F	4 5 6 7
All other types of development including Council development that requires approval under the EP&A Act.	I. Quality Management During Construction II. Quality Management During Operation III. Water conservation IV. Salinity prevention only where applicable	C D E F	4 5 6 7

A BASIX

The Development proponent shall meet all obligations included on their BASIX certificate.

B QUANTITY MANAGEMENT DURING OPERATION

EXEMPTIONS TO THIS PART

Rural development and development which is located in areas of high ground salinity.

HOW TO COMPLY?

Step 1: Determine the minimum runoff storage volume required

The minimum runoff storage volume (m^3) required is shown in equation 1 and is:

- (1) Rainfall threshold depth, 0.022m x proposed impervious area (m^2)

Note that all paved areas which are constructed from permeable paving shall be considered to be permeable for the purposes of applying this policy.

Step 2: Work out how much a rainwater tank can reduce the infiltration volume?

The next step is to work out if a rainwater tank is to be included in the configuration of your solution. If it is, then credit will be given and the retention volume can be reduced in accordance with the following table (2) below.

If there is a rainwater tank obligation arising from BASIX, then credit will be given for the tank and the runoff storage volume will be reduced. If the applicant opts to install a larger tank than that required under BASIX, then even more credit may be given.

Table 2 Credits (reductions in the runoff storage volume) given for various rain tank sizes and proposed end uses of the rainwater.

Reduction in runoff storage volume (m^3) for using a rainwater tank		
Proposed Rainwater Tank size (kL)	Where outdoor use only is proposed	Where both outdoor and internal use including toilets, hot water and laundry is proposed
<2.5	0	0
≥2.5	1	2.0
≥5.0	1.25	2.5
≥7.5	1.5	3.0
≥10.0	1.75	3.5
≥12.5	2	4.0
≥15.0	2.25	4.5

Step 3 Configure the proposed trench, rain garden or rainwater tank according to the supporting S2S - Supporting Technical Guidelines (Appendix B2)

Alternate solutions

Alternatively, a unique solution supported with scientific evidence which demonstrates that the proposal complies with the performance targets may be submitted. The supporting technical guidelines document the minimum evidence requirements.

C QUALITY MANAGEMENT DURING CONSTRUCTION

PERFORMANCE TARGETS

Table 3 identifies soil and erosion control requirements during construction for all Applicants.

Commercial and industrial internal alterations, refits and refurbishments which do not disturb any earth are exempt from complying with this part.

Table 3. Water quality management requirements during construction

Development Scale	Performance Target
Small Scale < 800m ² of disturbed area	As a minimum, Council requires a hand marked-up plan of proposed works showing sediment and erosion control measures. This plan must be prepared in accordance with the supporting Technical Guidelines
Medium 800 m ² to 2,500 m ² of disturbed area	An Erosion and Sediment Control Plan (ESCP) must be prepared in accordance with Landcom's Managing Urban Stormwater (2006) otherwise known as 'The Blue Book' (refer to the supporting S ₂ S - Technical Guidelines).
Large More than 2,500 m ² of disturbed area	A Soil and Water Management Plan (SWMP) must be prepared in accordance with Landcom's Managing Urban Stormwater (2006) otherwise known as 'The Blue Book' (refer to the S ₂ S - Supporting Technical Guidelines).

D QUALITY MANAGEMENT DURING OPERATION

PERFORMANCE TARGETS

This performance target is applicable to:

- Residential development in areas of high ground salinity
- Subdivisions that comprise the whole or major part of a catchment
- Car parks which have a capacity for more than 5 cars
- Commercial development (excluding internal refurbishment and refits)
- Industrial development (excluding internal refurbishment and refits)
- Any new Council or Special Uses development such as schools, hospitals, etc.

Water Quality Requirements for Urban Subdivision

Development Scale (average lot size of 800m ² or equivalent land size)	Performance Target
Small Scale Up to 30 Lots	<ul style="list-style-type: none"> • Bio-retention • Post development flows do not exceed pre-development flows up to and including 1.5 year ARI rainfall event • Bio filtration for overland flow paths
Medium 30 – 100 lots	<ul style="list-style-type: none"> • On Site Detention (OSD) up to 100 year ARI • All water quality requirements except Gross Pollutant Traps (GPTs)
Large Beyond 100 lots	<ul style="list-style-type: none"> • On Site Detention (OSD) up to 100 year ARI • All water quality requirements including Gross Pollutant Traps (GPTs) and biofiltration

Water quality performance targets are stipulated in Table 4.

Table 4. Post development pollution reduction targets

Pollution Reduction Target
<ul style="list-style-type: none"> • Total Suspended Solids (TSS) – 85% reduction of the typical annual load • Total Phosphorus (TP) - 65% reduction of the typical annual load • Total Nitrogen (TN) - 45% reduction of the typical annual load • 90% of gross pollutant loads (litter and heavy sediments), oil and grease are retained on site

HOW TO COMPLY?

DEEMED TO COMPLY SOLUTIONS

There are two deemed to comply solutions which are:

- 1) The use of a bioretention basin or raingarden (which can also be used to increase public amenity) configured to also promote infiltration where permitted.

The minimum area of the bioretention basin is to be based on the proposed impervious area. Table 6 defines the minimum requisite areas. The bioretention basin or rain garden is to be designed in accordance with the supporting S₂S - Supporting Technical Guidelines (Appendix B2)

- 2) The use of a buried infiltration trench. The deemed to comply infiltration trench solution will need to have a minimum volume calculated in accordance with Table 5. The infiltration trench usually receives stormwater flows from the surface in the same manner as raingardens. However, if the trench is receiving sub-surface flows from the stormwater network then the flows will need to be pre-treated with a sediment trap to ensure that sediment is removed from the runoff before it enters the trench. This, in combination with routine maintenance to remove accumulated sediment will ensure the trench has a long life.

- 3) The provision of a rainwater tank as defined in Appendix B2.

Worked examples are included in the S₂S - Supporting Technical Guidelines Appendix B2.

Table 5. Area of bioretention and volume of infiltration as a proportion of the upstream impervious area.

Average annual rainfall (mm/yr)	<800	>800
Area of bioretention for roads/carparks expressed as % of the upstream <u>impervious</u> catchment area (based on 100mm depth of surface ponding, 500mm filter media depth and 120mm/hour saturated hydraulic conductivity).	1.0%	1.2%
Minimum volume of storage required inside buried infiltration trench per 100m ² of upstream <u>impervious</u> catchment.	0.5m ³ /100m ²	0.75m ³ /100m ²

Both the bioretention/raingarden and infiltration trench shall be constructed in accordance with the supporting S₂S - Supporting Technical Guidelines Appendix B2.

Alternate solutions

Alternatively, a unique solution supported with scientific evidence which demonstrates that the proposal complies with the performance targets may be submitted. The supporting technical guidelines document the minimum evidence requirements.

E WATER CONSERVATION FOR NON RESIDENTIAL DEVELOPMENT

EXEMPTIONS

This clause does not apply to residential development.

PERFORMANCE TARGETS

New development applicants (other than residential and commercial and industrial refurbishments and refits) shall reduce consumption of potable water by 40% benchmarked against a development which uses only potable water and which has no water conserving fixtures or fittings.

Commercial and Industrial refurbishments and refit applicants shall reduce consumption of potable water by 30% benchmarked against a development which only uses potable water and which does not use water conserving fixtures and fittings.

HOW TO COMPLY?

A Water Conservation Report is to be prepared and submitted with the DA which demonstrates how the water consumption on the proposed development will be reduced by 40% when benchmarked against a development which only uses potable water and does not have any water conservation measures. The measures proposed in the Water Conservation Report shall form a statement of commitment and be included on the conditions of consent.

Compliance with the target can be achieved by firstly reducing the demand for water (known as demand management), and secondly by substituting rainwater, stormwater or wastewater sources for town potable water.

With respect to refurbishments and refits and; where consumption is relatively minor, compliance might be achieved simply by implementing demand management measures alone. In all cases evidence must be provided to Council by way of the Water Conservation Report which defines current demand and demonstrates how future demand will be reduced by the relevant performance target.

Demand Management Measures include the following examples noting the list is not exhaustive:

- Use of minimum AAA rated fixtures and appliances
- Use of aerators on existing and proposed taps
- Flush arresters on existing toilets.
- Selection of plants and landscaping that require little or no watering.

If source substitution such as the use of rainwater tanks, grey water recycling systems or other measures are proposed then the applicant shall ensure that all water shall be fit for its intended purpose, including:

- Recycled water (treated wastewater or stormwater) may be used for non-potable purposes such as toilet flushing or irrigation and washdown.
- Rainwater may be used for both potable and non potable uses.
- Applicants are encouraged to maintain a town water supply (where available) to top up a rainwater tank when needed.

-
- Where town water supply is available but not to be installed, agreement on adequate provisions for fire-fighting shall be made with the NSW Fire Brigade who may permit the use of rainwater for fire-fighting purposes provided it is stored in such a manner that it cannot be drawn down for any other purpose.

F SALINITY PREVENTION

AIMS

To prevent a decline in the health of receiving waters from development located in areas with high ground salinity.

PERFORMANCE TARGET

In areas with high ground salinity or in areas where an elevated saline groundwater table exists, infiltration of runoff shall not be permitted.

Where a Quality Management During Operation performance target exists (such as for residential development in saline affected areas) and for reasons of high ground salinity infiltration is not permitted then:

- 1) Applicants shall be limited to one deemed to comply solution, which is either a rainwater tank, bioretention basin or raingarden.
- 2) If a bioretention basin or raingarden is adopted, it shall be lined to prevent infiltration and otherwise sized in accordance with Appendix B1 and constructed in accordance with the S₂S - Supporting Technical Guidelines Appendix B2.
- 3) Wherever possible, explore the adoption of rainwater tanks or stormwater harvesting to reduce the volume of stormwater runoff as much as possible. This is possible for residential developments where tanks up to 15 kL in volume will help to reduce water bills and runoff greatly.

In areas which are affected by high ground salinity and which have an elevated saline groundwater table, permeable paving may be used provided that no additional areas drain onto the pavement, i.e. only the paved area drains through the pavement.

5.4 ENVIRONMENTAL CONTROLS

Protection of Aboriginal Archaeological Items

- (a) Aboriginal archaeological relics are protected by the provisions of the National Parks and Wildlife Act 1974, which makes the disturbance or destruction of these relics, without permission of the Director, an offence.
- (b) Proponents should determine whether their site has potential archaeological significance and if so, should submit an archaeological survey with their development application. Generally, where a site is located near a water course or on an elevated area, an archaeological study will be required.
- (c) Proponents should determine if the development application is classified as integrated development under Section 91 of the EP&A Act 1979 and if an Aboriginal Heritage Impact Permit is required.

Bushfire Management

- (a) Where the development site is affected by a bushfire hazard as identified on the Bushfire Prone Land Map produced by the NSW Rural Fire Service, the design and management of the development shall comply with the guideline "Planning for Bushfire Protection" and where required; the Australian Standard AS 3959 - Construction of Buildings in Bush Fire Prone Areas.
- (b) Buildings shall be located to ensure that requirements for fuel free or fuel reduced zones do not impact on existing native vegetation on the site.
- (c) Proponents should determine if the development application is classified as integrated development under Section 91 of the EP & A Act 1979 and if a Bushfire Safety Authority is required.

Riparian and drainage line Environments

- (a) Proponents must identify all drainage lines, streams, creeks and rivers on development plans and identify how the development has been designed to respect and be setback from such waterways and their vegetation.
- (b) Proponents should determine if the development application is classified as integrated development under Section 91 of the EP & A Act 1979 and if a water use approval, water management work approval or activity approval is required.

Pollution and Waste Management

- (a) Proponents should indicate all waste streams i.e. trade, liquid, chemical, solid, medical, and clarify how they will be managed and contained safely on-site and disposed of such that there are no environmental impacts or effects on adjoining properties, stormwater or sewerage systems or waterways.
- (b) Proponents should determine if the development application is classified as integrated development under Section 91 of the EP&A Act 1979 and if an environmental protection license is required.

Threatened Species and Vegetation Management	<p>(c) Proponents will refer to Groundwater Vulnerability Mapping associated with Mid-Western Regional Council Local Environmental Plan 2012.</p> <p>(a) An assessment of any potential impact on native flora and fauna is to accompany a development application. If considered necessary by Council a Flora and Fauna Impact Assessment will be required from a suitably qualified professional. This Assessment will determine whether a Species Impact Statement will be required.</p> <p>(b) Development applications should indicate all existing vegetation.</p> <p>(c) Buildings and access areas should be sited to avoid removal of trees.</p>
Building in Saline Environments	<p><i>Information provided by the NSW Government indicates that salinity may occur in parts of the Mid-Western Regional Local Government Area (LGA). This salinity potential is due to inherent characteristics of the Mid-Western Regional LGA landscape. As a result, residential buildings in the Mid-Western Regional LGA may be susceptible to salt damage.</i></p> <p><i>The inclusion of this information in the DCP will assist the Council in the reasonable undertaking of its roles and responsibilities under the Local Government Act 1993 and the Environmental Planning and Assessment Act 1979.</i></p>
Definitions	<p><i>Salt damage</i> - the deterioration of material such as concrete, metal or brick caused by the chemical and physical impact of salts. Salts can be carried in surface water, soil, groundwater, rain or air.</p> <p><i>Residential Building</i> - Structures classified as either class 1, 2, 3, 9c or 10 in the Building Code of Australia (BCA)</p>
Variation	<p>Council will consider on merit, arguments relating to the application of this policy based on diminished salinity risk*. In all such instances the onus of proof rests with the applicant.</p> <p>*Diminished salinity risk may be argued through a risk assessment based on a site analysis consistent with the Department of Land and Water Conservation (2002) Guide: <i>Site Investigations for Urban Salinity</i> (ISBN: 0 7347 5305 5), and the incorporation into structure design, appropriate measures to manage the risk of salt damage.</p>
House slabs and Footings	<p>(A) The following measures must be used for house slabs and footings:</p> <ol style="list-style-type: none"> 1. For slab on ground construction, a layer of sand at least 50 mm deep under the slab must be provided; 2. A high impact damp proof membrane (rather than a vapour proof membrane) must be laid under the slab (NSW BCA 3.2.2.6); 3. The damp proof membrane must be extended to the outside face of the external edge beam up to the finished ground level. <i>(As per clause 3.2.2.6 and figure 3.2.2.3 of the BCA);</i> 4. Class 25 MPa (N25) concrete must be used OR a sulphate resisting Type SR cement with a water cement ratio of 0.5 must be used. Water, which will reduce the concrete strength below 25 MPa must not be added to the concrete at the

construction site;

5. Slabs must be vibrated and cured for a minimum of three days. Care must be taken not to over vibrate the concrete during placement, as segregation of the concrete aggregates will occur;
6. The minimum cover to reinforcement must be 50 mm from unprotected ground. Chairs including lateral supports should be in position prior to inspection and subsequent pouring of the concrete;
7. The minimum cover to reinforcement must be 30 mm from a membrane in contact with the ground;
8. The minimum cover to reinforcement must be 50 mm for strip footings and beams irrespective of whether a damp proof membrane is used;
9. Admixtures for waterproofing and/or corrosion prevention may be used.

Brickwork

(B) The following measures must be used for brickwork:

1. The damp proof course must consist of polyethylene or polyethylene coated metal and be correctly placed; (NSW BCA 3.3.4.4);
2. Exposure class masonry units must be used below the damp proof course level. *(Clause 3.3.1.5 (b) and Table 3.3.1.1 of the BCA);*
3. Appropriate mortar (M4 grade) and mixing ratio must be used with exposure class masonry units; *(clause 3.3.1.6 of the BCA);*
4. Admixtures for waterproofing and/or corrosion prevention may be used.

All buildings

(C) The following measures must be used for all buildings:

1. Once installed the damp proof course or the vapour barrier must not be breached by any later works or additions such as; steps, verandas, walls, rendering, bagging, pointing, paving or landscaping.
2. Appropriate sub-soil drainage must be installed for all slabs, footings, retaining walls and driveways;
3. The dwelling must be designed to suit the sites existing topography and any cut and fill required must not exceed 1000 mm in total.

Additional controls recommended for all buildings:

Landscaping and garden designs should not be placed against walls and be designed to minimise the use of water on the site.

Low water requiring plants and water-wise garden designs are required in accordance with the requirements of the Building Sustainability Index.

Buildings shall be maintained in accordance with the requirements of AS2870 Australian Standard Residential Slabs and Footings – Construction. Drainage is to be designed and constructed to avoid the ponding of water against or near footings.

**Alterations
and Additions**

(D) Alterations and Additions.

Applications for alterations or additions to existing buildings shall comply with the requirements for new structures. Existing buildings affected by the impact of salinity shall be repaired in accordance with the requirements for new buildings and any necessary remediation carried out to the site to ensure the impacts of salinity are eliminated.

Property owners are to obtain advice from suitably qualified building professionals with experience in this field before commencing any repairs or remedial action.

Situations requiring demolition of parts of the building, repairs to drainage systems or structural alterations should not be commenced before the appropriate Construction Certificate or Combined Development Certificate is obtained for the work proposed.

Notes:

- 1. In the event that the requirements of this section of the DCP contradicts the Building Code of Australia, the requirements of the Building Code of Australia prevail.*
- 2. Design and construction requirements in this section of the DCP are based on AS3600 Australian Standard Concrete Structures, for moderately aggressive to aggressive environments.*

PART 6 DEVELOPMENT IN RURAL AREAS

6.1 DWELLINGS

There are provisions within the LEP that prescribe circumstances for the erection of dwellings on rural land. These controls relate to Rural zoned (RU1, RU3, RU4, RU5) land and Large lot residential (R5) zoned land.

The subdivision controls in section 7.2 address dwellings associated with new lots. Additional guidelines are as follows.

Primary Production Small Lots Dwellings on land within the Primary Production Small lots zone will only be approved where it can be demonstrated that the dwelling is required to support the agricultural use of the land.

The agricultural use of the land for the purposes of the RU4 zone means intensive plant agriculture (defined in LEP) or the irrigation of pasture and fodder crops.

Applications for a dwelling will need to include:

- ❖ Details of the proposed/existing intensive plant agricultural activity
- ❖ Business plan prepared by a suitably qualified professional detailing production costs, harvesting potential and conservative market prices
- ❖ Evidence of water licenses satisfactory for the use
- ❖ Evidence of commencement or intention to commence the activity

Land adjacent to the Mudgee Airport – Dwellings on land zoned RU4 Primary Production Small Lots and having a minimum lots size of 2ha on the Lot Size Map shall only be considered where the dwelling is designed to incorporate a hanger. Such an application will need to address:

- ❖ The relationship between the airport and the development site in respect to the interface with the airport; and
- ❖ Access to the airport for private aircraft.

Dwellings on rural lots within the former Rylstone LGA The LEP provides for the erection of a dwelling on a lot (including a lot which forms part of larger holding) on which the erection of a dwelling was permissible immediately before the commencement of the (LEP) plan.

This clause ensures that despite the Lot Size Map, a dwelling house may be erected on a lot with a minimum area of at least 40ha within the former Rylstone LGA.

Reference should be made to the provisions of the LEP 2012 which provide for dwellings on lots below the minimum lot size in particular circumstances, for example existing holdings.

Services Where the dwelling will be erected on a lot that is within 500m of an R1 General Residential or R2 Low Density Residential zone, it must:

- ❖ Be on a lot with have sealed road frontage and be connected to the sealed road network; and
- ❖ connect to the reticulated water and sewer infrastructure.

Dwellings adjacent to Village Zones Consideration will be given to applications for the erection of dwellings on existing lots within 500m of an RU5 Village zone where the lot has sealed road frontage and is connected to the sealed road network – in many cases this is likely to mean that the proponent will be responsible for the upgrade of the road as part of any development approval.

In circumstances where the site is within 500m of reticulated water or sewer infrastructure, the dwelling will need to be connected as part of any development approval.

Setbacks	Zone	Street	Side/Rear	Secondary Frontage for Corner Lots *
	R5 Less than or equal to 5 ha. in area	30m	20m	15m
	Ru1, RU4 and R5 Greater than 5 ha. in area	60m	20m	15m
	RU5	7.5m	BCA	3m
<ul style="list-style-type: none"> Where the lot is located a Classified Road such as Ulan or Cope Road the front setback is 100m and side and rear setback is 20 metres. Where the lot is located on the State Highway the front setback is 200 m and the side setback is 20 metres. 				

6.2 TEMPORARY WORKERS ACCOMMODATION

Definition

temporary workers' accommodation means any habitable buildings and associated amenities erected on a temporary basis for the purpose of providing a place of temporary accommodation for persons employed to carry out large-scale infrastructure, including development for the purposes of an extractive industry, mining, renewable energy or an electricity transmission or distribution network.

Location

The development is to be located:

- (i) if the development relates to a mine—within 5 kilometres of the relevant mining lease under the Mining Act 1992, or
- (ii) in any other case—within 5 kilometres of the large-scale infrastructure in which persons are to be employed.
 - Provision of suitable arrangements for the disposal of waste water and the provision of a water supply. It should be noted that proposals relying on the provision of water transported by tankers will not be supported.
 - Design of the facility to ensure that there is no adverse visual impact discernable from outside the project site.
 - Submission of a plan of management to address the social concerns having regard to the particular location of the accommodation.
 - The application should address health and residential amenity issues that arise due to the location near the major infrastructure project site.
 - Provision of additional access and parking infrastructure commensurate with the additional demand.
 - Provision of a Social Impact Assessment.
 - The application should identify and address potential positive and negative economic impacts of the proposal.

Need

The proponent shall demonstrate the need for the facility by providing an analysis of the number of major infrastructure project (including mining) jobs currently approved and the total number of temporary workers accommodation beds approved. The expected life of the Temporary Workers Accommodation facility shall be included in the Statement of Environmental Effects indicating the expected timing of decommissioning to relate to the life of the major infrastructure project.

Social Impact Assessment

There are many definitions of *social impact*. A contemporary definition (Armour, 1992) defines social impacts as changes that occur in:

- People's way of *life* (how they live, work, play and interact with one another on a day-today basis);
- Their *culture* (shared beliefs, customs and values); and
- Their *Community* (its cohesion, stability, character, services and facilities).

Key principles of assessing social impacts.

To achieve a useful and appropriate framework for assessing social impacts, a number of key principles are important.

- The purpose of assessing social impacts is to provide focused relevant details on the significant or problematic impacts.
- It is essential to consider the positive and negative social aspects of the development.
- Persons and groups that may be affected by the proposal should be consulted. Community consultation should identify the possible impacts and mitigating measures that may be introduced. Community consultation should occur early in the process and should lead to the formulation of the terms of reference of the Social Impact Statement. It is a requirement that the proponent consult the NSW Police Local Area Command and local health providers (including General Practitioners and Dentists operating in the local area) during the preparation of the Social Impact Statement. It is recommended that the proponent consult Council after the terms of reference are formulated.
- The proponent should incorporate practical measures that will enhance the positive aspects, may improve the development and limit any possible negative social impacts.

The Social Impact Statement should include but is not limited to the following:

- Identification and an in-depth analysis of social impacts of the proposal.
- Outline the process of community consultation and address issues raised by the community.
- consideration of cumulative impacts, intergenerational equity, impacts on the provision of all services and identify ways to address these impacts.
- The results of consultation with relevant service providers including police and health providers.
- Identification of a strategy to mitigate impacts, encourage integration with the community, and permanent relocation to the area, timeframe for implementation of the strategy and a monitoring program.
- Identify and implement provisions that will address the needs identified by the SIS and the demands generated by the development in a way that will not adversely impact upon the existing community.

Transportable Buildings

The application must illustrate that all transportable buildings can be permanently affixed to the site by footings in accordance with the requirements of the National Construction Code and associated Engineer's Certification.

Detail that all buildings and structures will have adequate form and appearance, including material and colours in soft earth browns, creams and greens, which do not detract from the visual amenity of the area. The use of reflective cladding material on walls will not be permitted. Where the use of second hand buildings is proposed the application must be accompanied by the following information:

- Photographs clearly showing the condition from all four elevations of the

building

An inspection report from a certified structural engineer or accredited building surveyor that the buildings are suitable for the proposed use and relocation.

Accessibility

Accessibility requirements established by Access to Premises Standard, the National Construction Code and the associated Australian Standards are to be addressed in the application.

Density

Development shall be limited to a maximum of 100 beds per hectare.

Facilities

The accommodation facility is to provide the following facilities as a minimum:

- Ablution facilities to be provided in each accommodation room including shower, toilet and wash basin connected to an approved effluent disposal system. ;
- Communal laundry and associated facilities connected to an approved effluent disposal system
- A covered/ sheltered entry for each building;
- An outdoor activity area of which part shall be shaded;
- Adequate and secure storage space for workers, equipment and other material associated with the management and maintenance of the accommodation facility;
- Adequate Lighting for pedestrian and vehicular safety and security throughout the complex.
- Paved internal pedestrian access to and between all buildings and facilities is to be provided.

Traffic and Parking

- Internal road and vehicular access provided in accordance with Australian Standard No. AS2890 Council standard.
- Provision of one car parking space per room and one space per staff member in accordance with the car parking section of this DCP.
- Designated bus parking and collection/drop off area located within the development area with sufficient manoeuvring area to allow the bus to enter and leave the site in a forward direction.
- Designated delivery areas.

Services

- Provision of a potable water supply capable of providing a minimum of 140 litres per person per day. A lower daily minimum may be acceptable where the proposed development includes water saving measures such as recycling systems or non-potable water supply sources.
- A water balance is to be submitted demonstrating that the proposed provisions for water and sewer services can be met by the development.
- Demonstration of adequate water supply to maintain the accommodation facility including landscaping.
- Where the facility is to connect to a reticulated system proved by the local authority, the applicant must demonstrate that the reticulated system can support the additional demand generated by the Temporary Workers Accommodation whilst allowing adequate capacity to service existing demand, demand to meet land already zoned within the

catchment, uses already approved to connect to the reticulated service and land identified in the Comprehensive Land Use Strategy.

- Provision of waste collection and where necessary entering into a waste disposal agreement with Council or an approved waste collection operator.
- First aid facilities.

Landscaping

A landscape plan should be provided with the application. Where possible, remnant vegetation should be retained. Landscaping should focus on:

- Providing a buffer to surrounding land, in this case vegetation should consist a combination of mature trees and shrubs to achieve a visual buffer;
- Providing privacy within the development;
- Improving the residential amenity through the provisions of shade.
- Consist mainly of native species or species that thrive in this locality.
- At least 25% of the site should be open space.

It will be a requirement of any development consent that the landscaping is to be maintained for the life of the development in accordance with the approved landscaping plan.

Plan of Management

The applicant shall provide a Plan of Management that shall form part of any approval granted by Council. The Plan shall address, but is not limited to, the following issues:

- Identification of measures introduced to mitigate social impacts
- Management of security and safety of tenants, community and surrounding residents.
- Noise, dust, odour, light spill and litter.
- Potential conflict with adjoining owners/occupiers that may be affected by the operation of the accommodation facility.
- The method of transport of the workers to the project site.
- The consumption of alcohol at the accommodation facility (if applicable).
- Where adjacent to a town or village, access to facilities.
- Access to medical services.
- Method for the collection of waste within the site.
- Emergency response procedures.
- Soil, groundwater and surface water protection methods.
- Details of signage at the entrance to the accommodation which is to include the following:
 - Site Manager / Operator
 - Specific Rules of the Accommodation site
 - Emergency Contact Details
- Complaints Handling Procedure that will be publicly available and include a compliant contact phone number.

Decommissioning

The application shall be accompanied by a Decommissioning Plan that shall form part of any approval granted by Council. The Plan shall address the following issues:

-
- When the facility shall be decommissioned;
 - Works or facilities that shall remain in place following decommissioning;
 - Details of the clean –up and rehabilitation of the site;
 - The proposed use of the site after decommissioning; and
 - The transfer to public ownership of any legacy infrastructure.

**Developer
Contributions**

Council will seek to negotiate planning agreements for major developments in accordance with s93F of the Environmental Planning and Assessment Act 1979. Proposal involving less than 50 beds will be assessed in accordance with Council Section 94 Contributions Plan as commercial development.

6.3 WIND FARMS

Scope

For the purpose of the development control plan, commercial wind power generation turbine(s) or towers with a peak capacity power rated output greater than 10kW require development consent and must comply with the provisions of this plan.

For the purposes of this Plan, commercial wind power generation includes wind power generation

Turbine(s) or towers with a peak capacity of power rated output greater than 10kW. The erection of a wind monitoring tower also requires Council's consent.

Objectives

- To minimise potential land use conflicts,
 - To ensure that there is no unreasonable interference with the comfort or response of adjoining land users,
- To ensure road access and other issues are identified and sufficient information is included with each development application to enable proper assessment, and
- To ensure that adequate provisions are made to restore developed land at the end of the life of the development.

State Significant Development

Due to the high capital investment value of large wind farms they often are categorised as State Significant Development. In these circumstances the assessment of the application is undertaken by the Department of Infrastructure and Planning. To determine if your proposal falls within this category reference should be made to State Planning Policy (State and Regional Development 2011).

In the event that your proposal falls within the category of State Significant Development such that Council is not the approving authority, consistency with this Development Control Plan is nevertheless sought.

Statement of Environmental Effects (SEE)

The development application must be accompanied by a Statement of Environmental Effects

The SEE as a minimum shall contain the following information:

- The location of the property, land contours, boundary dimensions and site area. This should include a topographic map of 1:25,000 scale showing the location of the proposed development, the route of transmission lines to the electricity grid (and include access road, pylon, gradient and erosion control assessments), the service roads on and to the site, and the proximity to significant features such as dwellings, environmentally sensitive land, prime crop and pasture land, forests, national parks, heritage items and aircraft facilities.
- The site plan or plans showing positions of the proposed wind turbines, site boundaries, land contours, native vegetation, the proposed vehicular access points, the location of existing and proposed vegetation and trees on the land, the location and uses of all existing and proposed buildings, power lines, sub-station and fences on the land.
- A description of the proposed wind turbine/s, including all relevant details such as number, make, model, dimensions, generation capacity, tower

height, blade length, materials and colour.

- A land use description of the adjoining land and/or affected lands and landscape including assessment of the likely future impact.
- A noise impact assessment demonstrating compliance with the Department of Environment, Climate Change and Water licensing requirements (whether a licence is required or not) the NSW Wind farm Guidelines (2012) and any other NSW Acts, Rules or Regulations applicable to wind farm noise. The application shall also detail proposed monitoring program(s) for full spectrum noise testing (including low frequency sound and infrasound) to validate predicted noise impacts on neighbouring properties. The impact of The Van Den Berg effect (ie the effects of the wind profile at night on wind turbine sound) is also to be specified.
- A description and assessment of the visual effects including photomontages, plate or panoramic photomontages, computer assisted photo simulations or other graphic representations of the appearance of the wind turbines and transmission lines. Viewshed modelling via the use of a suitable GIS (e.g. "MapInfo") is encouraged. Shadow prediction and shadow flicker assessments shall be included in the visual assessment(s).
- An evaluation of the electromagnetic radiation and/or interference from the wind turbines and/or transmission lines. This should include impacts on human and animal health, emergency services, RFS, Police, Ambulance etc and local television and radio reception and other local communications.
- A construction program and environmental management plan incorporating the proposed staging of the project, erosion and sedimentation controls, heavy vehicle movements, site access including all service roads, transmission towers, substation, underground wiring, construction phase impacts including facilities, waste disposal, staff/contractor numbers etc, weed control, farm impacts and all other works.
- A report detailing investigations into the impact of construction vehicles on the proposed route having regard to public safety especially school bus hours and citizens' peak hour travel to work shall accompany the development application. Detailed road condition reports will be required as part of any consent. Council will require a full traffic assessment as part of the development application;
- An evaluation of flora and fauna impacts with specific mention of migratory species potentially impacted by the development. Where the development is in close proximity to known habitats of threatened species (Flora or Fauna), early consultation with the Department of Environment, Climate Change and Water is highly recommended.
- A decommissioning and site restoration plan and program.
- Demonstration that all issues raised by relevant Agencies have been addressed (e.g. CASA for aviation safety, SCA for water quality issues - AAA for aerial agriculture implications etc)
- The heritage significance of the site and surrounds.
- An assessment of any risks involved in soil disturbance or arising from vibration or microclimate impact including contamination impacts on hydrology and archaeological issues.
- Assessment of the development regarding all relevant legislation and applicable policies.
- Applicants are required to keep the local community fully informed

throughout their design process.

- Additional information may be required depending upon the circumstances of the development proposal and level of detail, and accuracy provided within the development application.

Controls

The following must be included as part of the design criteria and assessment of any related development application:

- The development should be sited and carried out to minimise impacts on, or restrictions to grazing, farming and forestry practices;
- The development should be carried out in a way that minimises any physical adverse effects on adjoining land and the development site, including, but not limited to:
 - (i) land degradation
 - (ii) alteration to drainage patterns
 - (iii) pollution of ground water
 - (iv) spread of noxious plants and animals, and
 - (v) bushfire hazard
- The developer must assess the visual impact of the project including an assessment of scenic value. The developer must consult with the Council and the community on appropriate visual impact measures;
- The developer must assess the cumulative impact of the development having regard to wind farms in existence, those approved but yet to be constructed, those for which a Development Application has been lodged with a planning authority and those for which written licenses have been granted to a developer for wind farm assessment purposes Council does not favour large expanses of ridgelines being covered with wind farms and turbines;
- Proposed wind turbines shall comply with the NSW Wind farm Guidelines and any other NSW Acts, Rules or Regulations applicable to wind farm noise. Note that where noise levels are found to exceed those guidelines, Council shall require remediation work and may require the cessation or decommissioning of the turbines to reduce the noise impacts on sensitive receptors such as non-related dwellings. The developer shall, upon request of council or an adjoining landowner, furnish the following information: a) noise attributable to the wind farm; b) associated wind speed and direction at the wind farm, weather conditions at the wind farm and power output of individual turbines at the wind farm; and (c) data collected on low frequency noise and Infrasound levels occurring at a representative sample of neighbouring non-host residences;
- Turbines shall not be located within 5.0 kilometres of any dwelling not associated with the development or from any lot upon which a dwelling may be constructed. The 5.0 kilometre setback proposes utilising a precautionary principle in addressing perceived visual, noise and health concerns;
- Turbines shall not be located within a distance two times the height of the turbine (including the tip of the blade) from a formed public road. A greater distance may be required by the road authority;
- Turbines shall not be located within a distance 2.0km from a non-related property boundary;

-
- Existing and proposed screenings may be used to minimise visual impacts to non-related properties. However, due to the height of turbines, screening is not the preferred method of minimising visual impact. Turbines shall be located in positions so as to have minimal visual impact on nearby properties, especially existing dwellings and lots on which dwellings may be constructed;
 - Turbine locations are to be sensitive to existing related dwellings on the subject site. Noise and shadow flicker should be minimised and turbines should not be located in close proximity to existing dwellings;
 - Turbine locations shall not surround a non-related property. Turbines shall be located with the specified setbacks from property boundaries to minimise the visual impact of the development on adjacent and nearby non-related property. Cumulative impacts, having regard to existing turbines, turbines approved but yet to be constructed, those for which a Development Application has been lodged with a planning authority and those for which written licenses have been granted to a developer for wind farm assessment purposes should be assessed;
 - A Communications Study should identify the existing status of communications and detail the proposed method of dealing with potential communication interference. The development should not detract from the reception of radio, TV, internet or other communication methods. Where necessary, it may be required to install additional services (boosters/communication towers/ re-transmission towers etc) to maintain such services in the vicinity of the development. Where this is determined to be necessary, the work and equipment shall be at the developers cost;
 - Construction vehicles, including concrete trucks, carriers of turbine components, and related heavy vehicles (including relevant contractors) shall only travel on an approved route. This route shall be identified in a report having regard to public safety especially school bus hours and citizens peak hour travel to work and approved in accordance with this Plan;
 - A report detailing investigations into the impact of construction vehicles on the proposed route shall accompany the development application. Detailed road condition reports will be required as part of any consent. Council will require a full traffic assessment as part of the development application;
 - Council will require road works to cope with the over size and overweight traffic movements related to the construction of a wind farm. Bonds will also be required for any potential damage to roads during the construction phase. The road works and bond amounts will be determined by Council professional staff, but will be determined generally by the length of road and condition of road surface/base bridge, drainage etc relevant to the selected route. Where road works are determined necessary for the development, costs associated with the road works shall be the developer's responsibility;
 - The construction and maintenance of internal roads (roads within the property subject to the development) shall be the responsibility of the developer. Council will require proof that they have been adequately designed and constructed for their purpose. Council and relevant State Government Agencies shall be provided with adequate information about the environmental aspects of the internal road construction;
 - All infrastructure related to the wind farm should be included in the development application. Management of temporary facilities, waste, numbers of contractors/employees, etc, should be part of the Development

Application information. All infrastructure should be located in low visual impact locations and interconnection cables/wiring and the like should be underground;

- Within six months of the wind turbine generators ceasing to operate, any rights of carriageways that were created to enable maintenance to be conducted on the wind turbine generators are to be extinguished by the developer and the land made good, unless otherwise agreed with the landowner;
- Within twelve months of the wind turbine generators ceasing to operate, they are to be fully dismantled and removed from the site. A security guarantee/bond is to be lodged with the consent authority (prior to any work commencing on-site) in an amount determined by the consent authority to cover the cost of dismantling and removal of the turbines; and
- Details of the proposed connection to the electricity reticulation network shall be included as part of the Development Application Environmental Assessment.

Other Aspects

Notification

On lodgement of the DA, Council will notify property owners within a 5 kilometre radius of the development in addition to the notification requirements outlined in the DCP. All submissions received will be presented to the Council for their consideration in the assessment and determination process. Where Council is the consent authority, Council will hold a notification and submission period of not less than 60 days and will require the developer to hold a minimum of one public information night during the exhibition and submission period. The developer shall undertake additional consultation with the community and affected property owners.

Much of Council's road network is generally not capable of sustaining the overweight loads involved with wind farms and will require substantial upgrading to accommodate the wind farm construction vehicles. Appropriate bonds will be required to ensure any road damage is repaired to Council's satisfaction. Such bonds are payable prior to commencement of any works on the site. Road sealing shall be required where appropriate on unsealed public roads utilised by the proponent.

Consultation with State Government Authorities

Proponents are advised to consult with public authorities that may have a role in assessing their development application. Council may consult relevant public authorities.

6.4 TOURIST AND VISITOR ACCOMMODATION

Definition

tourist and visitor accommodation means a building or place that provides temporary or short-term accommodation on a commercial basis, and includes any of the following:

- (a) backpackers' accommodation,
- (b) bed and breakfast accommodation,
- (c) farm stay accommodation,
- (d) hotel or motel accommodation,
- (e) serviced apartments,

but does not include:

- (f) camping grounds, or
- (g) caravan parks, or
- (h) eco-tourist facilities.

Note: Refer to the LEP 2012 for individual definition of the above terms.

serviced apartment means a building (or part of a building) providing self-contained accommodation to tourists or visitors on a commercial basis and that is regularly serviced or cleaned by the owner or manager of the building or part of the building or the owner's or manager's agents.

Development for the purposes of cabins or self contained holiday accommodation, the definition of serviced apartment is applied.

Location

- (a) Must comply with the MLS map or demonstrate compliance with Clause 4.2A of the LEP 2012.
- (b) All tourist and visitor accommodation has a residential component and therefore Council will not consider the establishment of any tourist and visitor accommodation on land on which a single dwelling is not permissible in the LEP 2012.

Design & Layout

- (a) The development should address the constraints of the site including topography, existing vegetation
- (b) Development for the purpose of services apartments (cabins or the like) shall be limited to a maximum of 6 individual accommodation units and one permanent dwelling (or manager's residence).
- (c) The use of manufactured or relocated homes will not be permitted in the urban areas.

Water Cycle Management

Council will require a Water Cycle Management Report for each lot in the subdivision which identifies that there is a suitable area capable of the disposal of on-site wastewater. The report must include a plan showing a nominal effluent management area for each proposed dwelling or cabin site (as the case may be), in relation to slope, aspect and other site constraints. The plan must indicate all nearby waterways with a buffer of a least 100 metres between effluent management areas and perennial or intermittent creeks or watercourses and 40 metres to drainage depressions.

Electricity	The proponent shall demonstrate that the development can be serviced by electricity either via connection to the grid or solar power. Generators will generally not be accepted as a source of electricity.
Parking	Refer to car parking requirements section 5.1 in the DCP
Signage	Refer to requirement for signs section 4.4 in the DCP

PART 7 SUBDIVISION

7.1 URBAN SUBDIVISION

This section of the Plan provides guidelines for the subdivision of land zoned residential (R1 General Residential, R2 Low Density Residential and R3 Medium Density Residential),.

Lot Size	<p>The minimum lot size is determined by the Mid-Western Regional LEP 2012</p> <ul style="list-style-type: none">(a) All lots must have street frontage.(b) As slope increases the minimum size of the lots will be required to increase according to the following:-<table><tr><td>0-10°</td><td>600m²</td></tr><tr><td>10-15°</td><td>700m²</td></tr><tr><td>15-20°</td><td>800m²</td></tr></table>(c) Development will not be permitted on slopes in excess of 20°. All lots must have a minimum width of 16m at the building line (4.5 metres from the front property boundary) in the case of lots within residential and village zones. <p>Battleaxe handles in R1General Residential and R3 Medium Density Residential and RU5 Village zones must have a minimum width of 4m and R2 Low Density residential and R5 large lot residential zones must have a minimum width of 6m</p>	0-10°	600m ²	10-15°	700m ²	15-20°	800m ²
0-10°	600m ²						
10-15°	700m ²						
15-20°	800m ²						
Lot Design	<ul style="list-style-type: none">(a) For infill developments in established areas, lot orientation should optimise solar access while taking account of the existing pattern and solar orientation of development.(b) For subdivisions in new release areas and at the edge of established residential areas, orientation should maximise solar access by providing a north-south orientation within the range of 30° east of north or 20° west of north as the preferred option. Lots orientated east-west should have increased width and the midpoint of each lot with access to a minimum of 3 hours sunlight between 9.00 am and 3.00 pm on 21 June (Winter solstice)(c) Lots should be generally rectangular in shape. Lots on the southern side of the road should provide a greater frontage to allow better solar orientation of the future dwelling.(d) Corner lots should be created of a sufficient area to allow development for the purposes of dual occupancies with the supply of appropriately located independent utility connection points.						
Street Design and Layout	<ul style="list-style-type: none">(a) A Traffic Impact Statement is to be submitted for any subdivision involving 5 or more allotments and in all cases where the creation of a new road is proposed.(b) A subdivision layout will need to detail the road hierarchy and how the development integrates with the existing residential area. New roads associated with subdivisions must provide 'through road' connections between surrounding roads and road heads where they exist in the						

locality.

- (c) Where a cul de sac treatment is unavoidable, the applicant will need to incorporate pedestrian linkages between streets throughout the subdivision. Multiple use of cul de sacs and “no through roads” is discouraged.
- (d) The maximum number of lots serviced by a cul de sac in a residential zone is 12, or otherwise a cul-de-sac is restricted to less than 150 metres in length.
- (e) A subdivision involving more than 80 residential lots should be able to accommodate travel without excessive backtracking.

Road Standards for New Development

A road hierarchy has been established in Mudgee and distinguishes between, Minor Roads, Collector Roads, Sub Arterial Roads and Arterial Roads. This hierarchy is to be maintained. The following table sets out the required standards for the construction of new roads.

Urban Road Standards

Access to and within a residential subdivision (the road network and internal roads) are to be upgraded or constructed to the following standards. All roads are to be constructed with asphalt or bitumen in accordance with AusRoads standards.

Road Type	Road Reserve	Carriage-way	Nature Strip	Footpath	Kerbing
Minor Road- Cul-de-sac serves ≤10 dwellings	16m	8m	2x4m	No	Roll-over
Residential Road – serves 31-120 dwellings	18m	9m	2x4.5m	1x1.2m	Roll-over
Major Residential Road (collector road) - serves >120 dwellings	20m	11m	2x4.5m	1x1.2m	Roll-over
Sub-arterial Road –Bus Route and/or cycle lane (on one side only)	22m	13m	2x4.5m	2.5m	Barrier
Commercial & Industrial subdivision roads	24m	13m	2x5.5m	1x1.2m	Barrier/ roll over

Note: The minimum radius of Cul-de-sac kerb return is 8.5m with road reserve of 12.5m

Cul-de-sacs will only be considered in commercial/industrial subdivisions where there is no alternative option and should be designed having regard to the size of the lots proposed.

Cycle ways and Footpaths

- (a) Cycle ways and alternative pedestrian networks are encouraged within new subdivisions. Where the site is included in a cycleway plan or pedestrian strategy, the design of the development will need to address this. In other cases, all new residential subdivisions are required to plan and provide combined pedestrian/cycle ways, which will provide direct, convenient and safe access to major facilities eg schools, playing fields, playgrounds, shops,

bus stops, etc.

- (b) Ends of cul-de-sacs may be required to include pedestrian pathways (or share ways) preferably in conjunction with stormwater drainage to provide access to adjacent streets or parks. The minimum width of pathway and/or drainage overland flow outlets is 10 metres.
- (c) The developer will be required to pay council a contribution for the installation of cycle ways and footpaths prior to the release of a subdivision certificate.

Open Space

- (a) Subdivision of Greenfield sites where more than 20 lots are proposed shall ensure that all lots are within 400m of a local park, playground or passive open space
- (b) Where on-site detention basins are proposed to double as open space the basin must include a sizeable raised level area which incorporates playground or fitness equipment or the like and shading landscaping to ensure that it can be activated for active and passive recreation.

Landscaping

A Landscape plan detailing the proposed treatment of the public domain is required to be submitted with the development application. This plan is to include treatment of the nature strip, street furniture, paving materials etc.

Land to be dedicated as a public reserve is to be top soiled, levelled and turfed prior to the release of the Subdivision Certificate. The developer will need to maintain this land for a period of two years and therefore the construction of the public reserves at the start of a green field subdivision is encouraged.

Street Trees

All new lots require the establishment of 2 street trees per lot. The developer is required to pay a levy Council to carry out these works in the future. This is the preferred method for street tree planting as Council can plant these trees after much of the construction work (80% of the lots have been built upon) has taken place. The fee associated with this type of arrangement will be provided in Council's Management Plan.

Utility Services

A servicing plan shall be submitted with the development application and include the provisions of underground electricity, reticulated sewer and water services, drainage and telecommunications to the development.

Evidence of consultation with the relevant authorities is to be submitted with the development application.

In the R1 General Residential Zone and the R3 Medium Density Residential Zone an initial assessment will be undertaken at the development application to nominate those lots considered suitable for dual occupancy development. This assessment will have regard to the requirements of this DCP (see Section 2.2 and 3.1) and the suitability of the site. Where a site has been nominated Council will require dual utility services to be provided for those lots. Dual services are to include water,

sewer, stormwater, electrical and telecommunication services. Identification of the site does not pre-empt that development consent will be given for dual occupancy development. Any subsequent Development Application for a dual occupancy will be subject to a full assessment pursuant to Section 79C of the Environmental Planning and Assessment Act 1979.

Drainage Refer to section 5.3 Stormwater & Drainage

7 2 RURAL SUBDIVISION

This section of the Plan provides guidelines for the subdivision of land zoned rural and R5 Large Lot Residential.

Site Plan Applicants are required to submit a site plan which identifies existing vegetation, farm improvements including dwellings, sheds, dams, fences and access roads.

The application should:

- ❖ Detail the existing use of the land.
- ❖ Address access points and location of proposed lot configuration to public roads.
- ❖ Identify unformed roads and other crown land within and adjoining the subject site.
- ❖ Show any easements for electricity or other services.
- ❖ Clearly mark designated streams or watercourses within the site.

Lot Size

- (a) Lots must be of sufficient area to enable the construction of a dwelling house, associated outbuildings, services, vehicle parking and access, private open space without excessive terracing and allow for maximum retention of existing vegetation.
- (b) The minimum area for subdivision will apply to that area that is considered productive for the agricultural pursuit for which the lot is being created.

Primary Production Small Lots Subdivision applications on land in the RU4 zone for the purpose of intensive agriculture and a dwelling will need to include:

- ❖ Details of the proposed/existing intensive agricultural activity
- ❖ Business plan prepared by a suitably qualified professional detailing production costs, harvesting potential and conservative market prices.
- ❖ Evidence of water licenses satisfactory for the use
- ❖ Evidence of commencement or intention to commence the activity

Land adjacent to the Mudgee Airport – Subdivision of land zoned RU4 Primary Production Small Lots and having a minimum lots size of 2ha on the Lot Size Map shall only be considered where the subdivision will facilitate the development of hangers in conjunction with a dwelling. Such an application will need to address:

- ❖ The relationship between the airport and the development site in respect to the interface with the airport; and
- ❖ Access to the airport for private aircraft.

Any dwelling component will be ancillary to the use of the lot for a hanger.

Services

Where the proposed lot(s) is within 500m of an R1 General Residential or R2 Low Density Residential zone, the new lots must:

- ❖ have sealed road frontage and be connected by sealed road to the sealed road network;
- ❖ connect to the reticulated water and sewer infrastructure.

Roads

All roads within a rural subdivision are to be sealed or connected to the sealed road network if the proposed lots are less than 500 metres to the sealed road network.

Notwithstanding the previous clause, where land is located within the R5 Large Lot Residential Zone and the subdivision results in lots less than 2 hectares in area then the new lots must have sealed road frontage and be connected by sealed road to the sealed road network.

Lot design

New lots to be created to minimise environmental impacts including:

- soil disturbance/erosion
- creek/waterway crossings
- tree removal, and
- adequate separation distances for new and existing development and environmental features

Bushfire prone areas

Safe siting of lots within Bushfire Prone Areas is essential. Such sites should avoid the need for extensive clearing of native vegetation and must provide for safe access for Bushfire and Emergency Service vehicles where the land is Bush Fire Prone Land. A bushfire risk assessment must be submitted in accordance with Planning for Bushfire Protection 2006, a NSW Rural Fire Service Publication. Council is able to identify if the subject land is Bushfire Prone prior to the lodging of a development application. Please note a referral fee (payable to the NSW Rural Fire Service) is required with all mandatory referrals to the NSW Rural Fire Service.

Heritage

A cultural heritage assessment will be required to be submitted along with an application for subdivision where the subdivision will result the creation of a dwelling entitlement and there are overland drainage lines and/or elevated parts of the property (ridgelines and plateaus).

Vegetation/flora	<p>The Native Vegetation Act 2003 prohibits the removal of native vegetation without prior permission from the relevant Local Catchment Management Authority. Applicants are advised to discuss any proposed clearing of vegetation with their respective Catchment Management Authorities (CMAs) prior to lodging a development application with Council. The relevant CMAs are:</p> <ul style="list-style-type: none">• Central West CMA• Upper Hunter CMA <p>It is also advised to check with OEH for any endangered communities or species that may be on your land. If there is a possibility of any Endangered Communities or species on your land a flora study is to be completed and submitted with the application.</p>
Fauna	<p>The OEH should also be consulted to identify any threatened fauna that might be on the development site. If there is a possibility of any threatened fauna species or their habitat on your land then a fauna study is to be completed and submitted with the application.</p>
Crown Roads	<p>If the development is proposed to open or use a Crown Road, the written consent of the NSW Land and Property Management Authority to the making of the application is required prior to the submission of the development application to Council.</p> <p>Any crown road relied upon for the subdivision will be required by Council to be acquired from the Crown and upgraded by the applicant to Councils required standards. Thereafter the road will be designated to Council.</p> <p>Council will only be responsible for the maintenance of roads in accordance with Council's Unmaintained and Unformed Roads Policy.</p>
Watercourses	<p>Works on or near waterways under the Water Management Act (formerly Part 3A of the Rivers and Foreshores Improvements Act 1948) and any crossing of protected waters will require an activity approval from the NSW Office of Water prior to the construction of the crossing.</p>
Rights of Carriageway	<p>Subdivision of land for the purpose of a dwelling house where access is proposed by way of a right of carriageway which serves or is capable of serving any other portion or allotment of land other than that on which the dwelling house is to be erected, is generally not supported by Council. A detailed submission supporting this type of access must be submitted with the development application along with the written approval of all of the owners of the land over which a right of carriage way is proposed or currently exists to be submitted with the development application.</p>
Battle axe handle access	<p>Subdivision of land where access is proposed by a battleaxe handle is generally not supported by Council. A detailed submission supporting this type of access must be submitted with the development application.</p>

No more than two battle axe handles will be permitted. Where more than one battle axe handle is required the access will be redesigned, upgraded and designated as a public road such that all lots created have direct frontage to a road.

**Water cycle
management report**

Council will require a Water Cycle Management Report for each lot in the subdivision which identifies that there is a suitable area capable of the disposal of on-site wastewater. The report must include a plan showing a nominal effluent management area for each proposed lot, in relation to slope, aspect and other site constraints. The plan must indicate all nearby waterways with a buffer of a least 100 metres between effluent management areas and perennial or intermittent creeks or watercourses and 40 metres to drainage depressions.

**Telecommunications
Infrastructure
advice**

Telstra Corporation is the Primary Universal Service Provider for telecommunications infrastructure in Australia. Extensions to the Telstra network are planned in light of the size and pace of each stage of proposed development and the proximity of existing Telstra network. Early notification of any proposed development will enable Telstra to deliver services with minimal disruption and enable coordination of trenching with other infrastructure. To provide early notification, planned property developments can be registered on the Telstra website. Council requires the extension of the Telstra cable network to all new allotments within any subdivision for residential purposes.

Electricity

Council requires that electricity services be provided to each allotment created with a dwelling entitlement. Proposed alternative methods of power supply will be considered by Council for subdivision in RU1 Primary Production Zone, RU4 Primary Production Small Lots Zone and R5 Large Lot Residential Zone where the development is more than 1km from the grid system or the cost to provide electricity exceeds \$30,000 per lot subject to a covenant being imposed on the land title stating that the provision of electricity to the allotment is to be provided by the landowner. The approval of alternative methods of power supply is at the discretion of Council.

Land Use History

Any application on rural land would need to demonstrate the previous use of the land and potential for contaminating land uses.

**Community title
Subdivision**

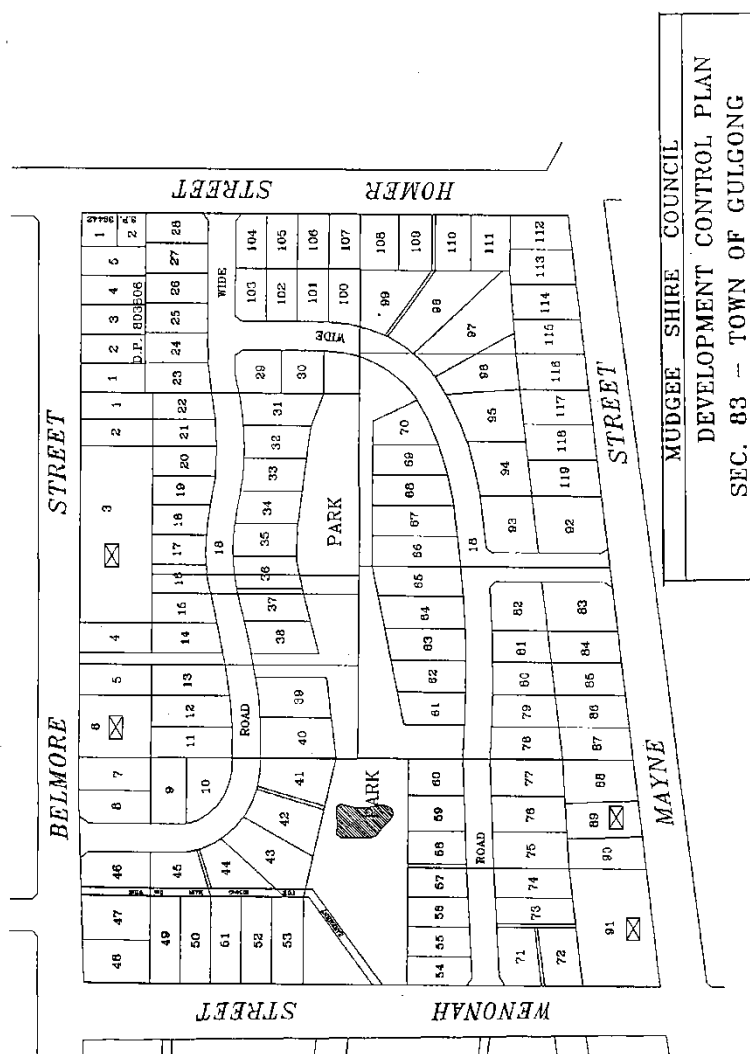
Any application on Large Lot Residential (R5) zoned land cannot create an overall lot density greater than the Minimum lot size prescribed by the LEP.

PART 8 SITE SPECIFIC CONTROLS

8.1 GULGONG

A person shall not subdivide land to which this plan applies (other than by strata subdivision) for the purpose of a dwelling house unless the site area of the lot to be created has an area of not less than 600m2 and frontage at the front of the building alignment of not less than 18 metres.

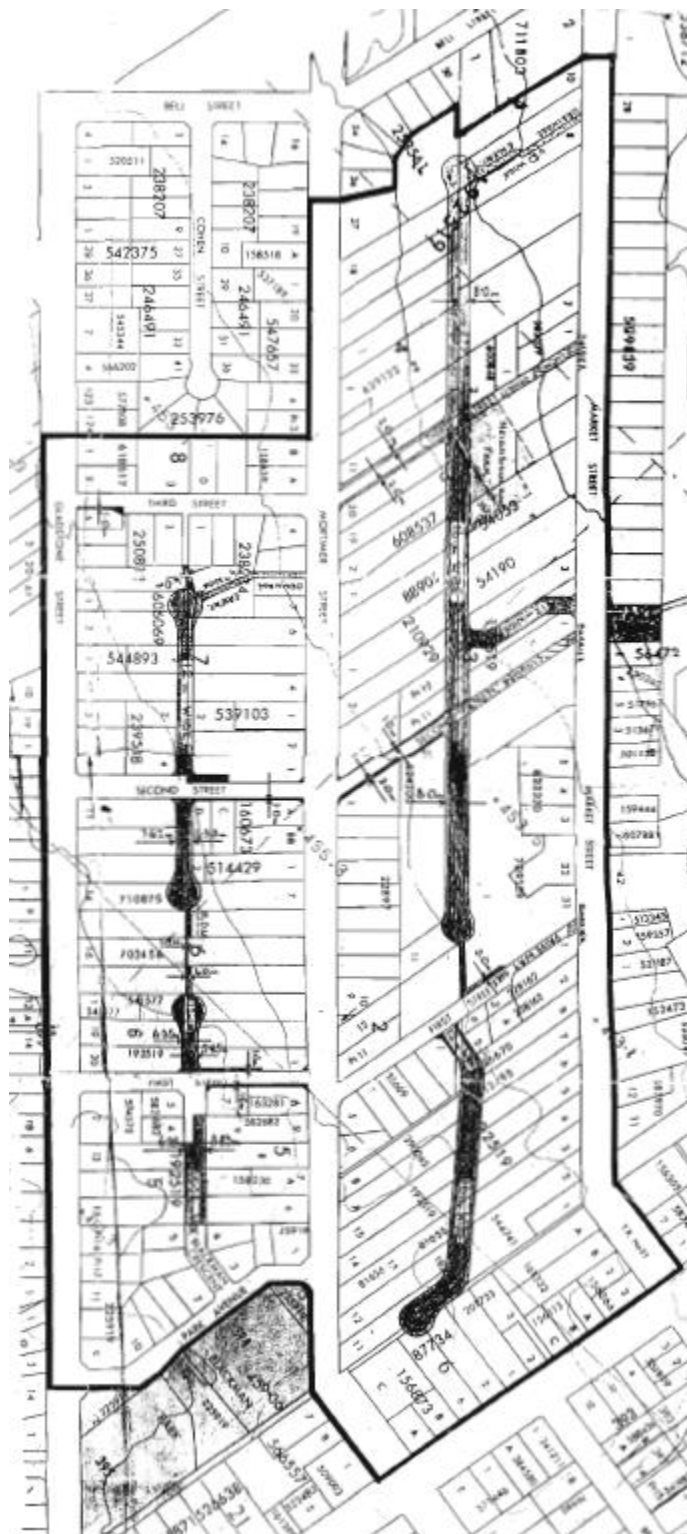
Any subdivision shall occur generally in accordance with the layout in the plan below.



8.2 WEST MUDGEE

A person shall not subdivide land to which this plan applies (other than by strata subdivision) for the purpose of a dwelling house unless the site area of the lot to be created has an area of not less than 600m² and frontage at the front of the building alignment of not less than 15 metres.

Any subdivision shall occur generally in accordance with the layout in the plan below.



8.3 CAERLEON RESIDENTIAL AREA

Site specific controls have been developed for the Caerleon precinct north west of Mudgee. The full detail of these controls is outlined in Appendix C Draft Caerleon Development Control Plan.

The Caerleon Precinct is to be assessed in accordance with the whole DCP except where specific provision is made for a standard in Appendix C.

APPENDIX A FLOOD SCHEDULES

FLOOD COMPATIBLE MATERIALS

BUILDING COMPONENT	FLOOD COMPATIBLE MATERIAL
Flooring and Sub-floor Structure	<ul style="list-style-type: none"> concrete slab-on-ground monolith construction suspension reinforced concrete slab.
Doors	<ul style="list-style-type: none"> solid panel with water proof adhesives flush door with marine ply filled with closed cell foam painted metal construction aluminium or galvanized steel frame
Floor Covering	<ul style="list-style-type: none"> clay tiles concrete, precast or in situ concrete tiles epoxy, formed-in-place mastic flooring, formed-in-place rubber sheets or tiles with chemical-set adhesives silicone floors formed-in-place vinyl sheets or tiles with chemical-set adhesive ceramic tiles, fixed with mortar or chemical-set adhesive asphalt tiles, fixed with water resistant adhesive
Wall and Ceiling Linings	<ul style="list-style-type: none"> fibro-cement board brick, face or glazed clay tile glazed in waterproof mortar concrete concrete block steel with waterproof applications stone, natural solid or veneer, waterproof grout glass blocks glass plastic sheeting or wall with waterproof adhesive
Insulation	<ul style="list-style-type: none"> foam (closed cell types)
Windows	<ul style="list-style-type: none"> aluminium frame with stainless steel rollers or similar corrosion and water resistant material.
Wall Structure	solid brickwork, blockwork, reinforced, concrete or mass concrete
Roofing Structure (for Situations Where the Relevant Flood Level is Above the Ceiling)	<ul style="list-style-type: none"> reinforced concrete construction galvanised metal construction

Nails, Bolts, Hinges and Fittings	<ul style="list-style-type: none"> • brass, nylon or stainless steel • removable pin hinges • hot dipped galvanised steel wire nails or similar
Electrical and Mechanical Equipment	<p>For dwellings constructed on land to which this Policy applies, the electrical and mechanical materials, equipment and installation should conform to the following requirements.</p> <p>Main power supply - Subject to the approval of the relevant authority the incoming main commercial power service equipment, including all metering equipment, shall be located above the relevant flood level. Means shall be available to easily disconnect the dwelling from the main power supply.</p> <p>Wiring - All wiring, power outlets, switches, etc., should, to the maximum extent possible, be located above the relevant flood level. All electrical wiring installed below the relevant flood level should be suitable for continuous submergence in water and should contain no fibrous components. Earth core linkage systems (or safety switches) are to be installed. Only submersible-type splices should be used below the relevant flood level. All conduits located below the relevant designated flood level should be so installed that they will be self-draining if subjected to flooding.</p> <p>Equipment - All equipment installed below or partially below the relevant flood level should be capable of disconnection by a single plug and socket assembly.</p> <p>Reconnection - Should any electrical device and/or part of the wiring be flooded it should be thoroughly cleaned or replaced and checked by an approved electrical contractor before reconnection.</p>
Heating and Air Conditioning Systems	<p>Heating and air conditioning systems should, to the maximum extent possible, be installed in areas and spaces of the house above the relevant flood level. When this is not feasible every precaution should be taken to minimise the damage caused by submersion according to the following guidelines.</p> <p>Fuel - Heating systems using gas or oil as a fuel should have a manually operated valve located in the fuel supply line to enable fuel cut-off.</p> <p>Installation - The heating equipment and fuel storage tanks should be mounted on and securely anchored to a foundation pad of sufficient mass to overcome buoyancy and prevent movement that could damage the fuel supply line. All storage tanks should be vented to an elevation of 600 millimetres above the relevant flood level.</p> <p>Ducting - All ductwork located below the relevant flood level should be provided with openings for drainage and cleaning. Self draining may be achieved by constructing the ductwork on a suitable grade. Where ductwork must pass through a water-tight wall or floor below the relevant flood level, the ductwork should be protected by a closure assembly operated from above relevant flood level.</p>

LAND USE CATEGORIES

Essential Community Facilities	Critical Utilities	Subdivision	Residential
<p>Place of assembly, public building or community centre which may provide an important contribution to the notification and evacuation of the community during flood events;</p> <p>Generating works;</p> <p>Hospitals;</p> <p>Institutions; and Educational establishments.</p>	<p>Telecommunication facilities;</p> <p>Public utility undertaking which may cause pollution of waterways during flooding, are essential to evacuation during periods of flood or if affected during flood events would unreasonably affect the ability of the community to return to normal activities after flood events.</p>	<p>Subdivision of land which involves the creation of new allotments.</p>	<p>Bed and breakfast establishment;</p> <p>Boarding houses;</p> <p>Caravan park– long-term sites only;</p> <p>Child care centre;</p> <p>Craftsman’s studio;</p> <p>Dwelling;</p> <p>Dwelling house;</p> <p>General store;</p> <p>Home industry;</p> <p>Home occupation;</p> <p>Housing for aged or disabled persons;</p> <p>Group homes;</p> <p>Professional consulting rooms;</p> <p>Residential flat building;</p> <p>Tourist facilities; and</p> <p>Utility installations (other than critical utilities)</p>
<p>Recreational Uses</p> <p>Golf courses</p> <p>Playing Fields</p> <p>Amenity Buildings</p>	<p>Agricultural Uses</p> <p>Cultivation</p> <p>Pastures</p> <p>Hay sheds</p> <p>Machinery sheds</p>		

MATRIX 1 URBAN FLOODPLAINS

Urban Floodplains

Planning & Development Controls

Planning Consideration	Flood Risk Precincts (FRP's)																								
	Low Flood Risk								Medium Flood Risk								High Flood Risk								
	Essential Community Facilities	Critical Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Agriculture	Minor Development	Essential Community Facilities	Critical Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Agriculture	Minor Development	Essential Community Facilities	Critical Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Agriculture	Minor Development	
Floor Level		3		2	2	2						2	2	2	1	2,4								1	2,4
Building Components		2		1	1	1						1	1	1	1	1								1	1
Structural Soundness		2										2	2	2	2	2								1	1
Flood Affection		2	2		2	2					1	2	2	2	2	2								1	1
Evacuation		2									1	1	1	1	1	1								1	1
Management & Design		4,5									1		2,3,5	2,3,5	2,3,5	2,3,5								2,3,5	2,3,5

 Not Relevant

 Unsuitable Land Use

Note: reference to freeboard refers to an increased height of 0.5 metres

Floor Level

- 1 All floor levels to be equal to or greater than the 20 year ARI flood (plus freeboard) unless justified by site specific assessment
- 2 Habitable floor levels to be equal to or greater than the 100 year ARI flood (plus freeboard)
- 3 All floor levels to be equal to or greater than the PMF flood (plus freeboard)
- 4 Floor levels to be as close to the design floor level as practical & no lower than the existing floor level when undertaking alterations or additions

Building Components & Method

- 1 All structures to have flood compatible building components below or at the 100 Year ARI flood level (plus freeboard)
- 2 All structures to have flood compatible building components below or at the PMF level (plus freeboard)

Structural Soundness

- 1 Engineers report to certify that any structure can withstand the forces of floodwater, debris & buoyancy up to and including the 100 year AR flood (plus freeboard)
- 2 Applicant to demonstrate that any structure can withstand the forces of floodwater, debris & buoyancy up to and including the 100 year AR flood (plus freeboard)
- 3 Applicant to demonstrate that any structure can withstand the forces of floodwater, debris & buoyancy up to and including a PMF flood (plus freeboard)

Flood Affection

- 1 Engineers report to certify that the development (or potential development in the case of subdivision) will not increase flood affection elsewhere
- 2 The impact of the development on flooding elsewhere to be considered

Evacuation

- 1 Reliable access for pedestrians or vehicles required during a 100 year ARI flood
- 2 Reliable access for vehicles required during a 100 year ARI flood
- 3 Reliable access for pedestrians and vehicles required during a PMF flood

Management and Design

- 1 Applicant to demonstrate that potential development as a consequence of subdivision proposal can be undertaken in accordance with this Plan
- 2 Flood plan required where floor levels are below the design floor level
- 3 Applicant to demonstrate that area is available to store goods above the 100 year ARI flood (plus freeboard)
- 4 Applicant to demonstrate that area is available to store goods above the PMF flood (plus freeboard)
- 5 No external storage of materials below the design floor level which may cause pollution or be potentially hazardous during any flood

MATRIX 2 NON URBAN FLOODPLAINS

Non-Urban Floodplains

Planning & Development Controls

Planning Consideration	Flood Risk Precincts (FRP's)																								
	Low Flood Risk								Medium Flood Risk								High Flood Risk								
	Essential Community Facilities	Critical Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Agriculture	Minor Development	Essential Community Facilities	Critical Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Agriculture	Minor Development	Essential Community Facilities	Critical Facilities	Subdivision	Residential	Commercial & Industrial	Tourist Related Development	Recreation & Agriculture	Minor Development	
Floor Level		3		2	2	2						2	2	2	1	2,4								1	2,4
Building Components		2		1	1	1						1	1	1	1	1								1	
Structural Soundness		2										2	2	2	2	2								1	
Flood Affection		2	2		2	2					1	2	2	2	2	2								1	
Evacuation		2									1	1	1	1	1	1								1	
Management & Design	4.5										1		2,3,5	2,3,5	2,3,5	2,3,5								2,3,5	2,3,5

Not Relevant
 Unsuitable Land Use

Note: reference to freeboard refers to an increased height of 0.5 metres

Floor Level

- 1 All floor levels to be equal to or greater than the 20 year ARI flood (plus freeboard) unless justified by site specific assessment
- 2 Habitable floor levels to be equal to or greater than the 100 year ARI flood (plus freeboard)
- 3 All floor levels to be equal to or greater than the PMF flood (plus freeboard)
- 4 Floor levels to be as close to the design floor level as practical & no lower than the existing floor level when undertaking alterations or additions

Building Components & Method

- 1 All structures to have flood compatible building components below or at the 100 Year ARI flood level (plus freeboard)
- 2 All structures to have flood compatible building components below or at the PMF level (plus freeboard)

Structural Soundness

- 1 Engineers report to certify that any structure can withstand the forces of floodwater, debris & buoyancy up to and including the 100 year AR flood (plus freeboard)
- 2 Applicant to demonstrate that any structure can withstand the forces of floodwater, debris & buoyancy up to and including the 100 year AR flood (plus freeboard)
- 3 Applicant to demonstrate that any structure can withstand the forces of floodwater, debris & buoyancy up to and including a PMF flood (plus freeboard)

Flood Affection

- 1 Engineers report to certify that the development (or potential development in the case of subdivision) will not increase flood affection elsewhere
- 2 The impact of the development on flooding elsewhere to be considered

Evacuation

- 1 Reliable access for pedestrians or vehicles required during a 100 year ARI flood
- 2 Reliable access for vehicles required during a 100 year ARI flood
- 3 Reliable access for pedestrians and vehicles required during a PMF flood

Management and Design

- 1 Applicant to demonstrate that potential development as a consequence of subdivision proposal can be undertaken in accordance with this Plan
- 2 Flood plan required where floor levels are below the design floor level
- 3 Applicant to demonstrate that area is available to store goods above the 100 year ARI flood (plus freeboard)
- 4 Applicant to demonstrate that area is available to store goods above the PMF flood (plus freeboard)
- 5 No external storage of materials below the design floor level which may cause pollution or be potentially hazardous during any flood

APPENDIX B1 MWRC AUSPEC STORMWATER DRAINAGE DESIGN

APPENDIX B2 STORMWATER TO SMARTWATER

APPENDIX C CAERLEON DEVELOPMENT CONTROL PLAN

APPENDIX D IMPLEMENTING A SUBDIVISION CONSENT

MID-WESTERN REGIONAL COUNCIL

NEW SOUTH WALES DEVELOPMENT DESIGN SPECIFICATION

D5

STORMWATER DRAINAGE DESIGN

Amendment Record for this Specification Part

This Specification is Council's edition of the AUS-SPEC generic specification part and includes Council's primary amendments.

Details are provided below outlining the clauses amended from the Council edition of this AUS-SPEC Specification Part. The clause numbering and context of each clause are preserved. New clauses are added towards the rear of the specification part as special requirements clauses. Project specific additional script is shown in the specification as italic font.

The amendment code indicated below is 'A' for additional script 'M' for modification to script and 'O' for omission of script. An additional code 'P' is included when the amendment is project specific.

Amendment Sequence No.	Key Topic addressed in Amendment	Amendment Code	Clause No.	Authors initials	Amendment Date
1	Update for council specific information	-	Numerous	SM	17.10.12

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DEVELOPMENT DESIGN SPECIFICATION D5 STORMWATER DRAINAGE DESIGN

GENERAL

D5.01 SCOPE

1. The work to be executed under this Specification consists of the design of stormwater drainage systems for urban and rural areas.

D5.02 OBJECTIVES

1. The objectives of stormwater drainage design are as follows:
 - (a) To ensure that inundation of private and public buildings located in flood-prone areas occurs only on rare occasions and that, in such events, surface flow routes convey floodwaters below the prescribed velocity/depth limits.
 - (b) To provide convenience and safety for pedestrians and traffic in frequent stormwater flows by controlling those flows within prescribed limits.
 - (c) Retain within each catchment as much incident rainfall and runoff as is possible and appropriate for the planned use and the characteristics of the catchment.
2. In pursuit of these objectives, the following principles shall apply:

***Design
Principles***

 - (a) Developments are to provide a stormwater drainage system in accordance with the "major / minor" system concept set out in Chapter 14 of Australian Rainfall & Runoff, 1987 (AR&R); that is, the "major" system shall provide safe, well-defined overland flow paths for rare and extreme storm runoff events while the "minor" system shall be capable of carrying and controlling flows from frequent runoff events.
 - (b) The on-site drainage system is to be designed in such a way that the estimated peak flow rates from the site for the design average recurrence interval (ARI) of the receiving minor/major system is no greater than that which would be expected from the previous landuse.
 - (c) The natural path of watercourses and flow paths shall be maintained and no development shall be permitted over them.

D5.03 REFERENCE AND SOURCE DOCUMENTS

(a) Council Specifications

C220	-	Stormwater Drainage - General
C221	-	Pipe Drainage
C222	-	Precast Box Culverts
C223	-	Drainage Structures
C224	-	Open Drains including Kerb & Gutter

(b) Australian Standards

- AS 1254 - Unplasticised PVC (uPVC) pipes and fittings for stormwater or surface water applications
- AS 2032 - Code of practice for installation of uPVC pipe systems
- AS/NZS 2566.1 - Buried flexible pipelines, structural design
- AS 3725 - Loads on buried concrete pipes
- AS 4058 - Precast concrete pipes
- AS 4139 - Fibre reinforced concrete pipes and fittings

(c) State Authorities

- RTA, NSW - Model Analysis to determine Hydraulic Capacities of Kerb Inlets and Gully Pit Gratings, 1979.

(d) Other

- AUSTROADS - Bridge Design Code.
- Inst. of Eng. - Australian Rainfall and Runoff (AR&R) - A guide to flood estimation. Aug 1987.
- Queensland Urban Drainage Manual, Volumes 1 & 2, 1993.
- Sangster, WM., Wood, HW., Smerdon, ET., and Bossy, HG.
 - Pressure Changes at Storm Drain Junction, Engineering Series, Bulletin No. 41, Eng. Experiment Station, Univ. of Missouri 1958.
- Hare CM.
 - Magnitude of Hydraulic Losses at Junctions in Piped Drainage Systems. Transactions, Inst. of Eng. Aust., Feb. 1983.
- Concrete Pipe Association of Australia
 - Concrete Pipe Guide, charts for the selection of concrete pipes to suit varying conditions.
- Henderson, FM. Open Channel Flow, 1966.
- Chow, Ven Te - Open Channel Hydraulics, 1959.
- John Argue - Australian Road Research Board Special Report 34
 - Stormwater drainage design in small urban catchments: a handbook for Australian practice.
- Australian National Conference On Large Dams, Leederville WA.
 - ANCOLD 1986, Guidelines on Design Floods for Dams.

HYDROLOGY**D5.04 DESIGN RAINFALL DATA**

1. Design Intensity-Frequency-Duration (IFD) Rainfall - IFD relationships shall be derived in accordance with Volume 1 Chapter 2, of AR&R, for the particular catchment under consideration.

***I-F-D
Relationships***

2. The nine basic parameters read from Maps 1-9 in Volume 2 of AR&R shall be shown in the calculations submitted to Council, except where the Bureau of Meteorology provides a polynomial relationship for the catchment.

3. Where design IFD rainfalls are provided for specific locations these are provided in Council's current Handbook of Drainage Design Criteria.

4. Design Average Recurrence Interval (ARI) - For design under the "major/minor" concept, the design ARIs to be used are given below.

**Average
Recurrence
Intervals**

5. Recurrence intervals for minor events depends on the zoning of the land being serviced by the drainage system. The minor system design ARIs are detailed below:-

- 10 years for commercial/industrial area "minor" systems
- 5 years for residential area "minor" systems
- 5 years for rural residential area "minor" systems
- 1 year for parks and recreation area "minor" systems.

6. In addition, where a development is designed in such a way that the major system flows involve surcharge across private property, then the underground system (both pipes and inlets) shall be designed to permit flows into and contain flows having an ARI of 100 years from the upstream catchment which would otherwise flow across the property. A surcharge path shall be defined for systems even where 100 year ARI flows can be maintained within the system. Easements are to be provided in private property over pipe systems and surcharge paths.

**Easements in
Private
Property**

D5.05 CATCHMENT AREA

1. The catchment area of any point is defined by the limits from where surface runoff will make its way, either by natural or artificial paths, to this point. Consideration shall be given to likely changes to individual catchment areas due to the full development of the catchment.

**Catchment
Definition**

2. Where no detailed survey of the catchment is available, 1:4000 orthophoto maps are to be used to determine the catchments and to measure areas.

3. Catchment area land use shall be based on current available zoning information or proposed future zonings, where applicable.

4. The natural catchment boundaries are to be maintained and developments are to consider and design for flows arriving at the site from upstream catchments.

5. Where a pre-existing integrated stormwater drainage plan exists for a catchment, developers shall make relevant contributions to this system and are responsible for connecting their development into the system.

**Catchment
integration**

6. If there is no pre-existing integrated stormwater drainage plan for the catchment and only a portion of a catchment is being developed at a particular time (staged development) the drainage strategy for the whole subdivisional catchment should be determined.

Developers are responsible for negotiating and arranging their own cost sharing arrangements with respect to stormwater drainage. Where landowners of adjoining parcels of land within the catchment area fail to communicate or agree on a drainage strategy, each developer will be required to dispose of its stormwater drainage wholly within its subdivision.

D5.06 RATIONAL METHOD

1. Rational Method calculations to determine peak flows shall be carried out in accordance with Volume 1, Chapter 14, of AR&R and the requirements of this Specification.

2. All calculations shall be carried out by a qualified person experienced in hydrologic and hydraulic design.

**Qualified
Person**

3. Co-efficients of Run-off shall be calculated as per Volume 1, Chapter 14.5 of AR&R and full details of co-efficients utilised shall be provided.

**Runoff
Co-efficients**

4. Details of percentage impervious for specific locations and for individual zonings are given below. These can be used in lieu of more detailed calculations.

Development Type	% of Lot Area
• Residential R1	50
• Residential R2	40
• Residential R3	50
• Industrial	80
• Commercial	100

Runoff coefficients shall be calculated in accordance with methodology set out in AR&R.

5. The time of concentration of a catchment is defined as the time required for storm runoff to flow from the most remote point on the catchment to the outlet of the catchment.

**Times of
Concentration**

6. Where the flow path is through areas having different flow characteristics or includes property and roadway, then the flow time of each portion of the flow path shall be calculated separately.

**Different Flow
Characteristics**

7. The maximum time of concentration in an urban area shall be 20 minutes unless sufficient evidence is provided to justify a greater time.

8. Flow paths to pits shall be representative of the fully developed catchment considering such things as fencing and the likely locations of buildings and shall be shown for each collection pit on the catchment area plan. Consideration shall be given to likely changes to individual flow paths due to the full development of the catchment.

**Flow Paths to
Pits**

9. Surface roughness co-efficients "n" shall generally be derived from information in Volume 1, Chapter 14 of AR&R. Values applicable to specific zoning types and overland flow path types are given below:

**Overland Flow
Retardance**

Flow across Parks	0.35
Flow across Rural Residential land	0.30
Flow across Residential (2a)	0.21
Flow across Residential (2b)	0.11
Flow across Industrial	0.06
Flow across Commercial	0.04
Flow across Paved Areas	0.01
Flow across Asphalt Roads	0.02
Flow across Gravel Areas	0.02

D5.07 OTHER HYDROLOGICAL MODELS

1. Other hydrological models may be used as long as the requirements of AR&R are met, summaries of calculations are provided and details are given of all program input and output.

**Alternative
Models**

2. Where computer analysis programs are used, copies of the final data files shall

be provided on submission of the design to Council and with the final drawings after approval by Council.

HYDRAULICS

D5.08 HYDRAULIC GRADE LINE

1. Hydraulic calculations shall generally be carried out in accordance with AR&R and shall be undertaken by a qualified person experienced in hydrologic and hydraulic design. The calculations shall substantiate the hydraulic grade line adopted for design of the system and shown on the drawings. Summaries of calculations are added to the plan and details of all calculations are given including listings of all program inputs and outputs.

**Qualified
Person**

Calculations

2. The "major" system shall provide safe, well-defined overland flow paths for rare and extreme storm runoff events while the "minor" system shall be capable of carrying and controlling flows from frequent runoff events.

3. Downstream water surface level requirements are given below:-

**Downstream
Control**

- (a) Known hydraulic grade line level from downstream calculations including pit losses at the starting pit in the design event.
- (b) Where the downstream starting point is a pit and the hydraulic grade line is unknown, a level of 0.15m below the invert of the pit inlet in the downstream pit is to be adopted.
- (c) Where the outlet is an open channel and the design storm is the minor event the top of the outlet pipe shall be the downstream control.
- (d) Where the outlet is an open channel, the design storm is the major event and downstream flood levels are not known, the top of the outlet pipe shall be the downstream control.
- (e) Where the outlet is an open channel, the design storm is the major event and downstream flood levels are known, the downstream control shall be the 1% probability flood level.

4. The water surface in drainage pits shall be limited to 0.150m, below the gutter invert for inlet pits and 0.150m below the underside of the lid for junction pits.

**Water Surface
Limits**

D5.09 MINOR SYSTEM CRITERIA

1. The acceptable gutter flow widths in the 20% probability event is 2.5 metres maximum. Wider flow widths may be approved on roads with flat grades.

**Gutter Flow
Widths**

2. Minimum conduit sizes shall be as follows:

Conduit Sizes

- Pipes - 375mm diameter.
- Box culverts - 600mm wide x 300mm high.

3. Minimum and maximum velocity of flow in stormwater pipelines shall be 0.6m/sec and 6m/sec respectively.

Velocity Limits

D5.10 PITS

1. Inlet Pits shall be spaced so that the gutter flow width is limited in accordance with this Specification and so that the inlet efficiency is not affected by adjacent inlet openings. Preference shall be given to the location of drainage pits at the upstream side of allotments.

Spacing

2. Other pits shall be provided:

- To enable access for maintenance.
- At changes in direction, grade, level or class of pipe.
- At junctions.

3. The maximum recommended spacing of pits where flow widths are not critical are given in Table D5.1 below:

	Pipe Size (mm)	Spacing (m)
Generally	less than 1200	100
	1200 or larger	150
In tidal influence	all	100

Table D5.1 - Pit Spacing

4. Kerb inlet lengths to side entry pits are to be a preferred maximum of 3.0m, with an absolute maximum of 5.0m where the grade is 10% or more, and an absolute maximum of 4.0m where the grade is less than 10%.

Inlet Capacity

5. Information on pit capacities is available in the following sources:-

- Roads and Traffic Authority's "Model analysis to determine Hydraulic Capacities of Kerb Inlets and Gully Pit Gratings", with due allowance to inlet bypass due to grade, for grade inlet pits, and recognised orifice or weir formulae for sag inlet pits.
- Pit relationships given in Volume 1, Chapter 14 of AR&R.

6. None of these pit charts include any blockage factors. The percentage of theoretical capacity allowed in relation to type of pit is given in Table D5.2 below:-

Allowance for Inlet Blockage

Condition	Inlet Type	Percentage of Theoretical Capacity Allowed
Sag	Side entry	80%
Sag	Grated	50%
Sag	Combination	Side inlet capacity only Grate assumed completely blocked
Sag	"Letterbox"	50%
Continuous Grade	Side entry	80%
Continuous Grade	Grated	50%
Continuous Grade	Combination	90%

Table D5.2 - Allowable Pit Capacities

D5.11 HYDRAULIC LOSSES

1. Appropriate pressure change co-efficient "Ke" shall be determined from AR&R and relevant industry standards, such as:

Pit Losses

Hare CM. - Magnitude of Hydraulic Losses at Junctions in Piped

Drainage Systems. Transactions, Inst. of Eng. Aust., Feb. 1983

Roads and Traffic Authority's "Model analysis to determine Hydraulic Capacities of Kerb Inlets and Gully Pit Gratings"

2. Bends may be permissible in certain circumstances and discussions with Council regarding their use is required prior to detailed design. Appropriate values of pit pressure change co-efficient at bends are to be applied.

Bend Losses

3. Where possible design should try to avoid clashes between services. However, where unavoidable clashes occur with existing sewer mains then appropriate pressure change co-efficient K_p shall be determined.

Service Entry Losses

4. Requirements for private pipes entering Council's system are given below:-

- (a) All pipe inlets, including roof and subsoil pipes, shall where possible, enter the main pipe system at junction pits. These shall be finished off flush with and be grouted into the pit wall.
- (b) If a junction has to be added which is larger than 225mm then a junction pit shall be built at this location in accordance with this Specification.
- (c) For smaller inlets, the drainage pipes may be broken into to allow interconnection with the main line. In this case the sideline shall be finished flush with and be grouted into the main line.

5. Construction of a junction without a structure should be avoided where possible. Permission to do this is required by Council prior to detailed design. Where this is unavoidable then appropriate pressure change co-efficients K_u , for the upstream pipe and K_l , for the lateral pipe, shall be determined.

Pipe Junction Losses

6. Going from larger upstream to smaller downstream conduits is not permitted without approval of Council prior to detailed design. In going from smaller to larger pipes benching shall be provided in pits to enable a smooth flow transition. Losses in sudden expansions and contractions must be accounted for.

Contraction/Expansion Losses

7. Drainage pipe systems shall be designed as an overall system, with due regard to the upstream and downstream system and not as individual pipe lengths. Drainage pipeline systems shall generally be designed as gravity systems flowing full at design discharge, but may be pressurised with the use of appropriate pits and joints. Pipe friction losses and pipe sizes in relation to discharge shall be determined using the Colebrook-White formula with the acceptable roughness co-efficients being 0.6mm for concrete pipes and 0.06mm for FRC pipes.

Pipe Friction Losses

D5.12 MAJOR SYSTEM CRITERIA

1. Surcharging of drainage systems which would provide for water depth above the top of kerb will not be permitted except:

Surcharging

- (a) Surcharging of drainage system for storm frequencies greater than 5% probability may be permitted across the road centreline where the road pavement is below the natural surface of the adjoining private property.
- (b) Flow across footpaths will only be permitted in situations specifically approved by Council, where this will not cause flooding of private property.

2. The velocity x depth product of flow across the footpath and within the road reserve shall be such that safety of children and vehicles is considered. The maximum allowable depth of water is 0.2 metres and the maximum velocity x depth product of $0.4\text{m}^2/\text{s}$ is permitted. Where the safety of only vehicles can be affected, a maximum

Velocity/ Depth Criteria

velocity x depth product of $0.6\text{m}^2/\text{s}$ is permitted. In open channels the above velocity x depth product criteria will be followed where possible or the design shall address the requirements for safety in relation to children by providing safe egress points from the channel or other appropriate methods.

3. Freeboard requirements for floor levels and levee bank levels from flood levels in roadways, stormwater surcharge paths and open channels are given below:

Freeboard

In Roadways:-

- (a) A minimum freeboard of 0.3m shall be provided between the 100 year flood level and floor levels on structures and entrances to underground car parks. A higher freeboard may be required in certain circumstances.
- (b) Where the road is in fill or overtopping of kerbs and flow through properties may occur a 100mm freeboard shall be provided between the ponding level of water in the road and the high point in the footpath. Driveway construction in these instances needs to consider this requirement.

In Stormwater Surcharge Paths:-

- (c) A minimum freeboard of 0.3 shall be provided between the 100 year flood level and floor levels on structures and entrances to underground car parks.

In Open Channels:-

- (d) A minimum freeboard of 0.5m shall be provided between the 100 year flood level and floor levels on structures and entrances to underground car parks.

4. Flow capacities of roads should be calculated using Technical Note 4 in Volume 1, Chapter 14 of AR&R with a flow adjustment factor as given in Council's current Handbook of Drainage Design Criteria.

Roadway Capacities**D5.13 OPEN CHANNELS**

1. Generally, open channels will only be permitted where they form part of the trunk drainage system and shall be designed to have smooth transitions with adequate access provisions for maintenance and cleaning. Where Council permits the use of an open channel to convey flows from a development site to the receiving water body, such a channel shall comply with the requirements of this Specification.

Safety

2. Design of open channels shall be in accordance with Volume 1, Chapter 14, of AR&R. Open channels will be designed to contain the major system flow less any flow that is contained in the minor system, with an appropriate allowance for blockage of the minor system.

3. Friction losses in open channels shall be determined using Mannings "n" values given below:-

Channel Roughness

Mannings "n" Roughness Co-efficients for open channels shall generally be derived from information in Chapter 14 of AR&R. Mannings "n" values applicable to specific channel types are given below:-

Concrete Pipes or Box Sections	0.011
Concrete (trowel finish)	0.014
Concrete (formed without finishing)	0.016

Sprayed Concrete (gunite)	0.018
Bitumen Seal	0.018
Bricks or pavers	0.015
Pitchers or dressed stone on mortar	0.016
Rubble Masonry or Random stone in mortar	0.028
Rock Lining or Rip-Rap	0.028
Corrugated Metal	0.027
Earth (clear)	0.022
Earth (with weeds and gravel)	0.028
Rock Cut	0.038
Short Grass	0.033
Long Grass	0.043

4. Where the product of average Velocity and average flow Depth for the design flow rate is greater than $0.4\text{m}^2/\text{s}$, the design will be required to specifically provide for the safety of persons who may enter the channel in accordance with Volume 1, Chapter 14, of AR&R..

5. Maximum side slopes on grassed lined open channels shall be 1 in 4, with a preference given to 1 in 6 side slopes, channel inverts shall generally have minimum cross slopes of 1 in 20.

Side Slopes

6. Low flow provisions in open channels (man-made or altered channels) will require low flows to be contained within a pipe system or concrete lined channel section at the invert of the main channel. Subsurface drainage shall be provided in grass lined channels to prevent waterlogging of the channel bed. The width of the concrete lined channel section shall be the width of the drain invert or at least sufficiently wide enough to accommodate the full width of a tractor.

Low Flows

7. Transition in channel slopes to be designed to avoid or accommodate any hydraulic jumps due to the nature of the transition.

Hydraulic Jumps

D5.14 MAJOR STRUCTURES

1. Hydraulic calculations for major structures shall generally be carried out in accordance with AR&R and shall be undertaken by a qualified person experienced in hydrologic and hydraulic design.

2. All major structures in urban areas, including bridges and culverts, shall be designed for the 100 year ARI storm event without afflux. Some afflux and upstream inundation may be permitted in certain rural and urban areas provided the increased upstream flooding is minimal and does not inundate private property.

Afflux

2. A minimum clearance of 0.3m between the 100 year ARI flood level and the underside of any major structure superstructure is required to allow for passage of debris without blockage.

Freeboard

3. Certified structural design shall be required on bridges and other major culvert structures and may be required on some specialised structures. Structural design shall be carried out in accordance with the Specification for STRUCTURES BRIDGE DESIGN.

4. Culverts (either pipe or box section) shall be designed with due regard being given to inlet and exit losses, inlet and outlet control and scour protection.

Culverts

D5.15 DETENTION STORAGES

1. Detention storages shall be located above ground and preferably integrated into landscaping.

2. For each ARI a range of storm events shall be run to determine the peak flood level and discharge from the retarding basin. Storm patterns shall be those given in

Critical Storm

Volume 1, Chapter 11 of AR&R. Sensitivity to storm pattern should be checked by reversing these storm patterns.

Duration

3. The critical storm duration with the basin is likely to be longer than without the basin. A graph showing the range of peak flood levels in the basin and peak discharges from the basin shall be provided for the storms examined.

4. Flood Routing should be modelled by methods outlined in AR&R.

Routing

5. The high level outlet to any basin shall have capacity to contain a minimum of the 100 year ARI flood event. Additional spillway capacity may be required due to the hazard category of the structure. The hazard category should be determined by reference to ANCOLD.

High Level Outlet

6. The spillway design shall generally be in accordance with the requirements for Open Channel Design in this Specification.

7. Wherever practicable and certainly in areas known to be affected by high water tables and/or salinity of groundwater, retarding basins shall be designed to be water retentive so that surface drainage water does not leak to the subsurface, recharging groundwater.

Salinity Prevention

8. Pipe systems shall contain the minor flow through the detention basin wall. Outlet pipes shall be rubber ring jointed with lifting holes securely sealed. Pipe and culvert bedding shall be specified to minimise its permeability, and cut off walls and anti-seepage collars installed where appropriate.

Low Flow Provision

9. The low flow pipe intake shall be protected to prevent blockages.

10. Freeboard - Minimum floor levels of dwelling shall be 0.5m above the 100 year ARI flood level in the basin.

Freeboard at Dwellings

11. Public Safety Issues - Detention storage design is to consider the following aspects relating to public safety.

Safety Issues

- Side slopes are to be a maximum of 1 in 6 to allow easy egress. Steeper side slopes may be considered in difficult circumstances. Side slopes of greater than 1 in 4 may require handrails to assist in egress.
- For basins, water depths shall be, where possible, less than 1.2m in the 20 year ARI storm event. Where neither practical or economic greater depths may be acceptable. In that case the provision of safety refuge mounds should be considered.
- The depth indicators should be provided indicating maximum depth in the basin.
- Where detention storage is being provided in landscape areas, depth of ponded water shall be less than 0.6m. Where detention storage is being provided in carparking/paved areas, depth of ponded water shall be less than 0.2m.
- Protection of the low flow intake pipe shall be undertaken to reduce hazards for people trapped in the basin.
- Signage of the spillway is necessary to indicate the additional hazard.
- Basins shall be designed so that no ponding of water occurs on to private property or roads.
- No planting of trees in basin walls is allowed.

- No basin spillway is to be located directly upstream of urban areas.
- Submission of design Drawings to the Dam Safety Committee is required where any of these guidelines are not met or Council specifically requires such submission.

12. Detention basins shall be topsoiled, turfed and landscaped.

STORMWATER DETENTION

D5.16 STORMWATER DETENTION

1. Installation of Stormwater Detention is required to maintain post- development flows to at or below predevelopment flows.
2. Location of basins for stormwater detention, stormwater treatment or sedimentation purposes shall avoid areas that are known to be permanent or seasonal groundwater discharge areas. This action reduces the likelihood of recharge into the groundwater.

**Salinity
Prevention**

INTERALLOTMENT DRAINAGE

D5.17 INTERALLOTMENT DRAINAGE

1. Interallotment Drainage shall be provided for every allotment which does not drain directly to its frontage street or a natural watercourse.
2. Interallotment drainage shall be contained within an easement not less than 1.0m wide , and the easement shall be in favour of the upstream allotments.
3. Pipe Capacity - The interallotment drain shall be designed to accept concentrated drainage from buildings and paved areas on each allotment for flow rates having a design ARI the same as the "minor" street drainage system.
4. In lieu of more detailed analysis, the following areas of impervious surface are assumed to be contributing runoff to the interallotment drain:-

**Impervious
Area**

Development Type	% of Lot Area
• Residential R1	50
• Residential R2	40
• Residential R3	50
• Industrial	80
• Commercial	100

5. Pipes shall be designed to flow full at the design discharge without surcharging of inspection pits.

6. Interallotment drainage pits shall be located at all changes of direction. Pits shall be constructed of concrete, with 100mm thick walls and floor and have a minimum 600 x 600 internal dimensions. Pits shall be with a 100mm concrete lid finished flush with the surface of works. Depressed grated inlets are acceptable.

Pits

7. Pipes - Minimum Grade - The interallotment drainage shall have a minimum longitudinal gradient of 0.5% .

Grade

8. Interallotment Drainage Pipe Standards - The interallotment drainage shall be

Pipe Type

constructed from rubber ring jointed pipes of either fibre reinforced concrete drainage pipe, reinforced concrete pipe, or UPVC pipe which shall conform respectively to the requirements of AS 4139, AS 4058 and AS 1254. In public road and recreation reserves where vehicle loads may be encountered, reinforced concrete pipe only, shall be used.

9. Interallotment Drainage Pipe - Relationship to Sewer Mains - Where interallotment drainage and sewer mains are laid adjacent to each other they are to be spaced 1.5 metres between pipe centrelines (where the pipe inverts are approximately equal).

Sewer

10. Where there is a disparity in level between inverts the spacing is to be submitted for approval.

11. Where sewer mains are in close proximity to interallotment drainage lines they are to be shown on the interallotment drainage plan.

DETAILED DESIGN

D5.18 CONDUITS

1. Conduits and materials shall be in accordance with the acceptable industry standards.

Materials

2. Pipe bedding and cover requirements for reinforced and fibre reinforced concrete pipes shall be determined from the Concrete Pipe Association "Concrete Pipe Guide" or AS 3725. For uPVC pipes, the requirements shall be to AS 2032.

Bedding and Cover

3. Drainage lines in road reserves shall generally be located behind the kerb line and parallel to the kerb. Drainage lines in easements shall generally be centrally located within easements.

Location

4. Bulkheads shall be designed on drainage lines where the pipe gradient exceeds 5 per cent. The design details shall address the size, and position in the trench as well as spacing along the line.

Bulkheads

D5.19 PIT DESIGN

1. Pits shall be designed with benching to improve hydraulic efficiency and reduce water ponding. Pit designs and other pit design requirements are to be in accordance with accepted industry standards. Safety and safe access are important considerations in pit design. Step irons shall be detailed where required and grates shall be of "bicycle safe" design.

D5.20 STORMWATER DISCHARGE

1. Stormwater discharge shall be located so as to avoid recharging groundwater and creating or worsening salinity degradation of adjacent land. Stormwater discharge shall be located to avoid areas with high groundwater tables, groundwater discharge areas or salt-affected land. The Designer shall meet requirements of the appropriate land and water resources authority with regard to the salinity levels of discharge to natural watercourses.

Salinity Prevention

2. Scour protection at culvert or pipe system outlets shall be constructed in accordance with guidelines set down in *The Blue Book - Managing Urban Stormwater:: Soils and Construction* unless outlet conditions dictate the use of more substantial energy dissipation arrangements.

Scour Protection

3. Kerb and gutter shall be extended to drainage pit or natural point of outlet. Where outlet velocity is greater than 2.5m per second or where the kerb and gutter

Kerb & Gutter Termination

discharge causes scour, then protection shall be provided to prevent scour and dissipate the flow.

4. At points of discharge of gutters or stormwater drainage lines or at any concentration of stormwater from one or on to adjoining properties, either upstream or downstream, Council will require the Developer to enter into a Deed of Agreement with the adjoining owner(s) granting permission to the discharge of stormwater drainage and the creation of any necessary easements with the cost of the easement being met by the Developer.

**Easements,
Adjoining
Owners**

5. Where the drainage is to discharge to an area under the control of another statutory authority eg, Public Works, the design requirements of that Statutory Authority are also to be met.

**Other
Authorities'
Requirements**

For site developments, an overland flowpath shall be provided through the site to cater for the 100 yr ARI event flows from the upstream catchment plus those from the site developed. These flows must be safely conveyed through the site to Council's road and/or drainage system and discharged via a road or pathway system in preference to the use of easements.

**Overland Flow
Paths**

6. The minimum drainage easement width shall be 3.0m for drainage systems to be taken over by Council. The overall width of the easement in Council's favour will be such as to contain the full width of overland flow or open channel flow in the major system design event.

**Council
Easement**

7. Piped stormwater drainage discharging to recreation reserves is to be taken to a natural watercourse and discharged in an approved outlet structure or alternatively taken to the nearest trunk stormwater line.

**Recreation
Reserves**

D5.21 TRENCH SUBSOIL DRAINAGE

1. Subsoil Drainage shall be provided in pipe trenches as follows:

In cases where pipe trenches are backfilled with sand or other pervious material, a 3m length of subsoil drain shall be constructed in the bottom of the trench immediately upstream from each pit or headwall. The subsoil drain shall consist of 100mm diameter agricultural pipes, butt jointed with joints wrapped with hessian, or slotted PVC pipe. The upstream end of the subsoil drain shall be sealed with cement mortar, and the downstream end shall discharge through the wall of the pit or headwall.

DOCUMENTATION

D5.22 DRAWINGS

1. Catchment Area Plans shall be drawn to scales of 1:100 or 1:200, unless alternative scales are specifically approved by Council and shall show contours, direction of grading of kerb and gutter, general layout of the drainage system with pit locations, catchment limits, how the proposed stormwater system is integrated with the proposed landscape and any other information necessary for the design of the drainage system. The extent and area (in plan) of any upstream catchment for external flows entering the site and the proposed catchment and sub-catchment areas layout of the subject site shall be shown

**Catchment
Areas**

2. The Drainage System Layout Plan shall be drawn to a scale of 1:500 and shall show the major and minor systems with drainage pipeline location, drainage pit location and number and road centreline chainage, size of opening and any other information necessary for the design and construction of the drainage system.

**Drainage
System Layout**

3. The plan shall also show all drainage easements, reserves and natural watercourses. The plan may be combined with the road layout plan.

4. Survey of the development site and surrounding areas, to provide sufficient information in order to assess the Application, which includes lot boundaries, contours/spot levels, buildings, easements, services, landscaped areas, site area, roadways etc.

Survey

Note: For plans submitted for construction certificate stage, sufficient contours and spot levels must be shown on the plan to enable a proposal's construction. It is insufficient to show arrows to indicate a fall in the pavement. All levels to be related to AHD.

4. The Drainage System Longitudinal Section shall be drawn to a scale of 1:500 horizontally and 1:50 vertically and shall show pipe size, class and type, pipe support type in accordance with AS 3725 or AS 2032 as appropriate, pipeline and road chainages, ground levels, services, invert levels, calculated flows, velocity, pipeline grade, hydraulic grade line and any other information necessary for the design and construction of the drainage system.

**Longitudinal
Section**

5. The location and extent of any floodways, flowpaths, stormwater concentrations or proposed overland flowpaths must be shown with information to include contours of the land within which the floodway, flowpath, stormwater concentrations or overland flowpath path will be located, the capacity of it, details of any bed reinforcement and the proposed point of discharge.

**Overland
flowpaths**

6. Open Channel Cross Sections shall be drawn to a scale of 1:100 natural and shall show the direction in which the cross sections should be viewed. Reduced levels are to be to Australian Height Datum (AHD), unless otherwise approved by Council where AHD is not available. Cross sections may alternatively be provided in digital format able to be viewed in Excel or text files or where HEC-RAS has been used, in this format.

**Open
Channels**

7. Details including standard and non-standard pits and structures, dimensions, pit benching, open channel designs and transitions shall be provided on the Drawings to scales appropriate to the type and complexity of the detail being shown. This includes for on-site detention storage, weirs, outlet structures, scour protection, etc.

Details

8. Written agreement from downstream property owners to provide an easement to drain water if applicable.

Easement

2. Where on-site detention is proposed, the following additional information will be required:

**On-site
detention**

- (a) The location and extent of the detention storage.
- (b) The location and levels of discharge points for the storage.
- (c) Preliminary estimates on the Site Storage Requirement and Permissible Site Discharge values.
- (d) The location and area of any portion of the site unable to drain to the storage.
- (e) The final disposal point, where the runoff from the site is unable to drain to the storage, together with justification that this runoff will not cause any adverse effects to the development site or neighbouring properties.

9. The flood study / drainage report prepared in accordance with relevant standards. The report will detail all assumptions and results and must demonstrate that stormwater runoff from the site is not increased beyond the existing undeveloped state up to and including a 100 year ARI. All stormwater detention details including analysis shall be included with the drainage report.

Report

7. Work-as-Executed Drawings shall be submitted to Council upon completion of the drainage construction and prior to the issue of the subdivision certificate. The detailed Drawings may form the basis of this information, however, any changes must be noted on these Drawings.

Work-as-Executed Drawings

D5.23 EASEMENTS AND AGREEMENTS

1. Evidence of any Deed of Agreement necessary to be entered into as part of the drainage system will need to be submitted prior to any approval of the engineering Drawings. Easements will need to be created prior to the issue of the subdivision certificate.

2. Where an agreement is reached with adjacent landowners to increase flood levels on their property or otherwise adversely affect their property, a letter signed by all the landowners outlining what they have agreed to and witnessed by an independent person shall be submitted prior to any approval of the engineering Drawings.

D5.24 SUMMARY SHEETS

1. A copy of the Hydrological Summary Sheets providing the minimum information set out in Appendix A is required.

Hydrology

2. A copy of the Hydraulic Summary Sheets providing the minimum information set out in Appendix B is required.

Hydraulics

D5.25 COMPUTER PROGRAM FILES AND PROGRAM OUTPUT

1. Computer program output may be provided as long as summary sheets for Hydrological and Hydraulic calculations in accordance with this Specification are provided with plans submitted for checking and with final Drawings.

2. Copies of final computer data files, for both hydrological and hydraulic models shall be provided for Council's data base of flooding and drainage information in formats previously agreed with Council.

3. It is preferably that stormwater pipe network design be undertaken in the DRAINS model format.

APPENDIX A
HYDROLOGICAL DESIGN SHEETS

PIPED URBAN STORMWATER DRAINAGE

HYDROLOGICAL DESIGN SHEET 1

Sheet of

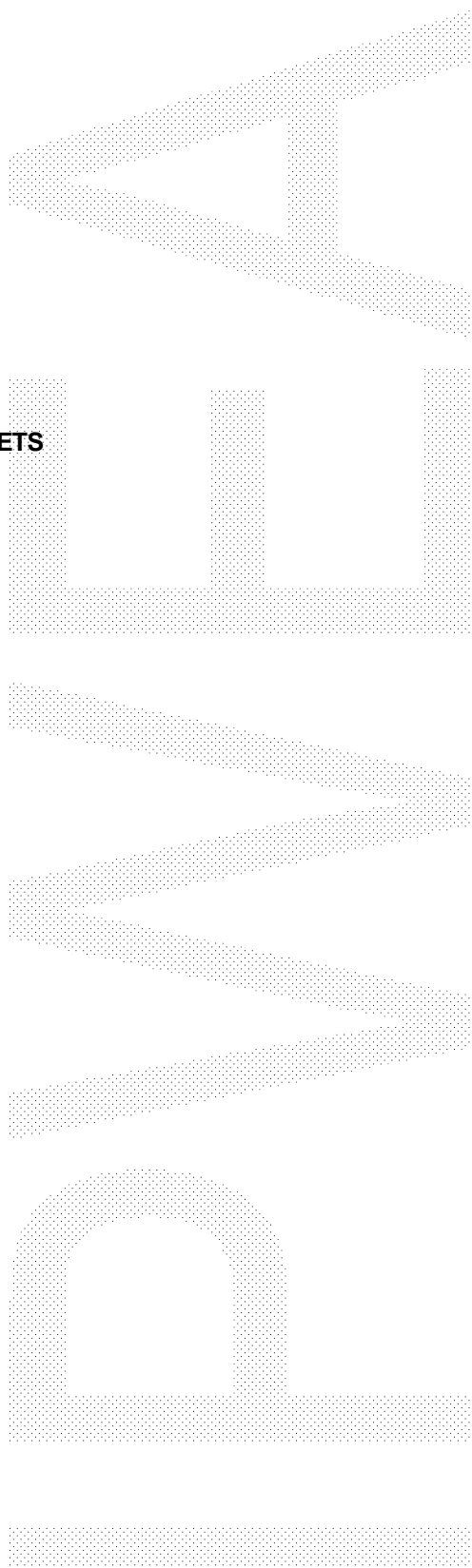
Job Reference

(1) Pit	(2) Land Use Type	(3) Flow Length (m)	(4) Slope (m/m)	(5) 'n'	(6) Time (min)	(7) Total Time (min)	(8) Intensity I (mm/h)	(9) Runoff Coeff. C	(10) Area A (ha)	(11) CA (ha) [9]x[10]	(12) ΣCA (ha)	(13) Q=CIA (l/s) [8]x[12] /0.36	(14) Bypass Flow (l/s) from Pit()	(15) Adopted Flow rate (l/s) [13]+[14]	(16) Gutter Slope (m/m)	(17) Flow Width (m)	(18) Inlet Type	(19) Inflow (l/s)	(20) Bypass Flow (l/s) to Pit ()	(21) Remarks
FLOW TIMES															PIT INLET					

PIPED URBAN STORMWATER DRAINAGE

[illegible]**MID-WESTERN REGIONAL**

APPENDIX B
HYDRAULIC DESIGN SHEETS



STORMWATER DRAINAGE DESIGN

HYDRAULIC DESIGN SHEET

Job _____

Designer _____ Date _____ Checked _____

PIPED URBAN STORMWATER DRAINAGE

[illegible]

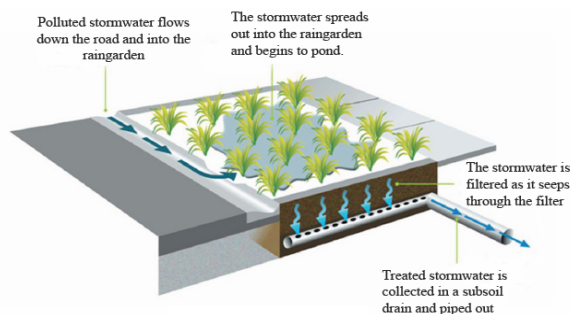
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Central West Councils Salinity & Water Quality Alliance



STORMWATER TO SMARTWATER S₂S – SUPPORTING TECHNICAL GUIDELINES

*Securing the Sustainable
Growth of all our Communities*



August 2010

Salinity & Water Quality Alliance Member Councils

Bathurst Regional Council

Blayney Shire Council

Bogan Shire Council

Cabonne Council

Coonamble Shire Council

Dubbo City Council

Gilgandra Shire Council

Mid-Western Regional Council

Narromine Shire Council

Orange City Council

Warren Shire Council

Warrumbungle Shire Council

Wellington Shire Council

S₂S - Stormwater to Smartwater aims to:

- Promote best practice stormwater management
- Protect our groundwater, creeks, rivers and wetlands by improving the quality of runoff
- Protect human health by improving the quality of runoff
- Manage all the impacts of new development including salinity, runoff quantity & quality
- Use our landscapes more effectively by integrating stormwater management
- Protect our land, creeks and rivers from erosion and siltation
- Add value while minimising development costs
- Reduce potable water demand

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1 Introduction

S₂S - Stormwater to Smartwater (S₂S) is the name given to Council's plan to improve stormwater management across the Local Government Area (LGA). The same plan is being applied across the Central West Region. The provisions in S₂S outline minimum requirements needed to obtain a Development Application and Occupation Certificate.

The S₂S - Supporting Technical Guidelines have been developed to support S₂S.

1.1. Purpose and Objectives

The purpose of this document is to provide the community, developers and Council with the minimum technical requirements and practical guidance which will enable compliance with S₂S.

The S₂S - Supporting Technical Guidelines:

- Explain the minimum requirements for each Performance Target
- Tell you how to comply
- Explain what information is required at Development Application Stage and at Construction Certificate Stage.

1.2. Related Documents

The S₂S - Supporting Technical Guidelines provide much of the information to needed to implement and operate S₂S.

Relevant Australian Standards are referenced. Note: that in the event of a conflict between the S₂S – Supporting Technical Guidelines and AS/NZS 3500, the S₂S - Supporting Technical Guidelines shall take precedence.

Landcom's Managing Urban Stormwater for Soils and Construction Volume 1 – commonly referred as the Blue Book is also a reference document and contains requirements for the management of soil and water during construction.

The Building and Sustainability Index (BASIX) State Environmental Planning Policy (SEPP) is referred to repeatedly but only applies to residential development.

1.3. Relationship with the BASIX SEPP

This section is only relevant to residential development.

The BASIX SEPP applies to all residential development in the State of NSW. S₂S applies to all development that requires approval in the form of an approved Development Application (DA). BASIX is aimed at reducing potable water consumption and greenhouse gases while S₂S is aimed at protecting the environment from damage caused by stormwater runoff from new development.

It is recommended that the most efficient means of complying with this plan can be achieved by firstly working out your minimum obligations under BASIX then work out your minimum obligations required under S₂S before you obtain a BASIX Certificate.

There are some incentives included in S₂S which may make it cheaper to install a larger rainwater tank than one which may be needed to satisfy your BASIX obligations. If necessary seek advice from a registered plumber or licensed builder – they can tell you how much it will cost to construct measures required by S₂S and BASIX.

2 Definitions

Base Flows – are flows that occur during dry weather conditions.

Best Management Practice – the design of a stormwater treatment measure in accordance with current best practice guidelines.

Impervious – a surface that does not allow water to infiltrate into the ground, including roofs, roads, pavements, hard surfaced sports courts, any “sealed” areas and permanent water bodies such as swimming pools.

Infiltration – the downward movement of water from the surface to the subsoil.

Low Flows – flows generated from rainfall events less than the 1 in 5 year ARI storm event including frequent events.

Non potable water – water that is to be used for non drinking purposes such as toilet flushing, laundry use, garden watering, car washing, etc.

On-site Retention (OSR) – retention of water on-site (refer to Retention).

Overland flow path – the path that stormwater may take if the piped or channeled stormwater system becomes blocked or its capacity exceeded. Overland flow paths provide a fail safe system to ensure that stormwater is not likely to cause flood damage.

Peak Flows – the maximum instantaneous outflow from a catchment during a storm event.

Permeable Paving – paving materials that allow infiltration into the soil.

Permissible Site Discharge – the maximum discharge from the site during a 1 in 5 year ARI storm event under pre-development (existing) site conditions.

Pervious - a surface that permits water to infiltrate into the ground.

Potable water – water that is fit for human consumption.

Roofwater – rain (water) that falls on the roof of a building.

Retention – the storing of a form of water for beneficial use. Can apply to all forms of water including rainwater, stormwater and recycled water. May occur by storing water in a tank or by infiltration.

Runoff – interchangeable with stormwater (see Stormwater).

Sewage – any form of wastewater (refer to Wastewater) connected to the sewerage system.

Soil & Water Management Plan (SWMP) - strategies and controls for a development or site to prevent pollution of the environment from all pollutants during the construction stage.

Stormwater – rainfall that is concentrated after it runs off all urban surfaces such as roofs, pavements, carparks, roads, gardens and vegetated open space and includes water in stormwater pipes and channels.

Sump – a cavity or depression where water drains to and which may then be pumped out.

Water Sensitive Urban Design – a design approach promoting sustainable management of the total water cycle through the ecologically sensitive design of homes, streets (and their drainage systems) and whole suburbs.

Wastewater – greywater and blackwater (see Blackwater).

3 Quantity Management During Operation

The following Section documents minimum performance requirements for all developments which have a Quantity Management During Operation Performance Target.

S₂S described the steps involved and they are further clarified here:

1

Determine the total site impervious area
Add roof areas, garage areas, and all paved areas.

2

Reduce the total site impervious area if permeable paving has been used

3

Determine which rainfall region you are located in: more than 800mm/year or less than 800mm/year

4

From Table 2 in S₂S workout your rainfall threshold.
It is 0.022m for areas with less than 800mm/year rainfall and 0.016m for areas with more than 800mm/year rainfall

5

Calculate the Runoff Storage Volume
 $\text{Runoff Storage Volume (m}^3\text{)} = \text{Total impervious area (m}^2\text{)} \times \text{rainfall threshold (m)}$

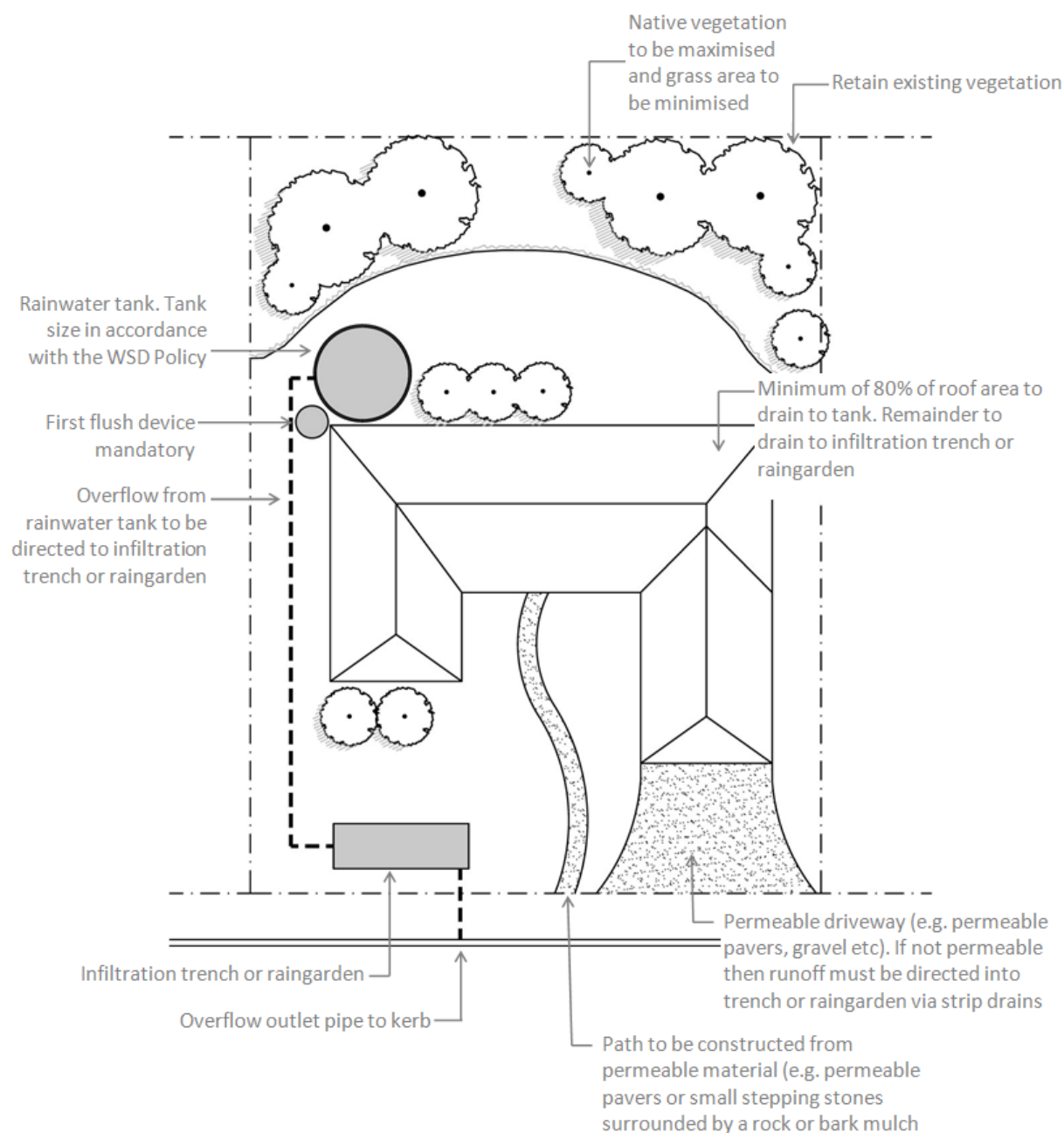
6

If you chose to use a rainwater tank then you can reduce the runoff storage volume in accordance with Table 3 in S₂S.

7

Choose from either an infiltration trench or a raingarden and calculate the size in accordance with this guideline.

This Section includes guidance and minimum requirements for infiltration trenches, raingardens, porous or permeable paving and rainwater tanks.



Example of single dwelling layout

The single dwelling layout shows a typical residential development with either a rain garden or infiltration trench to dispose of runoff. A rainwater tank may be added subject to BASIX and S₂S.

Note that in some cases where the property falls away from the street and interallotment drainage exists then the trench or raingarden shall be located at the rear of the property to limit discharge into the interallotment system.

3.1. Minimum Requirements for Infiltration Trenches

General Requirements

- Geocellular structures are permitted.
- The Trench is to be wrapped in a non-woven geotextile with a minimum conductivity of 3600mm/hour.
- Gravel is typically used to fill the trench and is to be clean and washed prior to use and free of fines. A 30mm diameter poorly graded gravel is to be used. Use of recycled concrete or bricks is not permitted under any circumstances. All gravel must be inert and be of high compressive strength.
- Trenches are typically 200mm below the surface but can be deeper if required.
- An overflow must be provided as shown in the accompanying sketches. The overflow must be connected to the back of kerb.
- Sediment and debris are to be removed from stormwater before it is allowed to enter the trench unless it can be demonstrated that the proposed system enables easy removal of accumulated sediment. This is very important to ensure that the trench continues to infiltrate runoff and does not clog. An example of a suitable device to remove sediment and debris is the Hydrofilter PE400 by HydroCon or similar. See www.hydrocon.com.au for more details. The selected sediment and debris filter device must be easy to maintain and importantly must be easily and safely accessible.
- Place a covenant or restriction as to user notice over the sediment removing device and trench so that it shall remain in place and in use.
- Are not permitted in areas of high salinity or high groundwater.
- Where groundwater is within 500mm of the base of the trench infiltration shall not be permitted and instead adopt Water Quality During Operation as a Performance Target.
- Trenches or the use of geocellular structures can be placed beneath driveways provided they are structurally sound. Appropriate manufacturer test certificates will need to be submitted with the DA. Evidence showing consideration of creep and point loading of geocellular structures is to be provided.

Trench volume to consider porosity

The infiltration trench shall be able to store the whole of the runoff storage volume. Infiltration trenches are normally constructed from gravel but can also be constructed from plastic geocellular structures that look like milk crates. The space between the individual gravel rocks (is called the pore space) allows about 1/3 of the volume of gravel to be filled with water. In other words every cubic metre of gravel can store 333 litres of runoff. This must be taken into account when sizing your infiltration trench. It is said that the porosity of gravel is about 33% or 0.33.

Equation 1 shows you how to work out the required trench volume:

$$\text{Equation 1. Required Trench Volume} = \text{Runoff storage volume (m}^3\text{)} / \text{porosity}$$

For example if the runoff storage volume was calculated as 3.8m³ and if your trench is to be constructed from gravel then you will need a gravel trench with a volume of $3.8 / 0.33 = 11.4 \text{ m}^3$.

Equation 2 shows how to calculate the length or width of a trench if you know the volume:

$$\text{Equation 2. Volume of a trench (m}^3\text{)} = \text{length (m)} \times \text{width (m)} \times \text{height (m)}.$$

Using our example above, if the trench was typically 1m wide and 1m deep then the length of the trench will be 11.4m.

If you chose to use a geocellular structure then the porosity can be as high as 0.90 or sometimes higher. To calculate the runoff storage volume using a plastic cell construction use equation 1 and simply divide the runoff storage volume by the porosity.

For example a plastic cell sold at many hardware suppliers has a porosity of about 90%. If the Runoff Storage Volume was 3.8 m³ you will need to construct a trench with a volume of $3.8 / 0.90 = 4.13 \text{ m}^3$.

Minimum safe distances to Foundations

Australian Runoff Quality published by the Institution of Engineers, Australia recommends minimum distances that infiltration trenches should be constructed away from building footings. These are shown in Table 1.

Table 1: Minimum Distance of an Infiltration Trench from footings depending on Soil Type

Soil Type	Hydraulic Conductivity	Minimum Distance from Footings
Sandstone	Assumed to be negligible	Do not infiltrate on these soils
Sand	>180 mm/hr	1 m
Sandy Clay	180-36 mm/hr	2 m
Medium Clay	36-3.6 mm/hr	4m
Reactive Clay	3.6-0.036 mm/hr	5 m

Reference: The Institution of Engineers Australia, Australian Runoff Quality Guidelines.

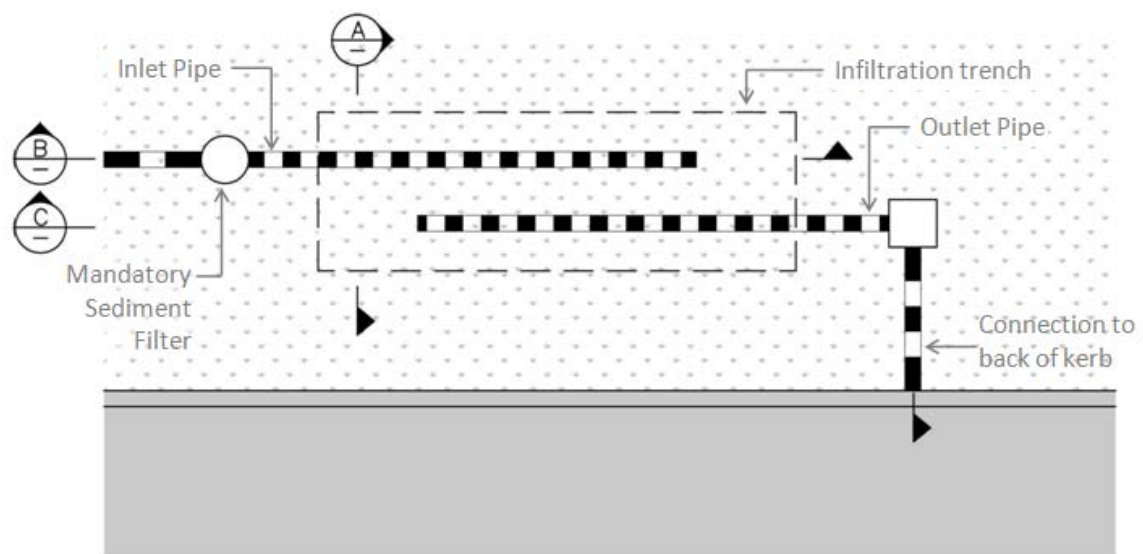
It is likely that your development is located on Medium Clay soils however confirm your soil type with Council who will have a soil map of the area and will be able to advise you if you do not know. Alternately seek advice from a civil or geotechnical engineer.

Manufacturers Recommendations to be adopted

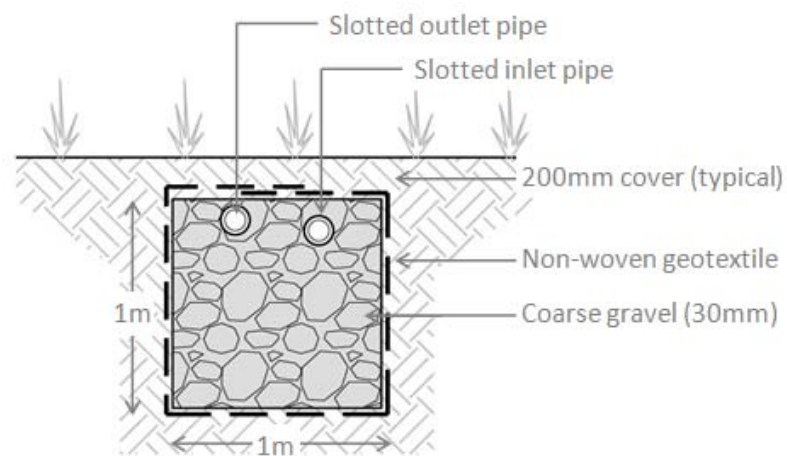
If proprietary infiltration products, such as geocellular structures are proposed for use they shall be constructed in accordance with the manufacturer's requirements. Some plastic cellular products have been shown to fail because manufacturers have failed to consider the impact of creep. All geocellular structures shall therefore consider creep and evidence shall be provided from the manufacturer of such.

Typical Details

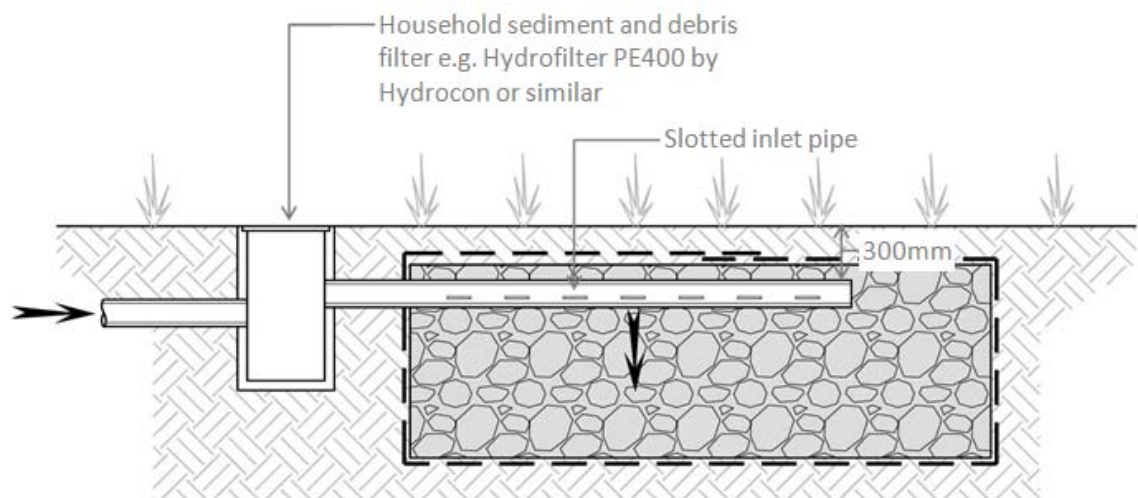
Some typical details follow and provide some guidance as to how to construct an infiltration trench. These are not standard drawings.



Infiltration Trench Plan



Section A: Infiltration Trench Cross Section



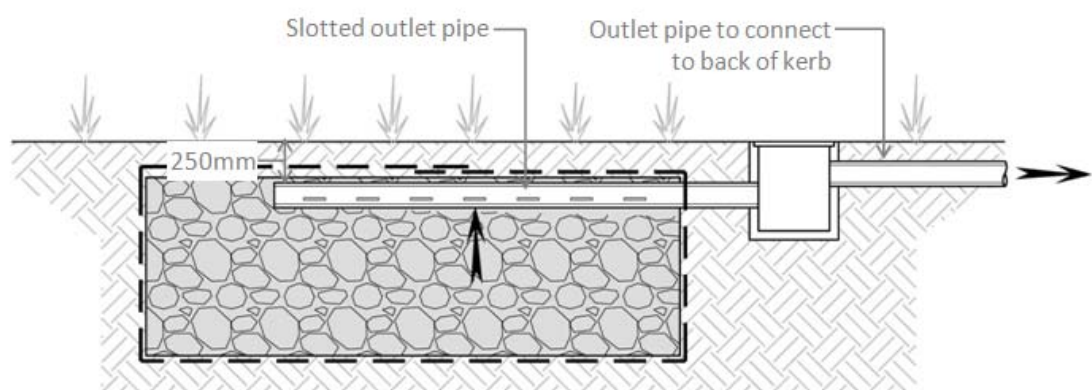
Section B: Infiltration System Inlet

Alternative inlet for draining impervious surfaces

An alternative inlet for stormwater runoff from impervious areas (eg driveway) may be to direct inflows overland via a grass swale to a gravel trench that extends to the surface. The swale would serve to both convey the water and filter out the sediments to reduce maintenance on the trench.

The swale would have a slope typically less than 5% and be well vegetated to prevent scour during runoff events and trap sediment. The swale can have gentle batters to facilitate mowing and pedestrian movement if desired. The inlet and infiltration trench must be configured to allow a minimum of 100mm surcharge for a gravel surface.

Hint: For this inlet configuration, install the trench at the same relative depths (ie 200mm from surface) with a geotextile wrapping. Add another 100mm layer of gravel on top and the final 100mm is for surcharge.



Section C: Infiltration System Outlet

Details Required at DA and CC stage

For DA provide:

- A drawing of the proposed development
- On the drawing show calculation of runoff storage volume
- Calculations of the minimum trench volume and demonstrate that the proposed volume is enough to store the whole of the Runoff Storage Volume.
- Show the proposed trench dimensions
- Show the proposed trench construction material, i.e. use of gravel and a geotextile blanket around the trench.
- Show the location of the trench on plan.
- Show any rainwater tank and show if any credit is claimed for the use of the tank in reducing the runoff storage volume.
- Show location of all incoming pipes.
- Show location of overflow pit and proposed piped connection to back of kerb. If no kerb exists then show the location of any proposed overland flow path.
- Show the invert level of the proposed overflow pipe at the overflow pit and show the invert level of the pipe where it will discharge at the kerb. This must be done to ensure that the overflow can drain safely to the street.

3.2. Minimum requirements for Raingardens**General requirements**

- Runoff from hardstand areas may be directed to the raingarden via:
 - an inlet pit which has a 500mm deep base below the incoming pipe and which allows sediment to settle out before discharging into the raingarden; or
 - direct discharge onto the raingarden surface
- Depth of surface ponding is 200mm
- Suitable water tolerant native plants are to be planted at minimum density of 4 plants/ m². Grass can also be used to cover the rain garden however make sure you do not compact the loamy sand media when mowing the grass.
- An overflow pit is to be provided which directs overflows to the street drainage system. Unless stated elsewhere in this document the subsoil is not to be drained using a subsoil pipe. Instead infiltration is to be maximised.
- Minimum depth of the loamy sand filter media layer is to be 500mm.
- Where raingardens are used to meet a water quality during operation Performance Target then they shall be constructed in accordance with the Facility for Advanced Water Biofiltration guidelines – these require a filter media layer as described above and then a transition layer below this to prevent the migration of finer sand particles down and then a gravel drainage layer in which there is subsoil drainage.
- The filter media to be comprised of a free draining sand material but capable of supporting plant growth (at least in the top 100mm)

- Overflows from rainwater tanks are to be directed into the rain garden
- Side slopes on the raingarden are to be flatter than 1 vertical for every 4 horizontal to prevent erosion of the banks. The banks are to be either grassed or formalized using a timber edge strip.

Minimum safe distances to footings

Table 1 **above** provides minimum safe distances to footings and foundations for infiltration. These are to be adopted for rain gardens. Raingardens which are lined to prevent infiltration may be constructed any distance away from a building.

Porosity and surface storage to be taken into account

The raingarden shall be able to store the whole of the runoff storage volume. This section shows you how to calculate the runoff storage volume.

Rain gardens differ from infiltration trenches in two main ways:

- 1) because ponding of water on the surface is permissible.
- 2) They use a coarse sand material filter instead of gravel. However both gravel and sand typically have a porosity of 33%.

In order to work out the required size of a rain garden you can take into account both:

- The amount of storage in the sand filter media below ground
- The amount of storage on the surface of the raingarden

To calculate the amount of storage in the sand filter media below ground follow the same steps as you would if constructing an infiltration trench.

Rain gardens are normally constructed from a sand media. The space between the individual grains of sand (this is called the pore space) allows about 1/3 of the volume of sand to be filled with water. In other words every cubic metre of sand can store 333 litres of runoff. This must be taken into account when sizing your raingarden. It is said that the porosity of sand is about 33% or 0.33.

Equation 1 shows you how to calculate the volume of storage provided by the below ground section of your raingarden:

Equation 1. Below ground storage volume = volume of sand used (m³) x porosity

For example if the volume of sand proposed was 6 m³ then you are able to store 6 x 0.33 = 2 m³ of runoff below ground.

In addition to the volume of storage below ground water is stored on the surface of the rain garden. To calculate how much water is stored simply work out the volume of surface storage. You do not need to consider porosity with surface storage.

Because the maximum permitted depth of surface ponding is 200mm one can simply work out how much water is stored on the surface of the rain garden by multiplying the area of storage by the depth. Equation 2 shows this:

Equation 2. Volume of surface storage (m³) = area of surface storage (m²) x depth (m) of surface storage.

For example, if you proposed a rain garden with an area of 5m² and depth of ponding of 200mm then the volume of water that can be stored on the surface is 5 x 0.2 = 1 m³ (not accounted for side slopes).

If you needed to construct a raingarden that could store a runoff storage volume of 3.8 m³ you could size it as follows:

- The minimum depth of the filter media is to be 500mm.
- The maximum depth of ponding is to be 200mm. It will be cheapest to maximise the area of surface ponding which will minimise the area of the trench.

For this example we have then assumed the rain garden will have 200mm ponding and be 500mm deep.

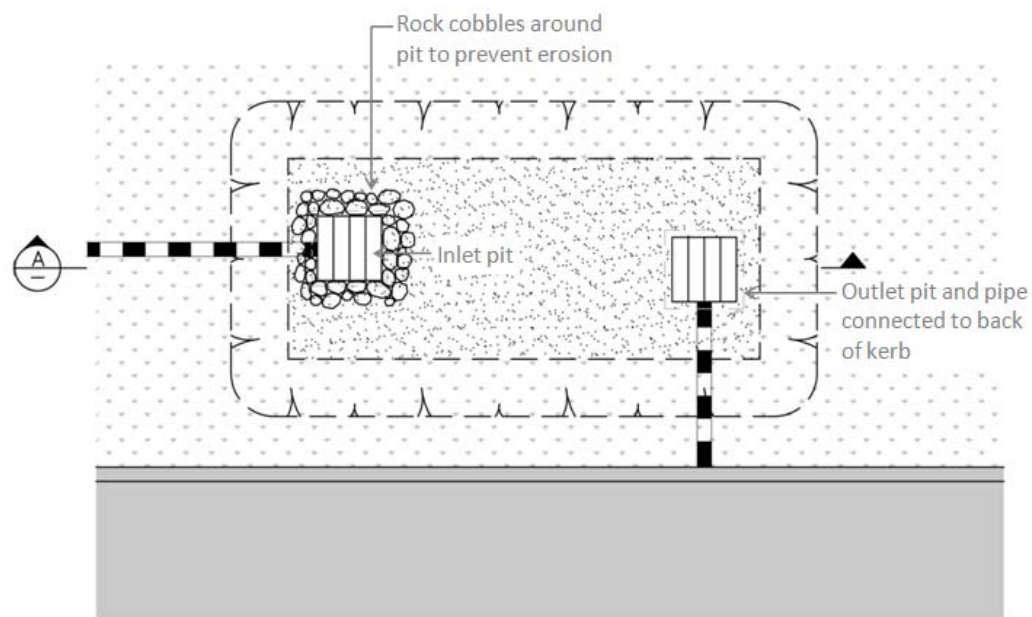
We have worked out for such a case that:

- area of rain garden required (m²) = the runoff storage volume / 0.365
- Using the previous examples where the runoff storage volume was 3.8m³, the area of raingarden is: $3.8 / 0.365 = 10.40 \text{ m}^2$.
- The raingarden could then be 3m wide by 3.46m long or any length and width combination which gave you a surface area of 10.4 m².

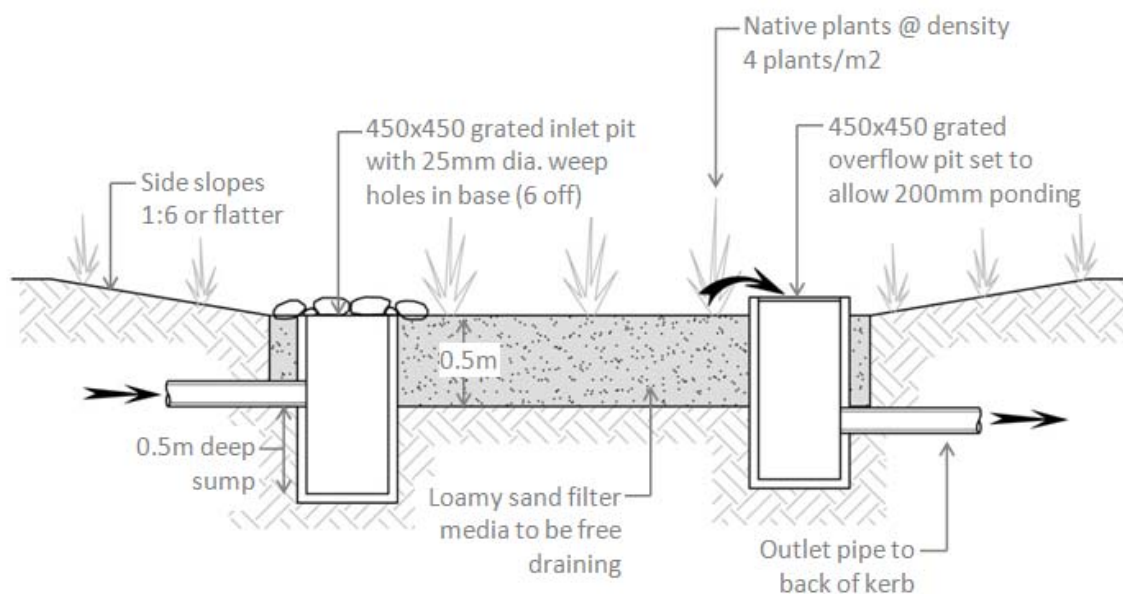
Some typical raingarden sketches and photos are shown below:



Top images courtesy Melbourne Water.



Raingarden Plan



Section A raingarden

Details Required to be submitted at DA stage

For DA provide:

- A drawing of the proposed development
- On the drawing show calculation of runoff storage volume
- Calculations of the minimum raingarden volume and demonstrate that the proposed volume is enough to store the whole of the Runoff Storage Volume.
- Show the proposed dimensions

- Show the proposed construction material, i.e. use of sand and any edging details if one is to be used.
- Show the location of the raingarden on plan.
- Show any rainwater tank and show if any credit is claimed for the use of the tank in reducing the runoff storage volume.
- Show location of all incoming pipes.
- Show location of overflow pit and proposed piped connection to back of kerb. If no kerb exists then show the location of any proposed overland flow path.
- Show the invert level of the proposed overflow pipe at the overflow pit and show the invert level of the pipe where it will discharge at the kerb. This must be done to ensure that the overflow can drain safely to the street.

3.3. Minimum Requirements for Permeable Paving

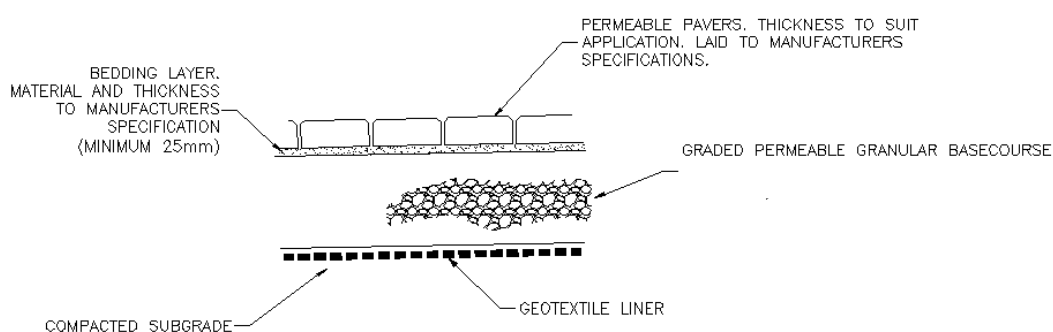
Permeable paving can be used to reduce the impervious area on the proposed development. For example a driveway which is constructed from permeable paving will not contribute to the total impervious area on a site. It may be cheaper to pave a driveway using permeable pavers than to increase the runoff storage volume which will then require a larger trench or rain garden.

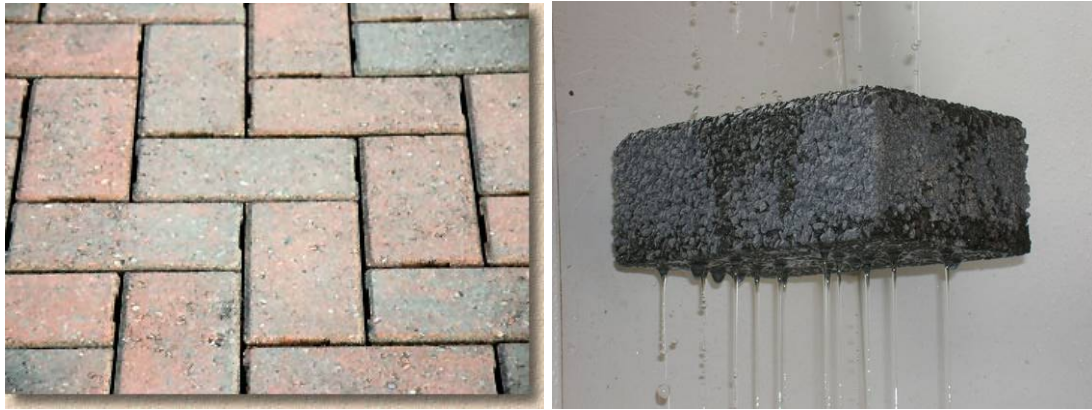
Permeable paving is considered appropriate in areas of high groundwater salinity if configured appropriately to ensure there is no increased volumes of water being infiltrated. If your paving is in high salinity areas then ensure there is no increased capture and infiltration.

Permeable pavers can also be used in areas where there is high ground salinity on the condition that no additional runoff is directed to the pavers.

All pavers are to be laid in accordance with manufacturers recommendations.

A typical paving detail is provided below however you will need to seek advice from your builder or engineer.





Details required at DA stage

- Show the extent of any permeable paving
- Show the total area of permeable paving
- Show what type of paving stone will be used
- Show a typical profile of the pavement
- Identify if the subgrade has sufficient bearing strength
- Confirm with Council the adoption of permeable pavers in high salinity areas

3.4. Minimum Requirements for Rainwater Tanks

Rainwater tanks can be used to reduce the Runoff Storage Volume. You need to decide:

- If you want to use a rainwater tank at all – you may need to do so because the BASIX SEPP requires you to do so however there is no compulsion under S₂S to do so.
- If you do decide to use a tank then you need to decide what you want to use the rainwater for. Rainwater is often softer and less salty than potable water and a range of filters easily available today can ensure that rainwater will not stain your toilet or laundry.
- If you do decide to use a tank then you also need to decide how large to make it.
- Table 3 in S₂S shows you how much you can reduce the Runoff Storage Volume depending on the size of the tank, your rainfall region and what you want to use the rainwater for.

General Requirements:

Where a rainwater tank is to be installed to comply with the requirements of S₂S the tank is to be plumbed using a pump and a suitable 3 way flow diversion device or tank top-up system where mains water is available.

Standard Requirements

The tank must be plumbed to deliver rainwater for the nominated end uses. Possible uses can include:

- Hot water supply
- Toilet flushing water
- Laundry washing water
- Outdoor water uses such as garden watering and car washing

- Topping up and/or filling up pools and spas
- Cold water or Drinking provided that an appropriate water filter is used and maintained.

Where a particular development must comply with BASIX, the minimum use of the rainwater shall be in accordance with that required for compliance under BASIX. However the proponent may decide that they wish to voluntarily exceed the requirements under BASIX to minimise the Runoff Storage Volume required by S₂S.

Any rainwater tank must comply with the following installation requirements:

- All raintanks must be installed in accordance with the manufacturer's recommendations;
- Rainwater tank installation must be undertaken in accordance with relevant Australian Standards, Codes and Industry Guidelines (e.g. AS3500:2003 *National Plumbing and Drainage*, HB 230-2006 *Rainwater Tank Design and Installation Handbook*);
- The system must be designed to collect roof water only. Roofwater shall not be sourced from roofs coated with lead- or bitumen-based paints, or from asbestos-cement roofs;
- The system must at least collect runoff from 80% of the roof area;
- Be fitted with a first flush device to prevent potential contaminants from entering the tank;
- If supply is supplemented with a top up system by interconnection with a reticulated water system, backflow prevention is provided in accordance with Australian Standard AS 3500.1.2 (2003) or subsequent update;
- The tank is enclosed and inlets screened, so as to prevent the entry of foreign matter and to prevent mosquito breeding;
- Tank overflow is to be connected to a retention/infiltration device, swale, stormwater drain or appropriate landscaping such that it does not cause nuisance to neighbouring properties;
- All fixtures connected to the supply system are marked 'RAINWATER';
- Above ground tanks must be located wholly within the building setbacks;
- Above ground tanks shall not require excavation of more than 1 metre from natural ground level to be installed;
- Underground tanks may be located outside the building setback provided they are not visible from the street and do not rise above the surrounding ground. The tank must not be installed within the zone of influence of any foundation of any structure (or a minimum of three metres) unless the tank design is certified by a suitably qualified engineer;
- All roofwater pipe designs shall ensure that an overflow point located lower than the gutters is provided to ensure that flooding of eaves from gutters overflowing does not occur;
- All below ground tanks must have sufficient means in place to prevent the backflow of stormwater from the street system into the tank during a storm event;
- All below ground tanks must be 100% water tight and fully sealed to prevent any ingress of groundwater. All tank openings must be located so that debris and groundwater does not enter the tank;
- The tank shall not exceed a height of 2.0 metres from ground level (including the stand for the tank);
- The tank shall be located at least 450mm from any property boundary;

- Pumps are to be covered or screened to avoid noise nuisances to neighbouring properties;
- Pumps are to comply with *NSW Department of Environment and Conservation (DEC) (2004) Noise Guide for Local Government*;
- Maintain pressure levels in the pressure vessels to minimise noise disturbance to neighbouring properties – this done by regularly pumping up the pressure vessel if required.
- The tank is to be maintained by the property owner to ensure adequate functioning and compliance with accepted health requirements;
- All plumbing work shall be undertaken by a licensed plumber; and

Maintenance

Regular maintenance is important to ensure your rainwater tank works effectively.

Recommended maintenance requirements include:

- Regular maintenance of first flush diverters by removing the filter screen in the bottom of the diverter and cleaning. The drip outlet should be monitored for the first 3 rainfall events and adjusted to ensure the diverter is completely drained over a 24 hour period;
- Annually check performance of the float valve or switch assembly to ensure correct operation at bottom water level as specified;
- Check the tank overflow outlet every six months to ensure that it is clear of weeds/sediment and other debris;
- Regularly clean roof gutters to remove leaves, sediment and other debris;
- The accumulation of sludge at the bottom of the rainwater tank should be checked every two years. The removal of which may be required about once every ten years depending on the amount of sediment entering the tank. This can be undertaken by either pumping or siphoning the sludge or the tank can be drained and then cleaned; and

Note: tanks are considered confined spaces. Access within the tank is to be restricted to personnel with confined spaces training.

- The required frequency of cleaning will depend upon several factors such as local environmental conditions, the condition of the tank inlet and regular performing of other maintenance duties by the owner.



Details to be provided at Development Application Stage:

- Tank location
- Tank height
- Tank size

- Proposed water end uses, i.e. toilet flushing, laundry, hot water, outdoor etc
- amount of credit claimed for the use of the tank;
- Pump location & noise insulation; and
- Overflow locations

4 Quality Management During Construction

The following Section documents minimum performance requirements for all developments which have a Quality Management During Construction Performance Target.

All developments shall install some degree of erosion and sediment control. Depending on the site of the development in question different requirements apply.

Table 2 Minimum Water Quality Management (During Construction) Requirements depending on the disturbed area

Area likely to be disturbed by the proposal (m ²)	Minimum Requirements	Details
< 800 m ² of disturbed area	<i>Basic Control Plan</i>	Council requires at least a hand marked up plan of proposed works and control measures. This plan must be prepared in accordance with these Technical Guidelines
800m ² to 2,500m ² of disturbed area	<i>Erosion and Sediment Control Plan (ESCP)</i>	This must be prepared in accordance with Landcom's Managing Urban Stormwater (2004) otherwise known as 'The Blue Book'
>2,500m ² of disturbed area	<i>Soil and Water Management Plan (SWMP)</i>	This must be prepared in accordance with Landcom's Managing Urban Stormwater (2004) otherwise known as 'The Blue Book'

The requirements for each of these plans are detailed below.

Appendix A includes some typical erosion and sediment control details which may assist in the preparation of the plans.

Erosion and sedimentation control measures, once installed are to be maintained so as to ensure their continued proper operation until such time as development activities have been completed and the site fully stabilised. Failure to effectively maintain sedimentation controls may result in the responsible individual/corporation receiving an on-the-spot fine of up to \$1500 under the Protection of the Environment Operations Act 1997.

Basic Controls Plan

This plan is to be prepared for submission with the DA. The plan may be a simple hand sketch prepared to scale.

For small areas of disturbance (i.e. <800m² of disturbed area), Council requires at least a hand marked up plan of proposed works and control measures (for an example see Figure 1).

Basic erosion and sediment controls should be put in place in accordance with the Figures in Appendix A (based on the "Blue Book" (Landcom, 2004)).

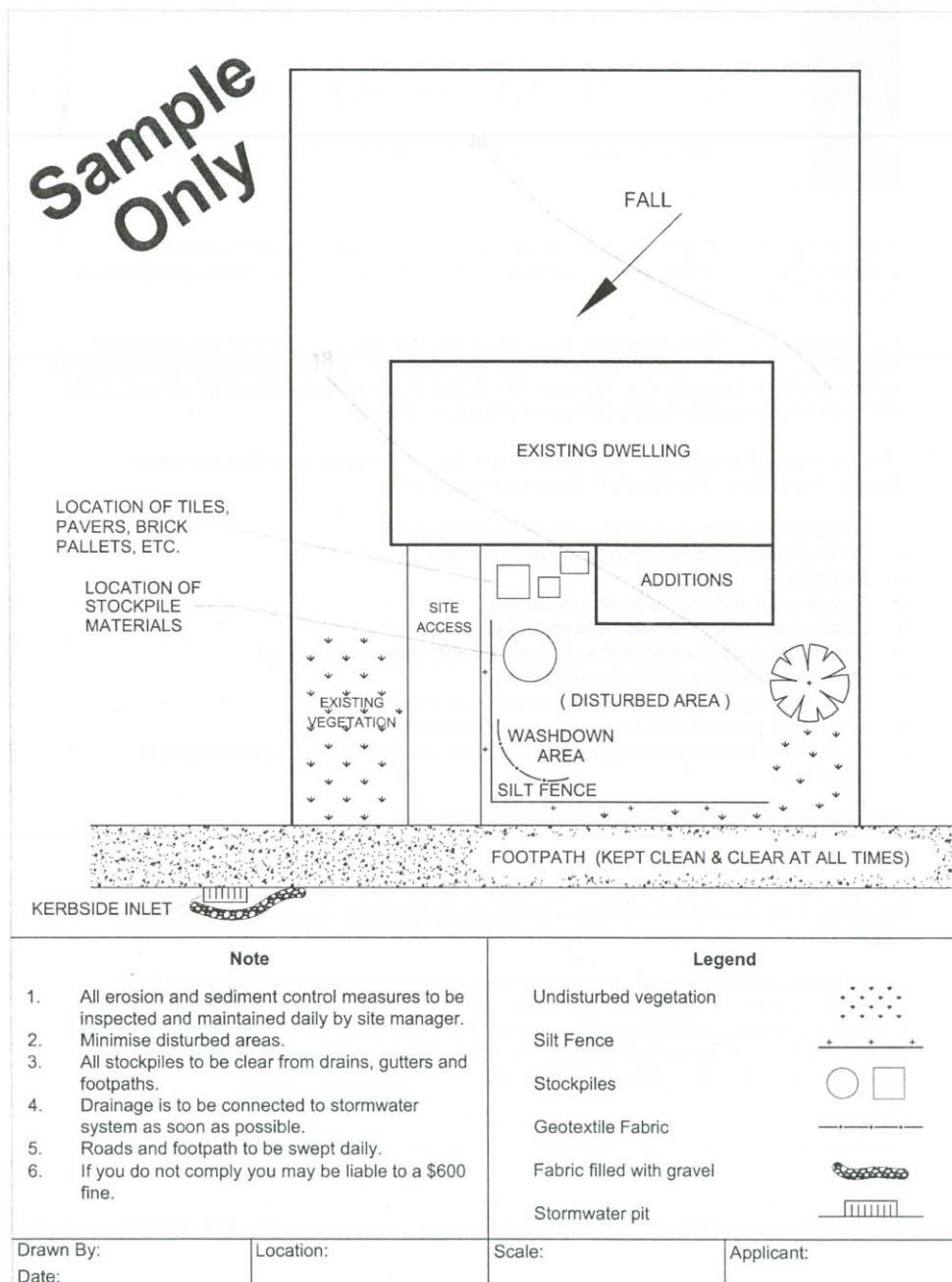


Figure 1: Example basic control plan for small areas of disturbance

Erosion and Sediment Control Plan (ESCP)

For disturbed areas between 800m² and 2,500m², an ESCP must be prepared for submission and approval during the DA stage of the development. The Plan must be updated continually throughout the design development process and once a Contractor has been appointed they shall ensure that the plan is updated.

The plan must then be executed in accordance with the requirements of the Blue Book.

All ESCPs should show:

- Site layout;

- Approximate location of best management practices (i.e. programs, systems or structures used to mitigate or prevent pollution of receiving waters) where appropriate;
- Where drawings are to scale, show scale at 1:500 or larger;
- Narrative describing how erosion control and soil and water management will be achieved on site, including ongoing maintenance of structures;
- Location of site boundaries and adjoining roads;
- Approximate grades and indications of direction(s) of fall;
- Approximate location of trees and other vegetation, showing items for removal or retention;
- Location of site access, proposed roads and other impervious areas (e.g. parking areas and site facilities);
- Existing and proposed drainage patterns with stormwater discharge points; and
- North point and scale (if to scale).

On the drawing or in a separate commentary, show how the various soil conservation measures will be carried out on site, including:

- Timing of works;
- Locations of lands where a protective ground cover will, as far as is practicable, be maintained;
- Access protection measures;
- Nature and extent of earthworks, including the amount of any cut and fill;
- Where applicable, the diversion of runoff from upslope lands around the disturbed areas;
- Location of all soil and other material stockpiles including topsoil storage, protection and reuse methodology;
- Location and type of proposed erosion and sediment control measures;
- Site rehabilitation proposals, including schedules;
- Frequency and nature of any maintenance program;
- Other site-specific soil or water conservation structures.

Soil and Water Management Plans (SWMP)

For disturbed areas >2,500m², a SWMP must be prepared for submission at DA stage and then executed in accordance with the requirements of The Blue Book.

In addition to the data requirements for an ESCP (as listed above), further data requirements for the SWMP include:

- Location of lots, public open space, stormwater drainage systems, an assessment of potential public safety risk;
- Existing site contours (recommended contour interval is 0.5m on gradients of <15%, 1 metre on gradients of 15 to 30% and 2 metres for slopes >30%);

- All necessary erosion and sediment control best management practices (BMPs) (location and general diagrammatic representations);
- Location and engineering details with supporting design calculations for all necessary sediment basins. This must include soil testing to determine the type of basin required and whether flocculation will be required;
- Location and basic details of any other facilities proposed to be included as part of the development or works such as:
 - constructed wetlands
 - gross pollutant traps
 - trash racks or trash collection/separator units
 - "water sensitive" stormwater treatment measures such as bioretention systems,
 - vegetated swales and infiltration measures
- Inspection and Test Plans (ITPs) should be presented as an element of the SWMP identifying:
 - the activity to be undertaken
 - the standard or specification compliance that is being sought
 - the relevant acceptance criteria the method of inspection and/or test and the frequency at which it is to be performed
 - who is responsible for carrying out the inspection and/or test
 - what documentation is to be produced as a record of the inspection and/or test
- Any "witness" or "hold points" required during the works should be identified.

The procedures for preparing the SWMPs are quite involved and guidelines are set out in the manual prepared by the NSW Department of Housing 'Managing Urban Stormwater, Soils and Construction' and must be prepared by a suitably experienced person.

Additional Notes

Note that all materials being delivered to the site and all waste to be collected occur within the confines of the site. If for some reason, you require to store materials or waste on the footpath, then you will require a lease from Council prior to using the footpath.

Typically, water pumped from an excavation will contain sediment and therefore cannot be directly pumped to the drainage system.

Sediment laden runoff from excavations must be first pumped to an adequately sized sediment basin and treated before discharge.

Waste water cannot be discharged to the stormwater system unless it is visually free from grease, oil, solids and unnatural discolouration and free from settleable matter under the Protection of the Environment Operations Act 1997.

A copy of the plan must be kept on the site at all times and be available to Council Officers on request.

5 Quality Management During Operation

This section documents minimum requirements where there is a water quality Management During Operation Performance Target.

There are three ways to comply with this Performance Target.

- 1) To construct an infiltration trench in accordance with the requirements of Section 3.1 of the Technical Guidelines.
- 2) To construct a raingarden in accordance with the requirements of Section 3.2 of the Technical Guidelines and guided further below:

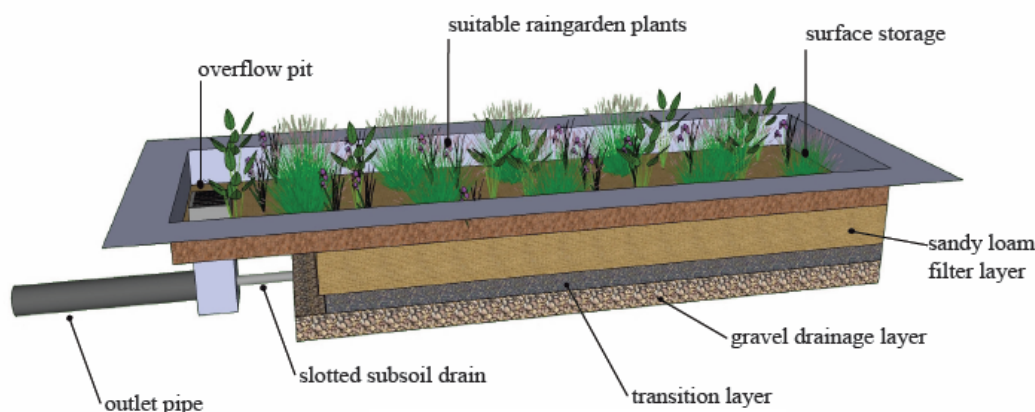
In addition to the requirements of Section 3.2, it is critical that:

- The filter media has hydraulic conductivity of 150-250mm/hr, has <3% silts/clays and can support the growth of the selected vegetation.
- Install a subsoil drainage manifold spaced and sized to ensure that there is capacity to drain a saturated hydraulic conductivity of 250mm/hour.

The subsoils pipe shall be laid in the base of the raingarden and within a suitably designed gravel drainage layer and transisiton. Refer to the Facility for Advanced Water Biofiltration Adoption Guidelines (FAWB 2009) for further information. These are found on the internet at: <http://www.monash.edu.au/fawb/products/>

The section below shows a raingarden designed in accordance with the FAWB Adoption Guidelines. The guidelines require a layered approach ensuring that good drainage out of the raingarden is achieved without the use of a geotextile.

Note that the subsoil drainage pipe shall NOT be placed in a filter-sock to prevent clogging.



Raingarden for water quality showing various layers

Typically the use of a DN100 ridged slotted subsoil drain will limit pipe outflows to about 8 m³/hour/pipe. To translate this into a rate expressed as depth (mm) per hour divide 8 m³ by the proposed area of raingarden. For example if a 10 m² rain garden is proposed then the hydraulic conductivity using a DN100 ridged draincoil pipe is = 8 m³ / 10 m² = 0.8 m/hour = 800mm/hour which will be more than sufficient as only 250mm/hour is needed. Note that the loamy sand will then limit the rate of flow down and through the device to about 150mm to 250mm/hour.

By further calculation, one pipe will be sufficient to drain an area of 53 m². Additional pipes or the use of smooth bore pipes with lower manning values will be needed to drain larger areas.

Note that the sand media filter will then limit the rate of flow down and through the device to a minimum of 150mm/hour. By further calculation, one pipe will be sufficient to drain an area up to 53 m². Additional pipes or the use of smooth bore pipes with lower manning values will be needed to drain larger areas.

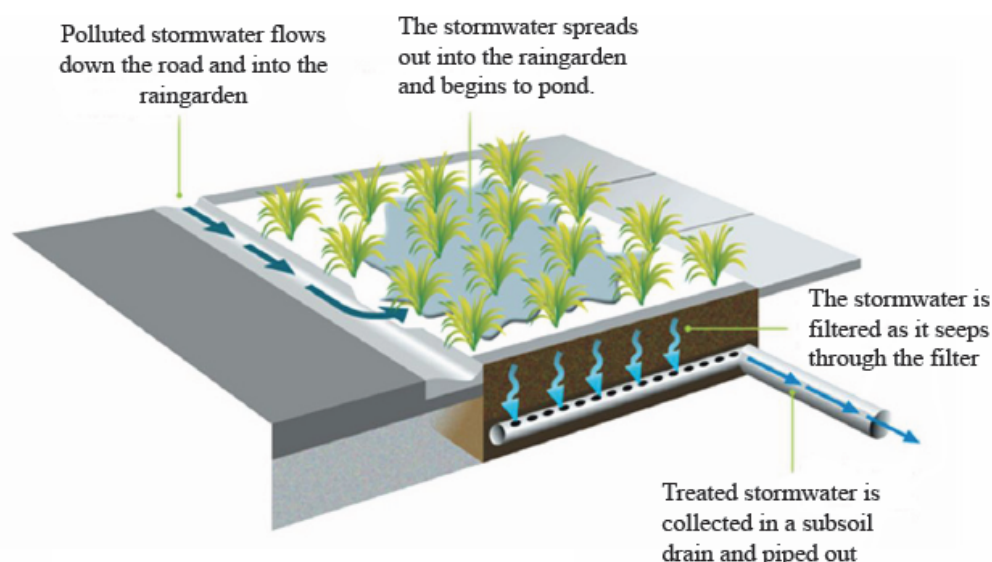


Illustration showing how a raingarden works

To determine the slotting length required in the subsoil drain pipe we can calculate out the area of the openings in the slotted pipe and treat each as an orifice. Use the orifice formula to work out how much flow will enter the pipe per 300mm by 5mm slot:

Using the orifice formula: $Q = C \times A \times (2 \times \text{gravity} \times \text{head difference})^{0.5}$

C is typically 0.67 for a sharp orifice typical of a pipe slot. However being in a gravel media a blocking factor should be applied as well as a factor of safety. It is recommended to adopt 0.15

$C = 0.15$

A = area of openings

Head difference is the difference in elevation between the water level and opening. The filter media is limiting the rate of down-flow and therefore the hydraulic head is the depth of transition layer – say 100mm above the highest slots.

If you have a deep drainage layer you may have a greater head than used in this example but it is considered that a conservative approach is warranted and the extra head in the drainage layer should be ignored.

$Q \text{ (per slot)} = 0.15 \times (0.3 \times 0.005) \times (2 \times 9.80 \times 0.1)^{0.5} = 3.15 \times 10^{-4} \text{ m}^3/\text{s}$ or 0.315 l/s is the flow rate expected to enter each slot. In other words, each metre of slot will drain 1.05 l/s. Recall that the flow along the pipe may be larger or smaller.

To achieve pipe full flow rate (8m³/hr) we need approximately
 $8 \times 1000 / (1.05 \times 60 \times 60) = 2.1\text{m}$ of slots.

- 3) To develop a unique solution guided by Australian Runoff Quality or other suitable guidelines and which uses an acceptable continuous simulation water quality model such as MUSIC to demonstrate how compliance with the performance target will be achieved.

In such a case the proponent shall reimburse Council for engagement of a suitably qualified Peer Reviewer who will review the proposal and verify the modelling results. Note that Council will not accept or adopt a stormwater treatment train which only uses an end of pipe approach. The stormwater treatment train must use source controls located on private property together with other best practice methods so that there is an equitable sharing of life cycle costs.

Deemed to comply solutions – minimum requirements

The two deemed to comply solutions must be sized in accordance with the minimum acceptable sizes stipulated in Table 6 of S₂S.

These requirements are repeated below for convenience:

Area of bioretention and volume of infiltration as a proportion of the upstream impervious area.

Average annual rainfall (mm/yr)	<800	>800
Area of bioretention for roads/carparks expressed as % of the upstream <u>impervious</u> catchment area (based on 100mm depth of surface ponding, 500mm filter media depth and 120mm/hour saturated hydraulic conductivity).	1.0%	1.2%
Minimum volume of storage required inside buried infiltration trench per 100m ² of upstream <u>impervious</u> catchment.	0.5m ³ /100m ²	0.75m ³ /100m ²

Worked example for both an infiltration trench and raingarden:

A new commercial development will happen on a 1,000 m² site. A new supermarket will have a roof area of 500 m² and a paved area of 450 m².

The builder decides to investigate both a trench and a raingarden.

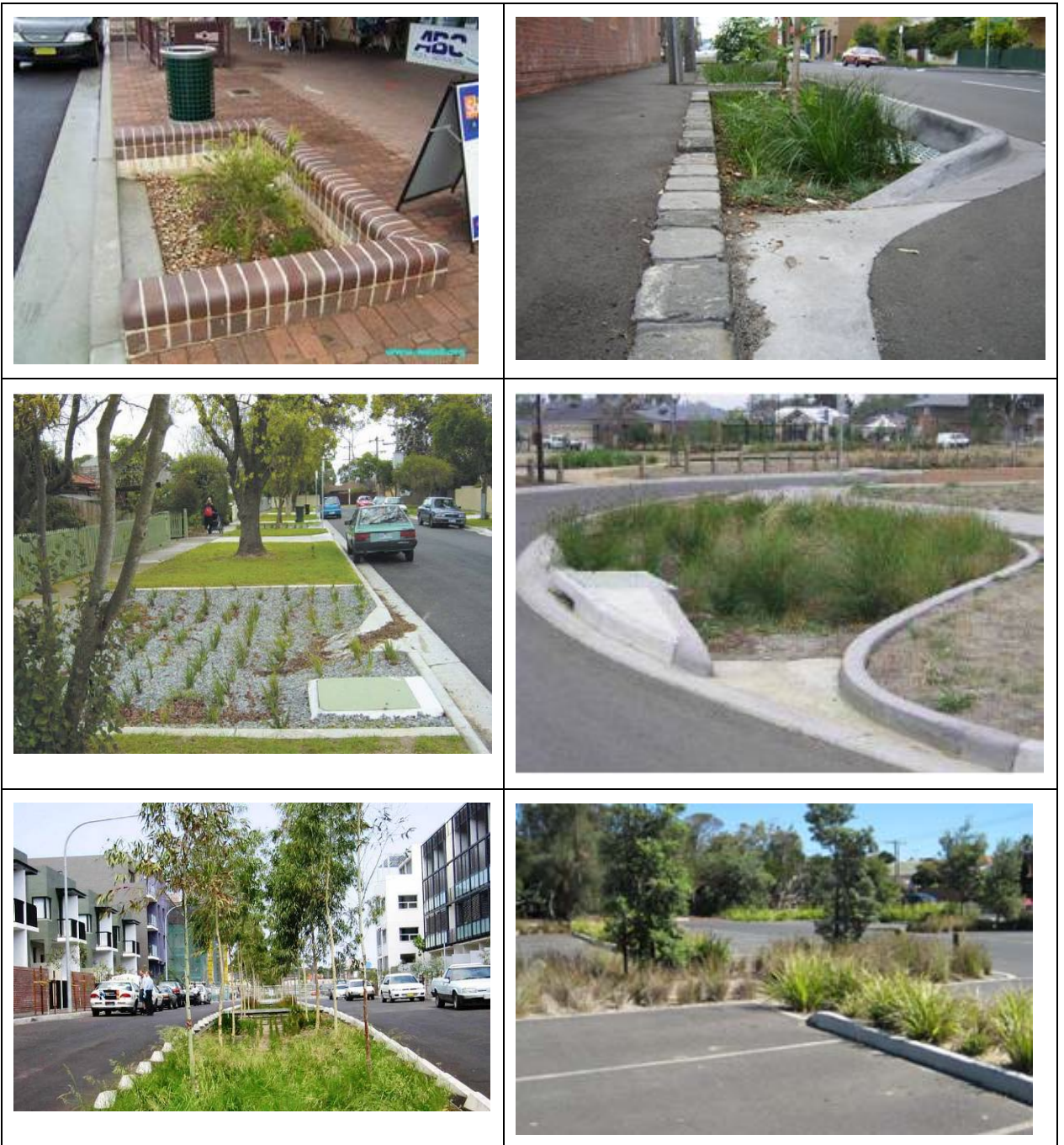
Infiltration trench sizing:

The total upstream impervious catchment area is 950 m². The volume of storage required inside the trench is therefore: $0.5 \times 950/100 = 4.75 \text{ m}^3$. Noting that if gravel is used and that it has a porosity of 0.333 then the volume of trench required will be 14.25m³. This can be spread over two or more areas.

If a raingarden was to be used it would need to be 1% of the upstream catchment area for areas with a rainfall less than 800mm/year such as Dubbo. This would require a raingarden with a minimum area of 9.5 m².

Clearly it is going to be much cheaper to construct the raingarden however there may be instances where trenches are required.

Photos of typical roadside or car park raingardens are shown below:



Requirements for DA

- Prepare a drawings showing the site, the proposed grading, north point, total site area and total impervious area
- On the drawing show the calculation for the minimum size of raingarden or infiltration trench
- Show the proposed raingarden or infiltration trench on the drawing
- Show location of all incoming pipes and overflow pits and pipes. For raingardens show the subsoil drainage pipe and point of disposal of the cleansed water
- Verify that the proposed system will enable gravity drainage to occur, i.e. verify that the pipe inverts and outlet levels will enable the device to function as intended
- Show what specifiers of plants will be used in any raingarden
- Show the use of any rock mulches – noting vegetative mulches are not to be used on raingardens because they will wash away.

6 Water Conservation

This Section applies to all non residential development where there is a water conservation objective.

S₂S noted the Performance Targets are:

New development applicants (other than residential and commercial and industrial refurbishments and refits) shall reduce consumption of potable water by 40% benchmarked against a development which uses only potable water and which has no water conserving fixtures or fittings.

Commercial and Industrial refurbishments and refit applicants shall reduce consumption of potable water by 30% benchmarked against a development which only uses potable water and which does not use water conserving fixtures and fittings.

Minimum Requirements

A water conservation report shall be prepared for submission with the DA. The report shall:

- Document historical water consumption – use of past bills is acceptable for retrofits. New development shall estimate its water consumption based on the number of fixture units in accordance with the methods shown in AS3500.
- Document the number of water fixtures (currently in use - if any) and proposed for use.
- Document the methods and techniques used to reduce water consumption to comply with the Performance Targets
- Identify appropriate risk management procedures to ensure that any water used shall remain fit for purpose. If only demand management measures are proposed then a risk management strategy is not required.

Useful sources of information include:

- Your local water utility – ask Council if in doubt.
- <http://www.savewater.com.au/>
- <http://www.waterwisensw.com.au/>

7 Salinity Prevention

In areas where there is high ground salinity:

- **Infiltration shall not be used**
- Only the use of lined bioretention devices or raingardens are acceptable.
- The devices shall be lined to prevent infiltration into the surrounding soil. The use of HDPE, bentonite impregnated geotextiles are acceptable. If other types of liners are to be used then the proponent shall prove the liner is capable of preventing infiltration.
- The devices shall otherwise be designed according to Section 5 of this Supporting Technical Guideline.

8 References

Australian and New Zealand Environment and Conservation Council (ANZECC) and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) (1992). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*.

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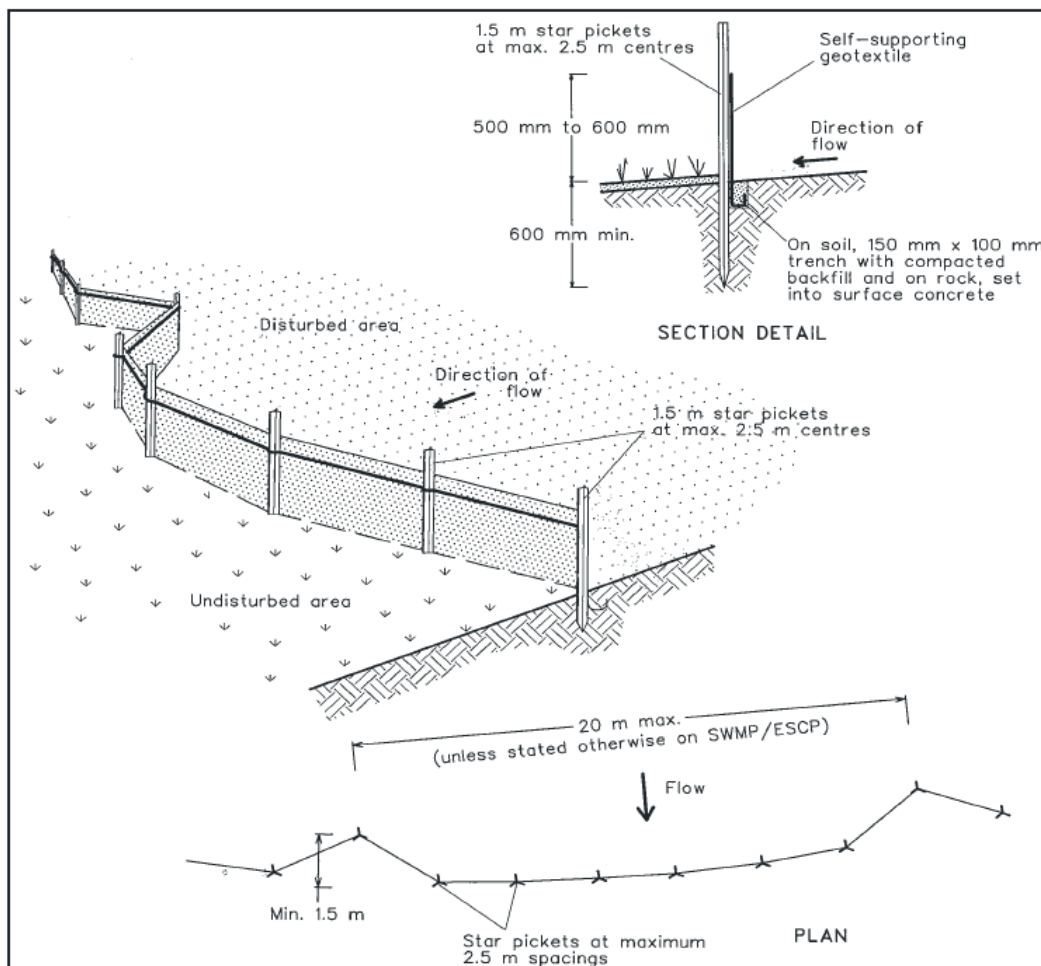
Standards Australia (1992). Australian Standard: *Fixed platforms, walkways, stairways and ladders – Design, construction and installation AS 1657-1992*

Standards Australia (1989). Australian Standard: *Loads on Buried Concrete Pipes AS 3725:1989*

Standards Australia (2004) Australian Standard: *The storage and handling of flammable and combustible liquids AS 1940:2004*

9 Appendices

Appendix A – SWMP standard drawings (filter sock, sediment fence, straw bale filter)

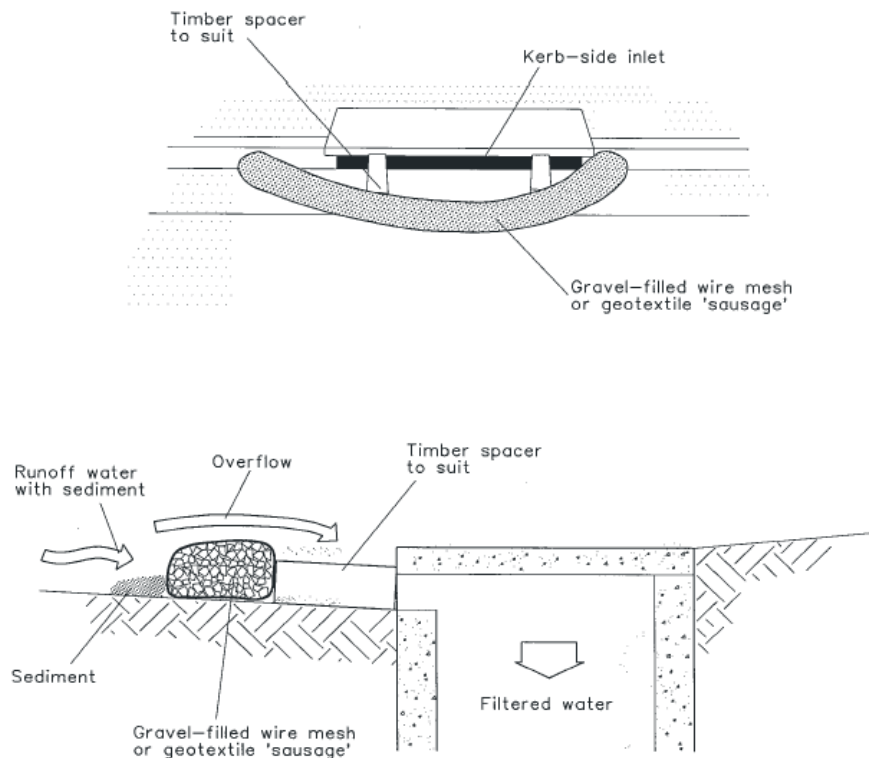


Construction Notes

1. Construct sediment fences as close as possible to being parallel to the contours of the site, but with small returns as shown in the drawing to limit the catchment area of any one section. The catchment area should be small enough to limit water flow if concentrated at one point to 50 litres per second in the design storm event, usually the 10-year event.
2. Cut a 150-mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched.
3. Drive 1.5 metre long star pickets into ground at 2.5 metre intervals (max) at the downslope edge of the trench. Ensure any star pickets are fitted with safety caps.
4. Fix self-supporting geotextile to the upslope side of the posts ensuring it goes to the base of the trench. Fix the geotextile with wire ties or as recommended by the manufacturer. Only use geotextile specifically produced for sediment fencing. The use of shade cloth for this purpose is not satisfactory.
5. Join sections of fabric at a support post with a 150-mm overlap.
6. Backfill the trench over the base of the fabric and compact it thoroughly over the geotextile.

SEDIMENT FENCE

SD 6-8



NOTE: This practice only to be used where specified in an approved SWMP/ESCP.

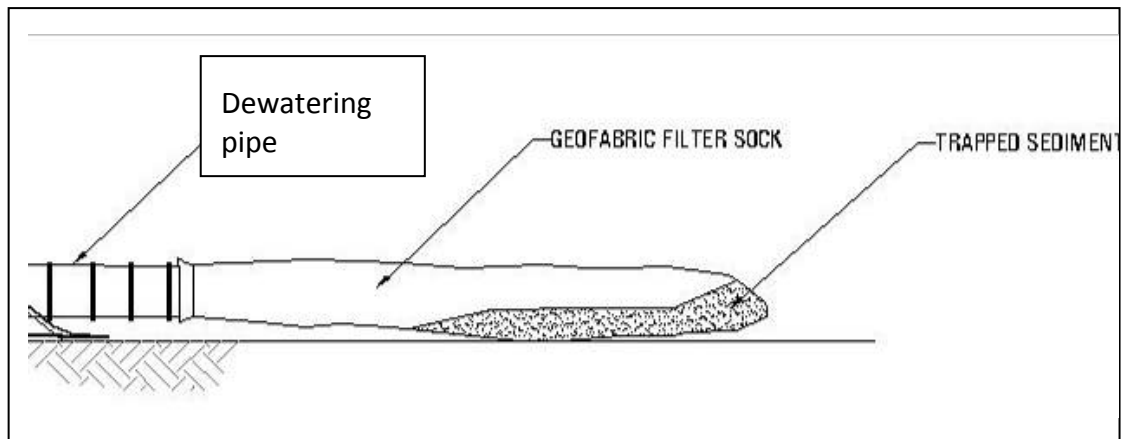
Construction Notes

1. Install filters to kerb inlets only at sag points.
2. Fabricate a sleeve made from geotextile or wire mesh longer than the length of the inlet pit and fill it with 25 mm to 50 mm gravel.
3. Form an elliptical cross-section about 150 mm high x 400 mm wide.
4. Place the filter at the opening leaving at least a 100-mm space between it and the kerb inlet. Maintain the opening with spacer blocks.
5. Form a seal with the kerb to prevent sediment bypassing the filter.
6. Sandbags filled with gravel can substitute for the mesh or geotextile providing they are placed so that they firmly abut each other and sediment-laden waters cannot pass between.

MESH AND GRAVEL INLET FILTER

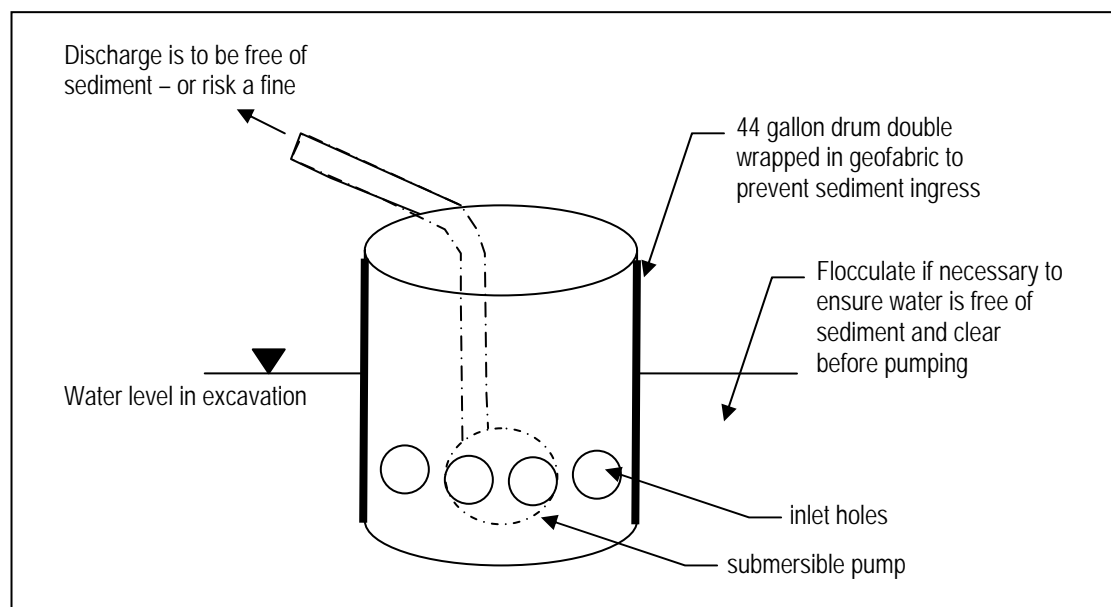
SD 6-11

(Source: Landcom, 2004)

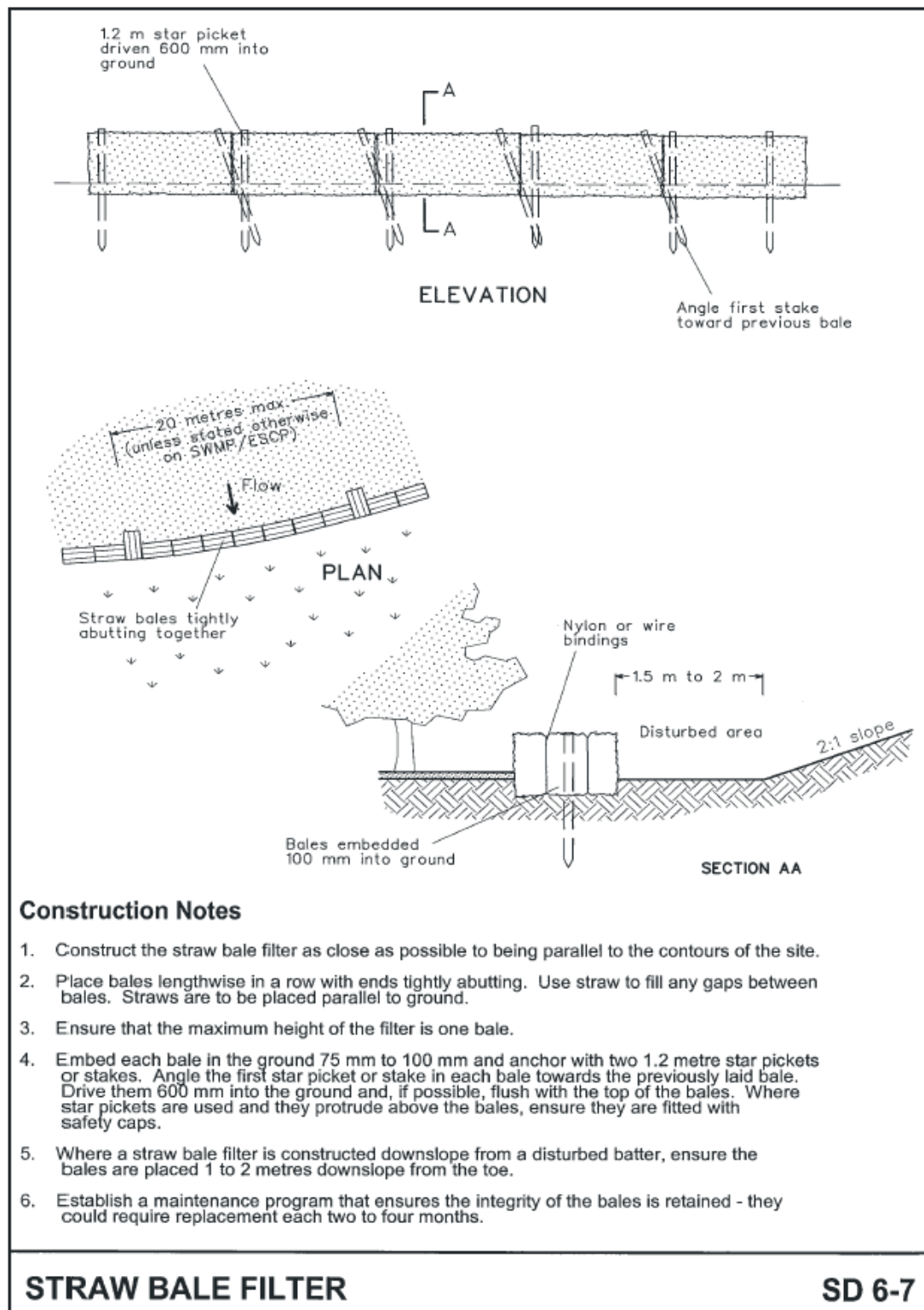


Dewatering Filer Sock - Detail

The above detail is to be applied when dewatering an excavation. A fine geofabric filter sock is to be placed over the dewatering pipe to trap fine silts.



The above detail is to be applied when pumping out an excavation.





Draft Caerleon Development Control Plan

Prepared by:
Elton Consulting

October 2012



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1. Introduction

1.1 Land to which this DCP Applies

This DCP contains the vision, principles and site specific development controls for the land known as the Caerleon site ('the land'), shown in **Figure 1**.

Appendix A contains a description of each land parcel affected by this DCP (i.e. Lot and Deposited Plan number).

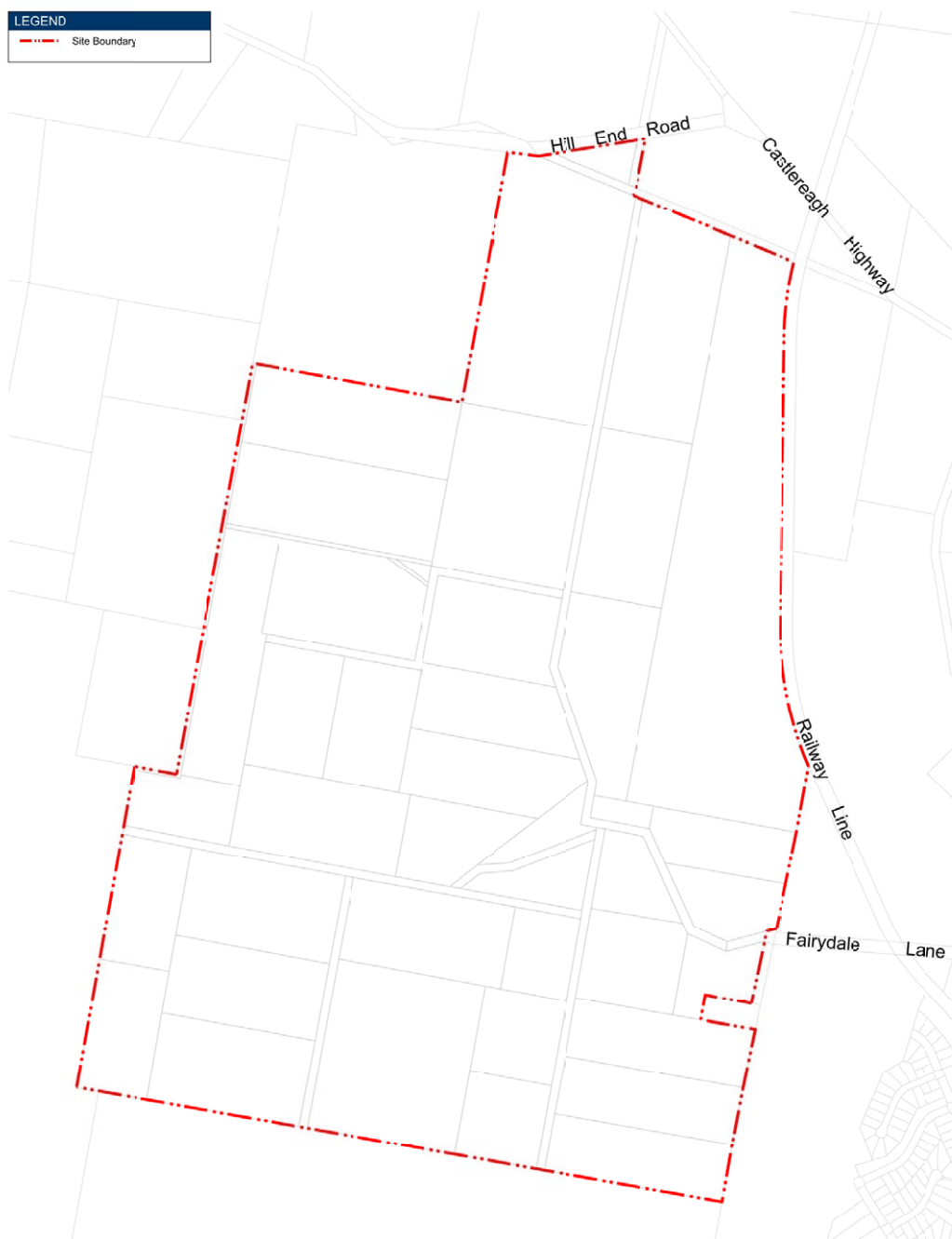


Figure 1. Land to which this DCP Applies

1.2 Purpose of this DCP

The purpose of this DCP is to:

- » Communicate the site-specific planning, design and environmental controls against which Council will assess future Development Applications for the land;
- » Establish controls for the land that vary from general controls in the *Mid-Western Regional Council Development Control Plan – Residential Development (amended 2009)* and other Council Policies and Plans;
- » Provide a development framework that ensures a connected, well-designed and sustainable extension to the Mudgee urban area;
- » Ensure the orderly, efficient and environmentally sensitive development of the land;
- » Promote high quality urban design outcomes that are integrated with the landscape features and topography of the land;
- » Ensure satisfactory measures are incorporated to ameliorate any impacts arising from the proposed development of the land.

1.3 Relationship to other Plans

This DCP contains development controls relating to the Caerleon land, which are 'deemed to satisfy' controls. Where there is any inconsistency between this DCP and any other DCP or Policy of Council, this DCP shall prevail.

This DCP should be read in conjunction with the following Plans and Policies:

- » DCP - Advertising Signs
- » DCP - Brothels and Sex Premises
- » DCP - Car Parking
- » DCP - Complying Development Conditions
- » DCP - Design for Accessibility
- » DCP - Footpath Restaurants Management of Obstruction on Footpaths
- » DCP - Managing Flood Risks
- » DCP - Notifications
- » DCP - Residential
- » DCP - Temporary Workers Accommodation
- » Bushfire Prevention Policy
- » Street Tree Policy.

1.4 Structure of this DCP

This DCP is structured as follows:

Section 1 Introduction

sets out the administrative provisions of the DCP.

Section 2 Vision

relates to the overall layout and vision for the future development of the land as well as the controls for character areas.

Section 3 Access and Movement

relates to the street network and sets out a street hierarchy, including road design standards, and the pedestrian and cycleway network.

Section 4 Open Space and Public Domain

relates to the open space system which includes all aspect of the public realm including parks, street planting and the like.

Section 5 Residential Development

relates to subdivision, built form and other controls associated with residential development.

Section 6 Neighbourhood Centre

relates to specific design, land use and public domain controls for the B4 Mixed Use Zone.

Section 7 Environmental Management

relates to general environmental issues that apply across the land including stormwater management, Aboriginal heritage, bushfire hazard management, biodiversity protection, and odour.

Section 8 Utilities

relates to the provision of primary utilities to the land.

Section 9 Torrens, Strata and Community Title Subdivision

relates to the subdivision of land.

Appendix Appendix A – Description of Lot and DPs to which this DCP Applies

2. Vision

2.1 Vision and Principles

The Vision for Caerleon is to create a well-connected residential community of approximately 1,000 – 1,400 homes on the edge of Mudgee CBD that provides for urban living and simultaneously responds to the natural environment. Caerleon will provide a full range of high quality housing and lifestyle options for its residents – an active ‘urban’ precinct, traditional suburban setting or a natural rural-residential context.

The principles that underpin the planning and future development of Caerleon are:

- » Sensitive areas developed with a ‘rural’ character to protect the ridgelines and hilltops which characterise the land and are a valued landscape feature of Mudgee.
- » A range of residential Character Areas linked through a safe and connected street network with dedicated pedestrian and cycle paths and tree-lined streets, to promote a healthy and active lifestyle.
- » A street network designed to encourage walking, cycling and safe vehicle movements, and provide connections to the Mudgee CBD without relying on the Castlereagh Highway for access;
- » Public open space designed for social activity, entertainment, recreation and conservation, and distributed so that all residents are close to a park or green space.
- » A balanced mix and distribution of land uses with predominantly residential housing, but also providing for natural and formal recreation, small-scale retail and commercial activity, and community uses.
- » A variety of housing types and sizes to support the changing demographic needs of the community, including smaller housing – such as townhouses and cottages – in key locations around the neighbourhood centre, transitioning to larger, rural-style housing on steeper land.
- » A neighbourhood centre at heart of the general residential area providing opportunities for small-scale retail, such as a café and neighbourhood shops, as well as a child care centre, to allow residents to meet their daily needs. The neighbourhood centre recognises the existing commercial hierarchy within Mudgee, and is located within 400m of the majority of homes within the ‘urban’ area in the northern portion of the site so that residents are encouraged to walk and increase their physical activity.
- » Retention of important environmental and cultural features of the site such as valuable biodiversity, drainage corridors and Aboriginal heritage items.

2.2 Indicative Concept Plan

The Indicative Concept Plan shown in **Figure 2** illustrates the broad level development outcomes for the Caerleon land.

The Indicative Concept Plan shows the development footprint and land uses, and the location of a local neighbourhood centre, open space, major easements, key transport linkages, and drainage corridors and buffers.

- » All development is to be undertaken generally in accordance with the Indicative Concept Plan at **Figure 2** and must comply with the development controls set out in this DCP.
- » The neighbourhood layout in the Indicative Concept Plan is preliminary and subject to detailed design at Subdivision and Development Application stage. Where variation from the Indicative Concept Plan is proposed, development must remain consistent with the Vision and Principles for the land set out in Section 2.1 of this DCP and other relevant controls in this DCP.

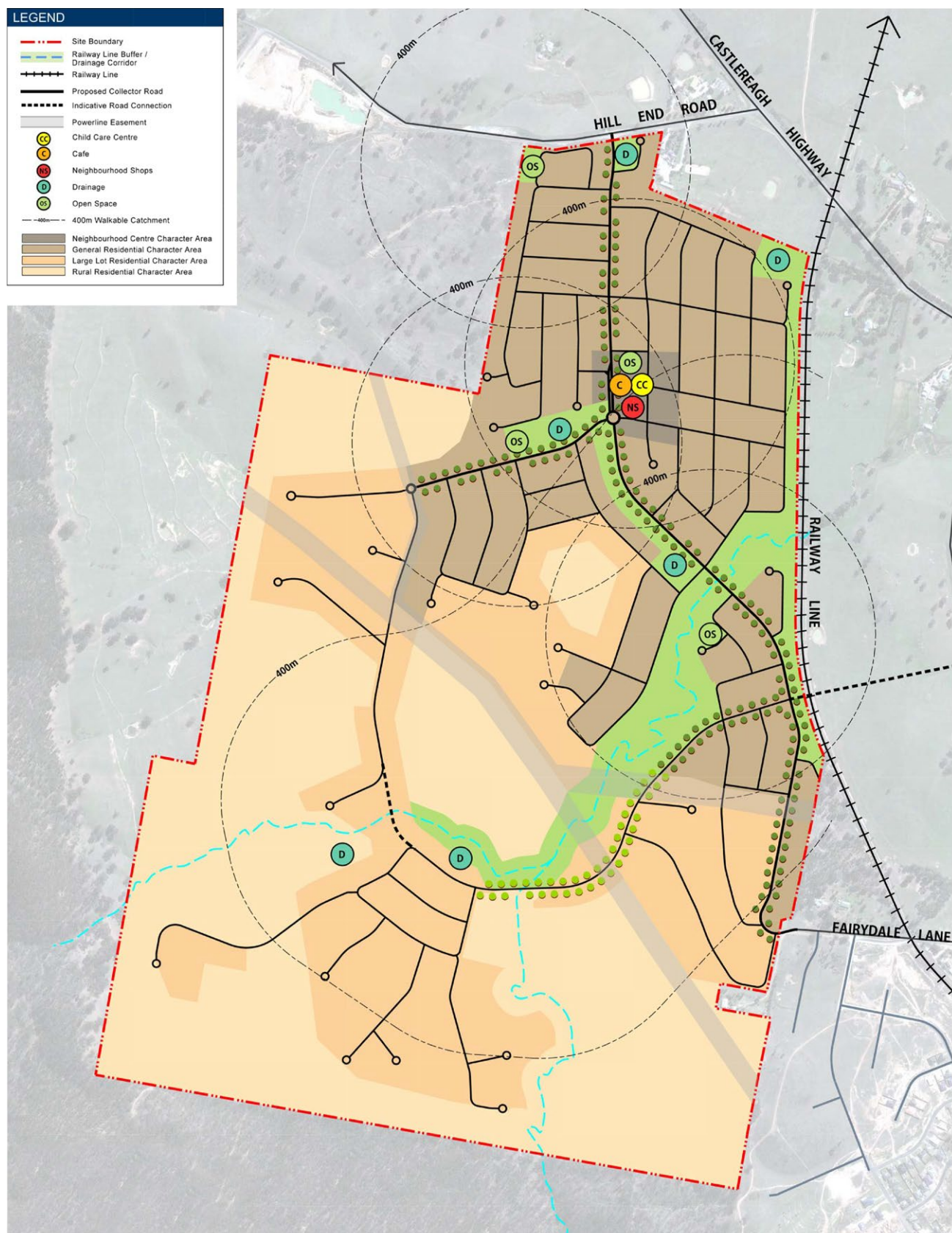


Figure 2. Indicative Concept Plan

2.3 Character Areas

Character Areas reflect the desired built form and landscape character of Caerleon based on the physical and visual qualities of the natural landscape. Character Areas aim to give a distinct identity and 'sense of place' for different areas within Caerleon through specific lot size, built form, landscape and public domain controls.

There are four Character Areas within Caerleon, shown in **Figure 2**. They are:

- » Neighbourhood Centre
- » General Residential
- » Large Lot Residential
- » Rural Residential.

2.3.1 NEIGHBOURHOOD CENTRE CHARACTER AREA

The Neighbourhood Centre is located on the main collector road in the northern portion of Caerleon. Positioned in a central location, the Neighbourhood Centre shall be 'urban' in character, and provide a community hub with a small-scale retail focus for the future community. The Neighbourhood Centre is well located in the northern part of the site to allow houses to be within 400m and even 800m, to gain easy walking or cycling access.

The Neighbourhood Centre will service the local community and shall contain a mix of local retail, commercial, residential, community and recreational uses. It is envisaged that the types of uses within the Neighbourhood Centre will include small-scale retail – such as a café, neighbourhood shop or small grocery store, a child care centre and home-offices.

Positioned on either side of the main collector road, the Neighbourhood Centre shall contain active retail or commercial uses along the road frontage. Residential uses are encouraged above the commercial and retail uses, with a maximum height of 2 storeys. A limited range of medium-density housing is also encouraged within this area. Medium-density housing in the Neighbourhood Centre, such as villas, townhouses, shop top housing or smaller detached housing, will contribute to creating a 'sense of place' that has a more 'urban' and 'active' character.

Reduced lot size and setback requirements accommodate this type of housing in the Neighbourhood Centre.

A small park shall be provided within or directly adjacent to the Neighbourhood Centre. Located close to the retail and community uses (i.e. child care centre), the park shall provide play and passive recreation opportunities, and could form a 'local town square' for the community to congregate.

2.3.2 GENERAL RESIDENTIAL CHARACTER AREA

The General Residential Character Area surrounds the Neighbourhood Centre Character Area and provides a more 'urban' residential environment on the central and northern part of the site.

A range of residential densities within the General Residential Character Area provide housing options for a wide variety of demographic and socio-economic groups, whilst complementing the traditional housing character in Mudgee.

Small lot housing (from 450m² to 600m²) shall be located within close proximity to open space, around the Neighbourhood Centre and along main roads. It is envisaged that small lot housing will be 'salt and peppered' in areas that are in close proximity to open space, around the Neighbourhood Centre and along main roads, in order to create diversity and interest in the streetscape.

The balance of General Residential Character Area will contain 'traditional' detached dwellings on lots of 600m² – 800m² or more.

Caerleon will be set apart by its high-quality streetscapes and housing design. Streets in the General Residential Character Area shall be tree-lined, house frontages articulated and fences made of durable and high-quality materials.

2.3.3 LARGE LOT RESIDENTIAL CHARACTER AREA

The Large Lot Residential Character Area is characterised by larger-style residential development that responds to the undulating nature of the land. This area provides a transition between general residential development on flatter, northern parts of the site and rural-style housing in the R5 Large Lot Residential Zone on steeper land, and the natural hilltops above.

This natural progression to larger lots provides an appropriate transition to the Rural Residential Character Area.

Densities in this Character Area vary depending on the topography and physical characteristics of the land. More traditional residential lots, generally to a minimum of 600m², are located on flatter areas that are more easily serviced by a collector road. These areas occur generally to the north of the power easement.

Slightly steeper land in this Character Area that is closer to, but still below, the 520m contour line shall have larger lots of 1,200m² or more. Positioned between two prominent hilltops, houses on these larger lots shall be placed in the natural landscape so that they do not feature prominently in the landscape, particularly when viewed from Mudgee CBD. These steeper areas where a minimum lot size of 1,200m² is provided, occur generally to the south of the power easement.

2.3.4 RURAL RESIDENTIAL CHARACTER AREA

The Rural Residential Character Area is located on land with steeper slopes. Generally, this area will be characterised by large lots within the natural landscape, as well as existing vegetation on the ridges that define the western side of Mudgee.

Residential subdivision in this Character Area is to be in the form of large lots to reflect the rural character of the hilltops. Residential development will only be permissible on large residential lots (4,000m² and above), and should consist of one or two storey detached dwellings with generous setbacks that complement the rural setting.

The majority of the Rural Residential Character Area will consist of existing vegetation on upper slopes and ridgelines. Any development above the 520m contour line shall be set in the landscape of the existing vegetation and significant trees, provide generous landscaping with appropriate endemic species, and be sited on the lowest part of a lot.

3. Access and Movement

3.1 Street Network and Design

- » The street network is to be generally in accordance with the Indicative Street Hierarchy illustrated in **Figure 3, Table 1** and **Table 2**.
- » Primary access to the site is to be via Hill End Road to the north and Fairydale Lane to the south-east.
- » A potential future road connection across the Gwabegar railway line is incorporated within the Indicative Concept Plan, in order to allow for additional connectivity east to Salesyard Lane toward the Mudgee CBD. If the future road connection is proposed, the applicant is to demonstrate that the street hierarchy will be maintained, and any Development Application shall be subject to detailed traffic investigations.
- » Road design is to be generally in accordance with the standards outlined in **Table 2**.
- » Cul-de-sac roads are permitted within Caerleon.
- » Verges abutting open space and riparian areas may be reduced to 1m in width providing no servicing infrastructure is installed on the non-residential side of the road.
- » 60° angled rear-to-kerb parking bays are to be provided within, and on both sides of, the carriageway of the Neighbourhood Centre Road.
- » The Residential Collector Road between Hill End Road and Fairydale Lane is proposed to be constructed in the early stages of development, or as outlined in a condition of Development Consent or Voluntary Planning Agreement.
- » A low scale, low impact linkage (such as a causeway) is located across the drainage line in the Indicative Street Hierarchy Plan in **Figure 3**. Such a linkage, if proposed by the Applicant, should be investigated and considered for inclusion at the Development Application stage for that section of road.

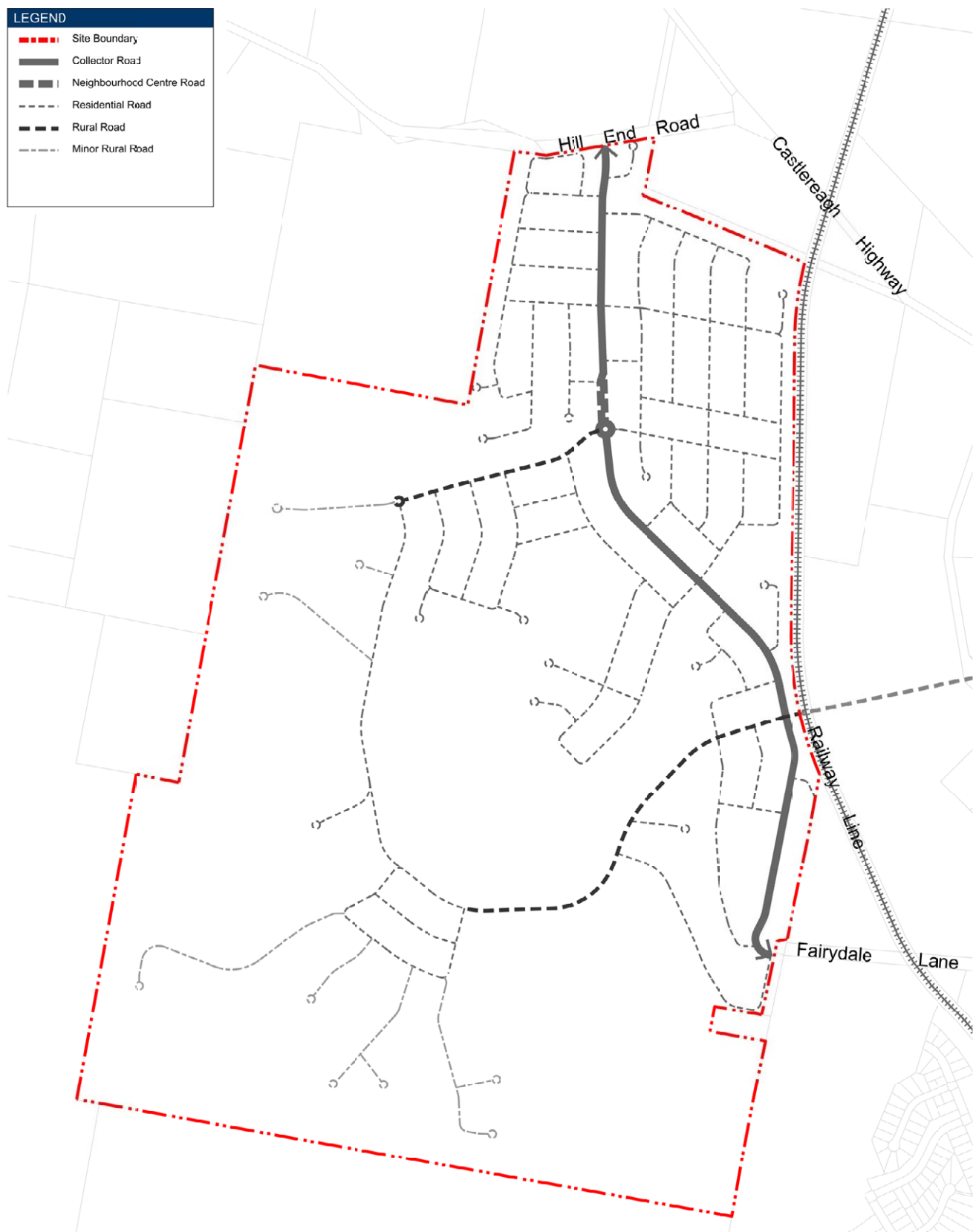


Figure 3. Indicative Street Hierarchy

Table 1. Street Types

Street Type	Description
Laneway	Laneways can be used to provide access to developments fronting collector roads in the Neighbourhood Centre Character Area and any medium density developments. Rear lanes will provide access for car parking and servicing.
Minor Access Street - Cul-de-sac	A road with local residential use where traffic volumes are very low and there is low parking demand (i.e. where only a few dwellings need to access the road). Cul-de-sac's are used sparingly throughout the estate.
Minor Access Street - Cul-de-sac (longer than 100m)	Cul-de-sacs which are greater than 100m in length are provided with a wider carriageway to accommodate the additional traffic, as more housing is located on longer streets.
Residential Local Street	This is the predominant street type used in Caerleon, primarily for access to residential properties in the General Residential Character Area. These streets are designed to slow residential traffic and give priority to pedestrians and cyclists. Amenity and safety is to be maintained by controlling the width of the road and introducing various traffic calming measures.
Residential Collector Street	Collects traffic from local streets and carries a higher volume of traffic, linking the site to the surrounding street network to the north and south-east. The Neighbourhood Centre is located along the main collector route at a four-way intersection, to enable a continuous path of travel for pedestrians and provide visual continuity of the streetscape. Footpaths are provided on at least one side of the street.
Residential Collector Street with Median	This part of the Residential Collector Street provides a wider road reserve to accommodate a median, so as to ensure safety at the intersection with Hill End Road.
Neighbourhood Centre Road	<p>The section of the Residential Collector Road traverses the Neighbourhood Centre and is specially designed to create a comfortable and safe pedestrian environment. Footpaths are provided on both sides of the Neighbourhood Centre Road.</p> <p>Parking bays are provided as angle parking at 60° rear to kerb on both sides of the street to encourage public activity and use of the retail, commercial and recreational land--uses and provide convenient access to the Neighbourhood Centre. Upright kerbs are used to clearly define the boundary between the pedestrian and vehicle zone.</p>
Rural Road	Provides an east-west connection between the main Residential Collector Road for access to large lots and rural residential dwellings.
Minor Rural Access Street - Cul-de-sac	These minor rural streets feed off the rural road and provide access to residential properties in the Larger Lot and Rural Residential Character Areas. The road will have a rural character in-keeping with the area it is serving.

Table 2. Road Cross Sections

Road Type	Road Reserve	Carriageway	Nature Strip (Verge)	Footpath	Parking	Median	Kerb Type
Laneway	8.0m	6.0m	2 x 1.0m	N/A	Not permitted	N/A	Barrier
Minor Access Street - Cul-de-sac	15.0m	7.0m	2 x 4.0m	N/A	Carriageway	N/A	Roll
Minor Access Street - Cul-de-sac (longer than 100m)	15.0m	7.0m	2 x 4.0m	N/A	Carriageway	N/A	Roll
Residential Local Street	15.5m	7.5m	2 x 4.0m	1 x 1.2m	Carriageway	N/A	Roll
Residential Collector Street	18.0m	11.0m	2 x 3.5m	2 x 1.2m or 1 x 2.0m shared cycle/path way	Carriageway	N/A	Roll
Residential Collector Street with Median	21.0m	5.5m for both directions	2 x 3.5m	2 x 1.2m or 1 x 2.0m shared cycle/path way	Carriageway	3.0m	Roll
Neighbourhood Centre Road	31.4m	10.7m both directions*	2 x 3.5m	2 x 1.2m	Parking bays**	3.0m	Barrier
Minor Rural Access Street - Cul-de-sac	16.0m	6.0m	2 x 5.0m	N/A	Carriageway	N/A	Flush or Roll***
Rural Road	18.0m	8.0m	2 x 5.0m	N/A	Carriageway	N/A	Flush or Roll***

* The Neighbourhood Centre Road carriageway incorporates 5.7m car parking bays + 5.0m travel lanes.

** Parking bays are to be provided as 60° rear to kerb. Parking bay dimensions equate to 5.7m in length parallel to the kerb and 2.75m in width.

*** Only where it can be demonstrated in conjunction with WSUD.

3.2 Pedestrian and Cycle Network

- » Pedestrian and cycle routes shall be in accordance with the Indicative Pedestrian and Cycle Network Plan in **Figure 4**.
- » On-road cycle paths are to be provided on all Collector Roads, Neighbourhood Centre Roads and Residential Roads in accordance with the road design controls in **Table 2**.
- » Off-road shared pedestrian and/or cycle paths are to be provided along the railway line corridor and drainage corridor. There is to be safe access between the off-road and on-road paths where they intersect.
- » Off-road shared pedestrian and/or cycle paths are to be no wider than 2.5m. Path/cycle ways in the drainage corridor should be located in the outer 50 per cent of the corridor. Refer to Section 7.1 of this DCP for further detail on drainage corridor width.
- » Conceptual design followed by detailed designs for pedestrian and cycle paths are to be submitted as part of a Development and Construction Certificate Application respectively. As a minimum, concept approval will be required at DA stage as part of the infrastructure works for each residential stage of development, for pedestrian and cycle paths.
- » Pedestrian pathways at the head of cul-de-sac street types are not required.
- » All footpaths are to be a minimum of 1.2m wide.

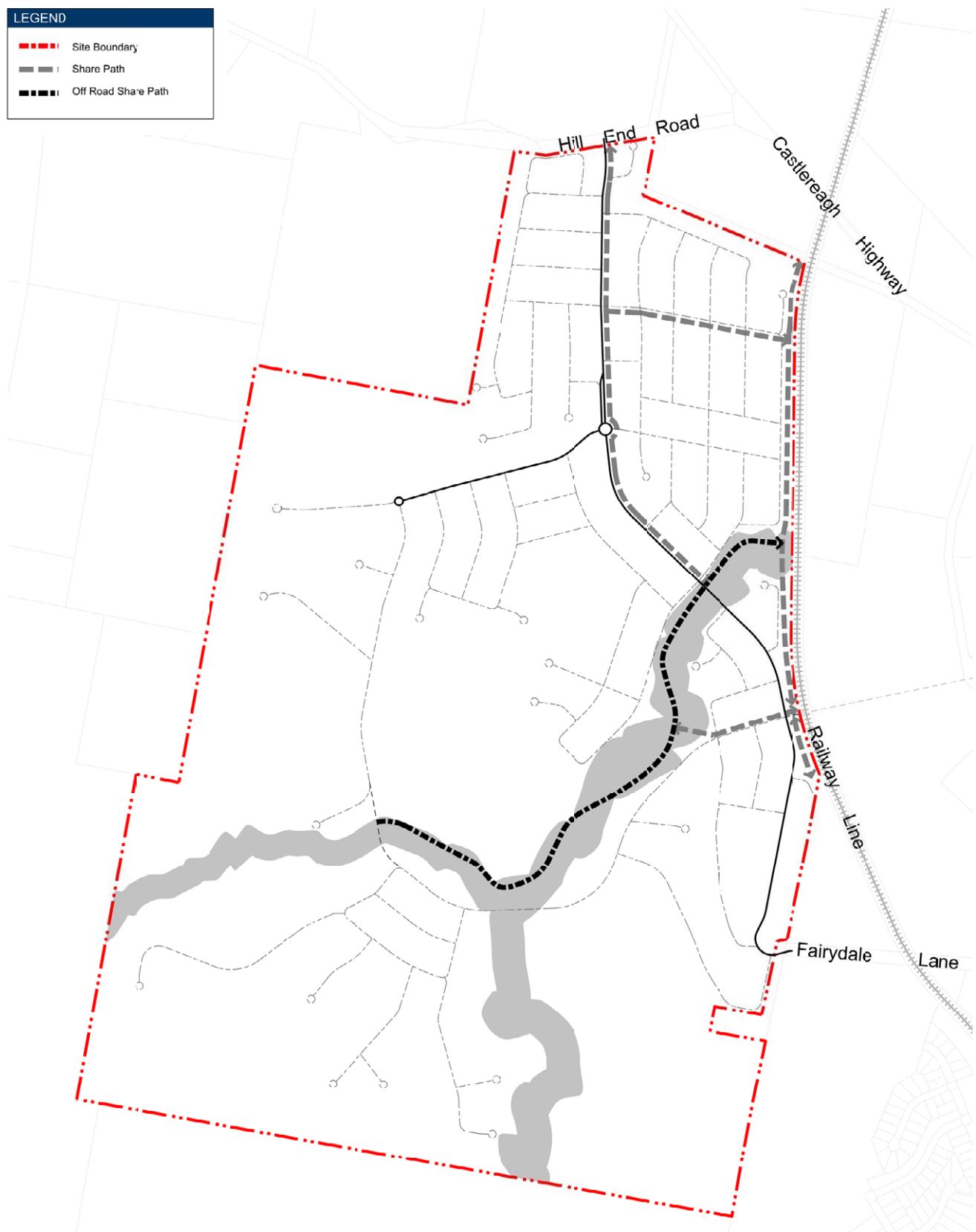


Figure 4. Indicative Pedestrian and Cycle Network

4. Open Space and Public Domain

4.1 Public Open Space

- » Public open space in the form of local parks, pocket parks and 'green buffers' is to be located generally in accordance with the Indicative Open Space Plan in **Figure 5**, so that the majority of housing in the General Residential Character Area is within 400m of public open space.
- » Open space is to be provided within, or adjacent to, the Neighbourhood Centre so that it is:
 - co-located with active uses, preferably directly adjacent to a child care, local retail or community land use; and
 - highly accessible; and
 - linked to a pedestrian and/or cycle path.
- » Dwellings are to be oriented towards public open space for increased surveillance opportunities.
- » Small lot housing is encouraged around local parks.
- » A 40m-wide open space buffer (measured from the railway line) is to be provided along the railway line and may incorporate road reserve, open space, drainage, landscaping and underground services. Housing adjacent to the buffer is to be oriented towards the street/buffer, where possible, for increased surveillance opportunities.
- » Drainage corridors, and vegetation within the drainage corridors, are to be retained. Drainage corridors should provide opportunities for appropriately located pedestrian and cycle paths, walking trails and additional open space in a manner that maintains the environmental significance and drainage function of the corridors.
- » Subdivision Applications that propose to incorporate part of a drainage corridor (as shown in **Figure 7**) within a private residential lot are to comply with the requirements of the *Water Management Act 2000* and obtain controlled activity approval.

Note. Under the *Water Management Act 2000*, a controlled activity includes the carrying out of any work (including subdivision) on water front land, which is defined as land within 40m of a river banks, lake shore or estuary mean high water mark.

4.2 Street Trees and Landscaping

- » Street trees and landscaping is to be provided to increase the amenity of the land, and encourage pedestrian use and walkability.
- » Street tree planting is to be provided to all streets with an average of one tree per lot frontage. Corner lots are to have a minimum of two street trees on the secondary frontage. The location of street trees must complement proposed driveway locations and other elements in the public domain (i.e. light poles); maintain adequate lines of sight for vehicles and pedestrians, especially around driveways and street corners; provide appropriate shade; and provide an attractive and interesting landscape character.
- » Street trees are generally to be 1.5 – 2m in height when planted.
- » A Landscape Plan is to be prepared by a qualified landscape architect, and lodged with a Development Application that creates public open space, which shall provide details on elements, including:
 - design philosophy;
 - furniture and play equipment;
 - plant species and sizes (with consideration for bush fire risks and asset protection zones);
 - hard and soft landscaping treatments;
 - signage;
 - any entry statements;
 - waste facilities;
 - linkages to adjacent areas, streets and dwellings;
 - any other embellishment.

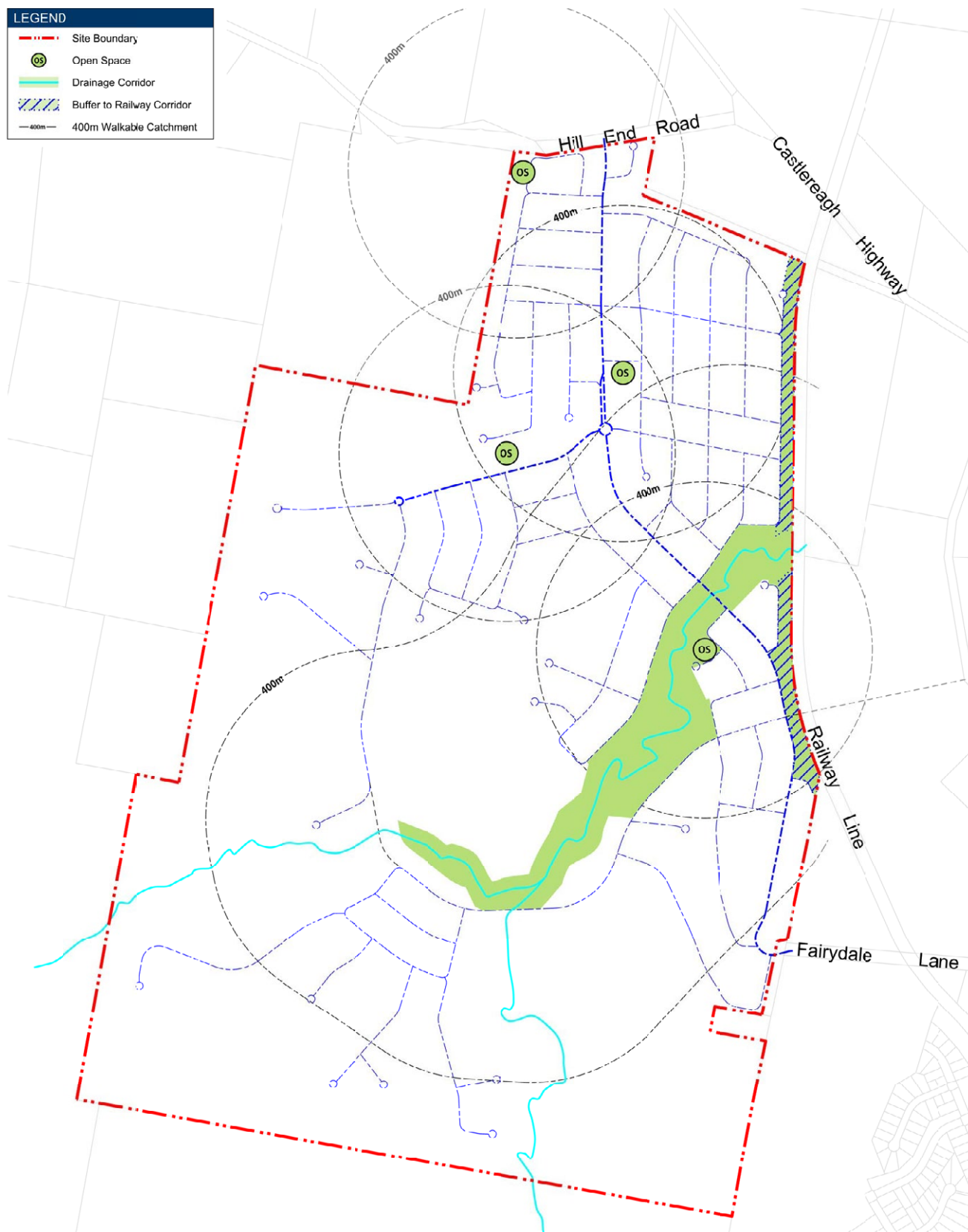


Figure 5. Indicative Open Space Plan

5. Residential Development

5.1 Subdivision

5.1.1 DENSITY AND LOT SIZE

R1 General Residential Zone

- » The minimum lot size for any development within the R1 General Residential Zone is determined by the Minimum Lot Size controls in the *Mid-Western Regional Local Environmental Plan 2012*.
- » Small lot housing to a minimum of 450m² is to be located adjacent to areas of high amenity, such as public open space or along major streets, as illustrated in the Indicative Density Allocation Plan in **Figure 6**.
- » Refer to Section 5.2 of this DCP for building design controls for small lot housing.
- » Subdivision of a single lot that contains a dual occupancy development or is proposed to contain a dual occupancy development into two lots, is only encouraged where each of the resulting lots is $\geq 600\text{m}^2$.

B4 Mixed Use Zone

- » Residential development in the form of medium-density housing (such as townhouses and terraces), shop top housing and mixed-use development is encouraged in the B4 Mixed Use Zone.
- » Smaller lot sizes ($< 450\text{m}^2$) may be created in the B4 Mixed Use Zone where the applicant can demonstrate the lot is consistent with, and helps to achieve the objectives of, the Neighbourhood Centre Character Area.
- » Smaller lot sizes ($< 450\text{m}^2$) may be created in the shaded area surrounding the B4 Mixed Use Zone, as illustrated in the Indicative Density Allocation Plan in **Figure 6**.

R5 Large Lot Residential Zone

- » All buildings must be sited in an accessible and practical location suitable for residential building construction.
- » On sloping sites at or above the 520m contour line, all buildings must be sited such that they cannot be viewed, or have minimum visibility, from any urban area of Mudgee.
- » Refer to Section 5.3 of this DCP for additional built form controls relating to development on steep slopes.

5.1.2 MINIMUM LOT WIDTH

- » All residential lots within the R1 General Residential Zone (except land in the shaded area surrounding the B4 Mixed Use Zone, as illustrated in the Indicative Density Allocation Plan in **Figure 6**), must have a minimum lot width of 12.5m at the building line, and are to be generally rectangular in shape.
- » Residential lots in cul-de-sac streets must be designed to create as regular lot shape as possible around the cul-de-sac head.
- » All residential lots within the R5 Large Lot Residential Zone must have a minimum lot width of 25m at the building line.

5.1.3 SUBDIVISION EARTHWORKS

- » Land forming in association with subdivision works is permitted where it contributes to the overall design quality of the development.

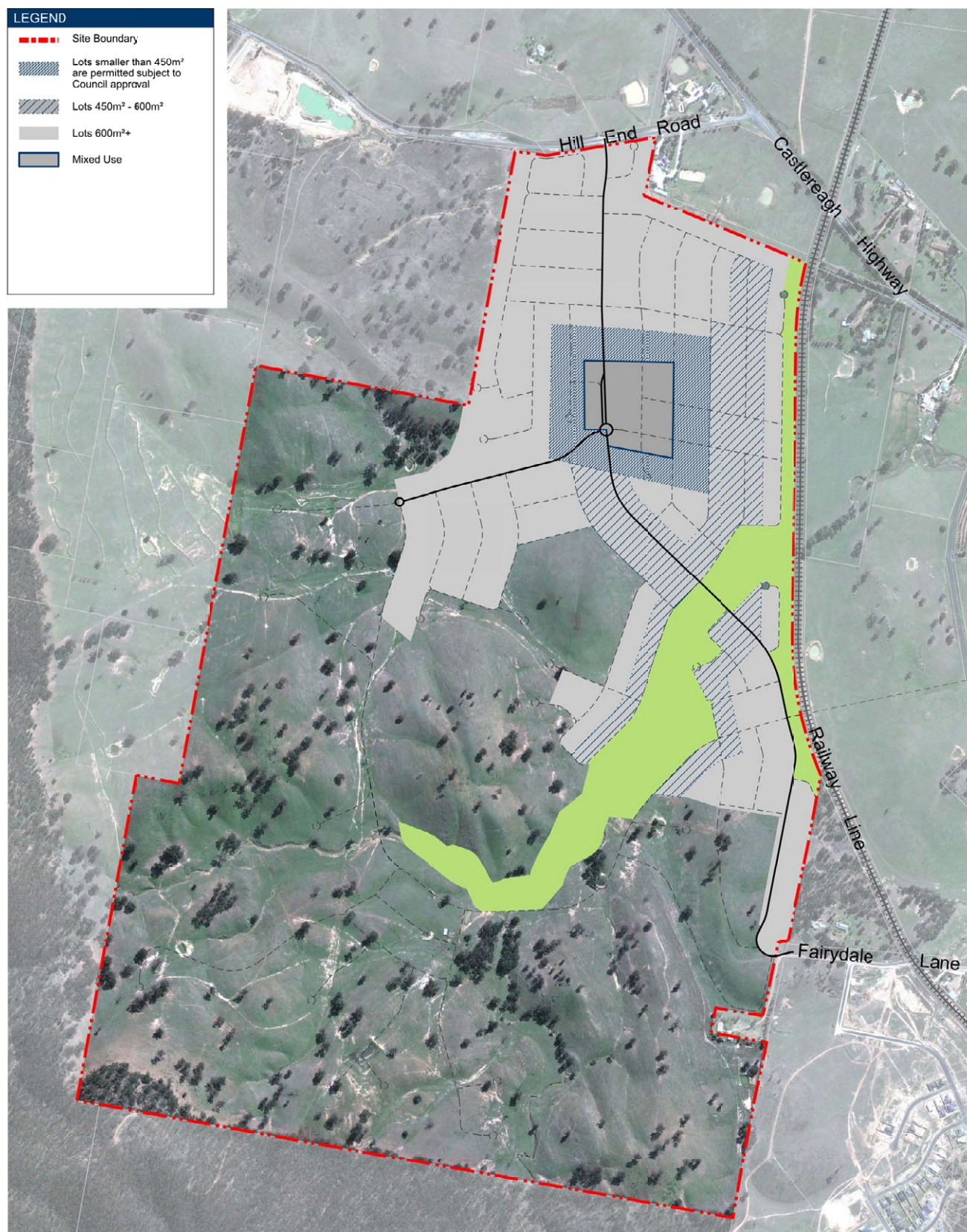


Figure 6. Indicative Density Allocation Plan

5.2 Building Design

5.2.1 STREETScape

- » Streetscapes are to be designed to promote attractive residential environments.
- » All development is to be sited and designed to achieve the desired neighbourhood character of the Character Area in which it is located. Refer to Section 2.3 of this DCP for a description of each Character Areas.
- » Building colours, materials and finishes are to be from a predominantly neutral palette of colours, except for architectural features. Where fencing is provided, it should complement the colours, materials and finishes of the building and be of high quality.
- » Dwellings on corner lots are to be designed to address both street frontages, in order to promote a strong and legible streetscape character and support surveillance of the street.

5.2.2 HOUSING TYPES

A variety of housing types are permissible within Caerleon, ranging from traditional detached housing; small dwellings such as terraces/townhouses, cottages, zero lot housing and semi-attached dwellings in certain areas; shop-top housing in the mixed use zone; traditional detached housing on larger lots and rural-style housing on higher slopes.

- » A mix of housing types is encouraged in order to increase the range of housing choice in Caerleon.
- » When determining the type of housing, applicants must ensure the housing type is consistent with the objectives of the Character Area so to maintain a desired streetscape.
- » Dual occupancy development in Caerleon, in particular battle-axe style development, will not be supported.

5.2.3 BUILT FORM AND BUILDING ENVELOPE

- » Dwellings are to be consistent with the minimum front, side and rear setback controls in **Table 3**.
- » For corner allotments, the setback controls to corner truncations shall be treated as if the lot did not have a truncation.
- » Front, side and rear setbacks for dwellings on lots with an area > 1,000m² are to be generally consistent with

Table 3, but may be varied if the variation is necessary to respond to the landscape features or topography of the land.

- » Projections that are permitted into side and rear setbacks include eaves, sun hoods, gutters, down pipes flues, light fittings and electricity or gas meters, rainwater tanks and hot water units.
- » Pergolas and other landscape features/structures are permitted to encroach into the rear setback.
- » Building facades within the articulation zone and secondary frontage elements shall consist of a mix of the following elements:
 - articulation or steps;
 - entry features;
 - awnings;
 - eaves and sun shading;
 - window to habitable space;
 - balcony or window box treatment;
 - recessing or projecting architectural elements;
 - verandahs;
 - bay windows or similar features.
- » Zero lot dwellings are permitted within the R1 General Residential Zone provided that:
 - any wall that adjoins the boundary has a maximum length of 20m or 35% of the length of the boundary, whichever is greater;
 - there are no openings in the wall that adjoins the boundary;
 - the Development Application demonstrates there will be no adverse impacts on the adjoining property in terms of solar access and overshadowing.

Note. Zero lot dwelling means those that have one or more walls abutting the boundary with the next lot.

- » For attached and semi-detached housing, the side setback control only applies to the end of a row of attached housing, or to the non-zero lot line side of a semi-detached house.
- » Refer to Section 6 for additional built form controls applying to development in the Neighbourhood Centre.

Table 3. Setback and Built Form Controls

Lot Size		≤ 300m ² *	301m ² – 649m ² *	650m ² – 999m ²	≥ 1,000m ² – 1,999m ² #	≥ 2,000m ² #
Front Setback	Building Line	3.0m	4.5m	5.5m	6.0m	10.0m
	Articulation Zone**	1.0m	1.0m	1.0m	1.0m	1.0m
	Garage Line	5.5m or 0m to Laneway	5.5m	6.5m	7.0m	11.5m
Secondary Frontage Setback		2.0m	2.0m	3.0m	4.0m	5.0m
Side/Rear Setback	Side Setback	0m / 0.9m	0.9m	0.9m	0.9m	5.0m
	Rear Setback (Excludes Garages)	3.0m	3.0m	3.0m	3.0m	5.0m

Refer to control 5.2.3 (3).

* Residential lots < 450m² may only be located in the B4 Mixed Use Zone or in the shaded area surrounding the B4 Mixed Use Zone, as illustrated in the Indicative Density Allocation Plan in **Figure 6**.

** The articulation zone is measured forward of the building line.

5.2.4 LANDSCAPING AND PRIVATE OPEN SPACE

- » Each dwelling is to have quality, useable private open space behind the primary building line to allow outdoor recreational and clothes drying areas.
- » Residential dwellings on lots ≤ 600m² are required to provide a minimum of 15% of Private Open Space.
- » Residential dwellings on lots > 600m² are required to provide a minimum of 20% of Private Open Space.

5.2.5 VEHICLE ACCESS, CAR PARKING AND GARAGE DESIGN

- » The minimum width of a driveway is 3m.
 - » Driveways are generally to be offset by 1m from the side boundary for all residential development.
 - » Landscaping is encouraged within setbacks between driveways and boundaries.
 - » The garage shall not comprise more than 50% of the front building elevation.
 - » For smaller lot housing on lots ≤ 450m², driveways may have zero setback to the side boundary.
- Note.** Smaller lot housing can only be located in the B4 Mixed Use Zone.
- » Rear access may to be provided to residential development on lots ≤ 450m² within the Neighbourhood Centre, in order to reduce the visual impact of garaging when viewed from the main street.

5.2.6 FENCING

R1 General Residential Zone

- » Front fencing is limited to a maximum height of 1m.
- » Front and side fencing forward of the building line must be constructed of visually permeable material. At least 50% of the fence structure should be visually permeable material.
- » Boundary fencing forward of the building line shall be a maximum height of 1m.
- » Solid fencing above 1m is not permitted adjacent to open space or drainage land.
- » All other fencing on the boundary is limited to a maximum height of 1.8m from natural ground level.
- » Fencing over 1m in height along the secondary frontage lot boundary is not to exceed more than 50% of the length of the lot.
- » Continuous landscaping must be provided on the street side of the fence where it comprises of solid sheet steel material and the fence is adjacent to, or visible from, the public domain.
- » Fencing is to be consistent in design and style with the dwelling in terms of style, colour, materials, textures, openings and finishes.

Note. Blank walls disrupt established fencing patterns and should be avoided.

R5 Large Lot Residential Zone

- » In the R5 Large Lot Residential Zone, open style post and rail, or post and wire fence types, are required.

5.2.7 WASTE DISPOSAL

- » Waste storage areas/bins are to be concealed from public view and stored on individual properties.

5.2.8 RESIDENTIAL EARTHWORKS

- » Development consent is required to place fill on the land in excess of 100mm topdressing, unless the development is exempt and complying development for the purposes of the *State Environmental Planning Policy (Exempt and Complying Development Codes) 2008*.
- » A maximum of 600mm cut or fill below or above ground level (existing) is permitted.
- » Cut and fill must be at least 900mm from each lot boundary.
- » Development must provide adequate drainage lines to ensure surface water is disposed of without causing a nuisance to adjoining owners, and must not redirect the flow of surface water onto an adjoining lot.
- » Cut and fill must be located at least 1m from any registered easement, sewer main or water main.
- » If the fill is more than 150mm deep it must not occupy more than 50% of the landscaped area.
- » Refer to Section 5.3.4 of this DCP for cut and fill controls for Development on Steep Slopes.

5.3 Additional Controls for Development on Steep Slopes

This section refers to development on steep slopes which are defined for the purposes of this DCP as slopes in excess of 15°.

5.3.1 SITING AND VISUAL IMPACT

- » The visual impact of dwelling houses on steep slopes, in particular dwellings at or above the 520m contour, is to be minimised through appropriate siting, landscaping, and the use of materials and colours which are sympathetic to a rural character of the land. Generally, dwellings are to be sited on the flattest section of each site and where possible, on the lowest contour of site.
- » Dwellings are not to be located within 40m of the Avisford Nature Reserve.
- » A Subdivision Application for land with steep slopes shall identify the general building envelope within the proposed lot, which will require preliminary input from qualified geotechnical and civil consultants.

5.3.2 BUILDING HEIGHT

- » Development must reflect the landform and dwellings, and must step down the block to follow the topography of the land.
- » Dwellings are limited to a maximum height of 8.5m in the *Mid-Western Regional Local Environmental Plan 2012*. Dwellings on sloping land shall demonstrate that a building height plane of 8.5m is generally achieved.

Note. Building height plane means a plane projected at an angle of 45° over the actual land to be built upon from a vertical distance (of 8.5m) above ground level at the side boundaries of the site.

5.3.3 SHEDS, OUTBUILDINGS AND DETACHED GARAGES

- » Sheds, outbuildings, detached garages and any other ancillary structures are to be located behind or adjacent to the dwelling, to protect the major ridgelines.
- » Landscaping must be provided around dwellings where the dwelling is visible from the public domain, in order to minimise its visibility.

5.3.4 CUT AND FILL

- » An appropriate construction methodology is to be outlined in the Development Application for building construction, and may include raised floor construction or stepped construction requiring cutting. Applicants must provide a detailed report and/or plans from qualified geotechnical and structural consultants with a Construction Certificate Application to demonstrate safety and avoid areas of land slip.

6. Neighbourhood Centre

6.1 Land Use

- » The Neighbourhood Centre Character Area is to incorporate a range of local retail, commercial, community and open space land uses to serve the everyday needs of the local community. These uses may spill into adjacent R1 General Residential land.
- » The Neighbourhood Centre Character Area is to incorporate higher intensity development, including medium-density housing and mixed-use development.
- » The Neighbourhood Centre Character Area is to be differentiated through varying and 'active' uses, which should be focused along, and front, a main street.
- » Development must have regard to, and maintain, the commercial hierarchy of Mudgee.
- » Retail and commercial uses at ground level within the B4 Mixed Use Zone must have a maximum Gross Floor Area of 1,280m² per unit or tenancy.
- » The Neighbourhood Centre Character Area and B4 Mixed Use Zone is to be a maximum of 2 Ha in area (excluding roads, road reserves, child care centres, community facilities, car parking, drainage and open space).

6.2 Built Form and Streetscape

- » Retail and commercial uses at ground level must have their entrance directly from the main street frontage.
- » Buildings with a retail function at ground level, whether part of a mixed-use building or stand-alone shop, shall be built with a zero or minimal front and side setbacks.
- » Zero setbacks are encouraged for buildings in the B4 Mixed Use Zone. Buildings should generally be built to the street edge.
- » The frontage of retail or mixed use buildings is to have substantial glazing at ground level and no large expanses of blank facade facing the street.
- » Where appropriate, an awning or posted verandah should be provided over the public footpath. If an awning or posted verandah is provided, it is to be cantilevered or suspended over the adjoining footpath within the road reserve.
- » Awnings must be designed to allow street tree planting to be provided at regular intervals.
- » Front fencing shall generally be provided for residential development in the B4 Mixed Use Zone.
- » Shop top housing must provide a street address and direct pedestrian access from street frontages and associated car parking areas. The access must be separate from the entry areas for other building uses.

6.3 Public Domain

- » Provide a high quality landscape design including planting, street furniture and lighting that enhances the character of the neighbourhood centre.
- » Provide street tree and planting that is of an appropriate height or permeability to maintain views and establishes shade for pedestrians.
- » Details of street furniture, lighting and plantings (including species selection, size of beds and irrigation provision), are to be provided with the Landscape Plan submitted to Council for approval with the Development Application.
- » An open space area should adjoin the Neighbourhood Centre Character Area in a prominent location, and should be designed to accommodate activities such as outdoor eating, pedestrian movement or seating areas.

6.4 Parking and Access

- » Locate at grade parking areas generally behind building lines and screened from the Residential Collector Road.
- » Shared car parking provision for complementary uses within the Neighbourhood Centre is supported.
- » On-street car parking is to be provided as 60° rear to kerb parking along the Neighbourhood Centre Road to contribute to street life and surveillance. Refer to **Table 2** for parking bay dimensions.
- » Laneways may be used to provide access to parking areas and waste collection areas. Laneways are to be designed to accommodate heavy vehicles, where access to the rear of shops (for deliveries) and waste collection is required.
- » Loading bays are not required on-site. Provision for loading/unloading can be made at the rear of an allotment where a laneway is proposed.
- » Shade trees shall be provided along the footpath adjacent any on-street rear-to-kerb car parking, at a rate of 1 tree for every 8 car parking spaces.
- » Where the need for a bus stop at the site is identified by Council, details of the location and design of the bus stop are to be provided with the development plans submitted to Council for approval.

7. Environmental Management

7.1 Stormwater Management

- » The two main watercourses that drain the majority of the land are shown in **Figure 7**. These two watercourses are identified as 3rd and 4th order streams and shall be retained for drainage functions. Buffers are to be provided along the drainage lines in accordance with the Strahler-based methodology (NSW Office of Water, July, 2012).
- » Natural regeneration is encouraged in vegetated riparian zones (VRZs) within the Riparian Corridors.
- » Stormwater from the site will be managed through on-site detention basins in the indicative locations shown in **Figure 7**.
- » Stormwater management within the northern section of the land can be designed to include natural water flow as well as an engineered solution.
- » The remaining lower order streams on the site (1st and 2nd order streams) can be:
 - removed and/or piped and integrated into an engineered approach to drainage; or
 - maintained as open channels.
- » The principles of Water Sensitive Urban Design (WSUD) should be incorporated across the site.
- » During the construction phase of development, the relevant stormwater management objectives for new development as set out in the most up to date revision of *Managing Urban Stormwater: Soils and Construction* (NSW Department of Housing) must be complied with.
- » Development Applications must demonstrate that any potential impacts on groundwater and salinity can be managed to mitigate environmental impact.
- » Where there is potential for soil erosion to occur, erosion and sediment control measures are to be implemented and regularly maintained during construction. Sediment trapping devices are to be located at all points where stormwater runoff can enter inlets to stormwater systems, or where runoff may leave the site, during construction. Details of erosion and sediment control measures are to be provided with Development Applications where there is potential for soil erosion to occur.
- » Driveways on steep slopes are to be designed to minimise erosion.

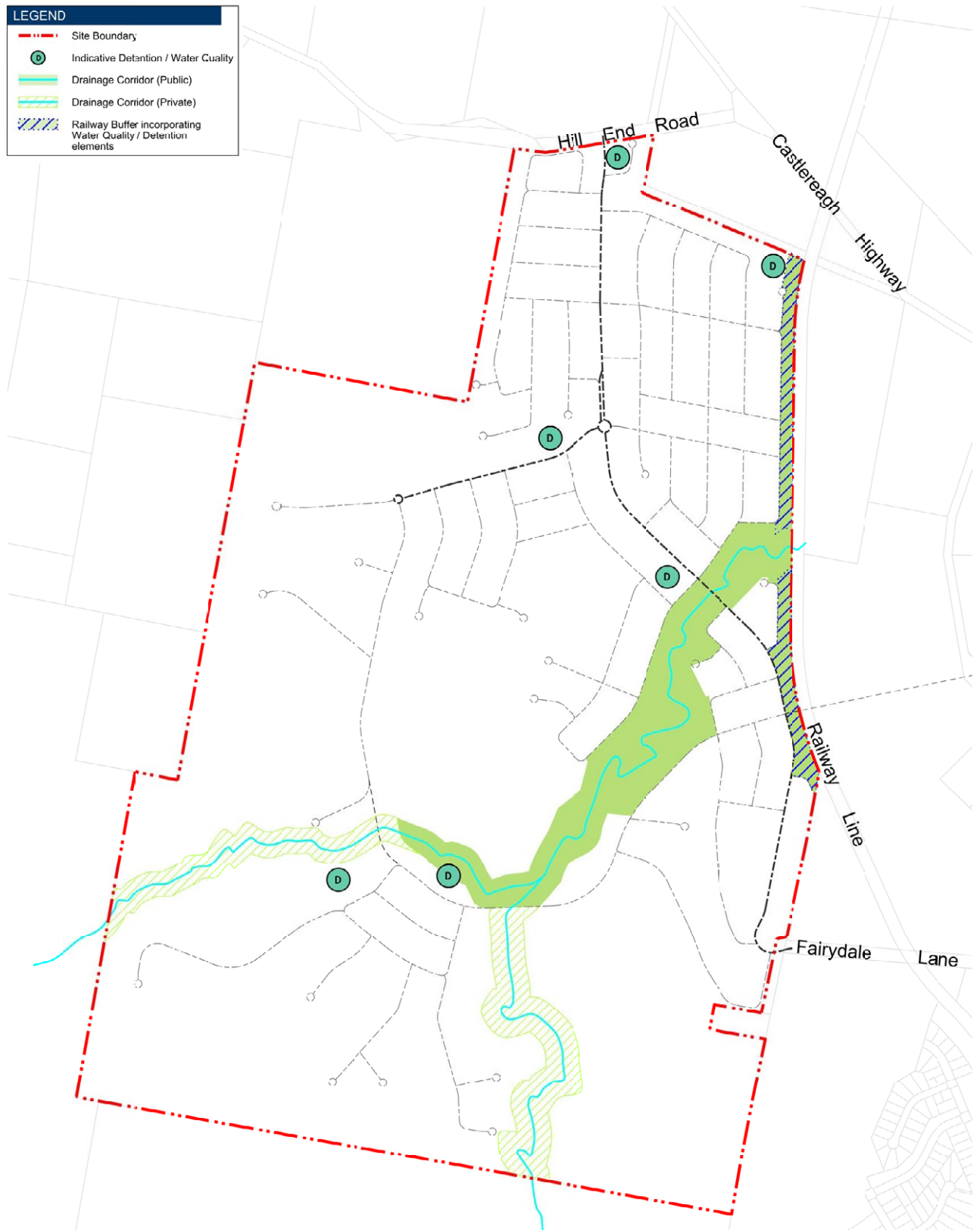


Figure 7. Indicative Drainage Plan

7.2 Biodiversity

- » Native vegetation and remnant trees in areas of high ecological constraint are to be retained and protected in large lots on land with steeper slopes. Any development within the Large Residential Character Area and Rural Residential Character Area shall be positioned to avoid the removal of remnant trees.

Note. Areas of high ecological constraint include the riparian corridors and areas containing Endangered Ecological Communities, and are mapped in the 'Caerleon Property Rezoning Investigations Flora and Fauna, Riparian and Bushfire Study' (July, 2012) and shown in **Figure 8**.

- » Development that affects areas of high ecological constraint, including the VRZs, must have regard to a Vegetation Management Plan (VMP) that sets out the methods to be used to encourage natural regeneration. A VMP shall be prepared with any Subdivision Application affecting areas of high ecological constraint shown in **Figure 8**.
- » An environmental buffer area of 40m shall be retained along the southern boundary of the land, wherein no dwelling shall be developed.

7.3 Bushfire

- » All Subdivision and Development Applications will be assessed under section 100B of the *Rural Fires Act 1997* and, if necessary, will require a Bush Fire Safety Authority (BFSA) to be obtained from the NSW Rural Fire Service at subdivision and/or Development Application stage. Detailed bushfire assessment shall be undertaken for future development and address the bushfire protection measures of *Planning for Bushfire Protection 2006*.

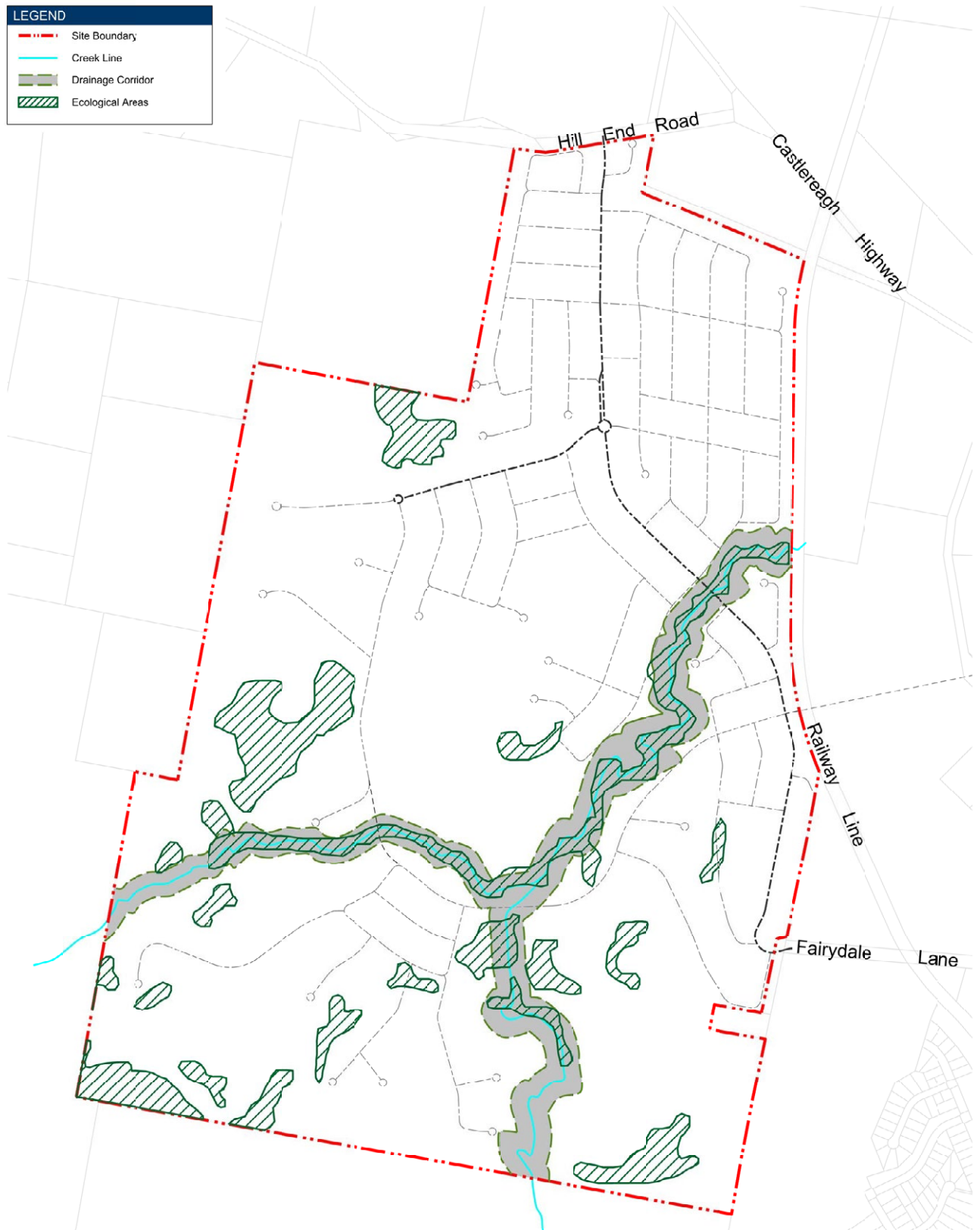


Figure 8. Indicative Conservation Plan

7.4 Odour

- » There is to be no development within the 1 odour unit contour, as shown in the Indicative Odour Plan in **Figure 9**, until such time as a revised odour assessment is undertaken after the Mudgee Sewerage Treatment Plant (STP) is commissioned.

Note. The developer is to commission a qualified odour consultant to undertake an odour assessment within 6 months from the time the Mudgee Sewerage Treatment Plant (STP) is commissioned. The odour study shall determine the minimum odour contour from the Mudgee STP and the minimum buffer from the landfill site.

7.5 Contamination

- » Further investigation at the Machinery Shed and Sheep Dip sites must be undertaken prior to development, in accordance with the contaminated land management planning guidelines *State Environmental Planning Policy No. 55*.

Note. The location of the Machinery Shed and Sheep Dip sites is mapped in '*Preliminary contamination assessment – Caerleon Hill End Road, Mudgee NSW*' (20 July 2012).

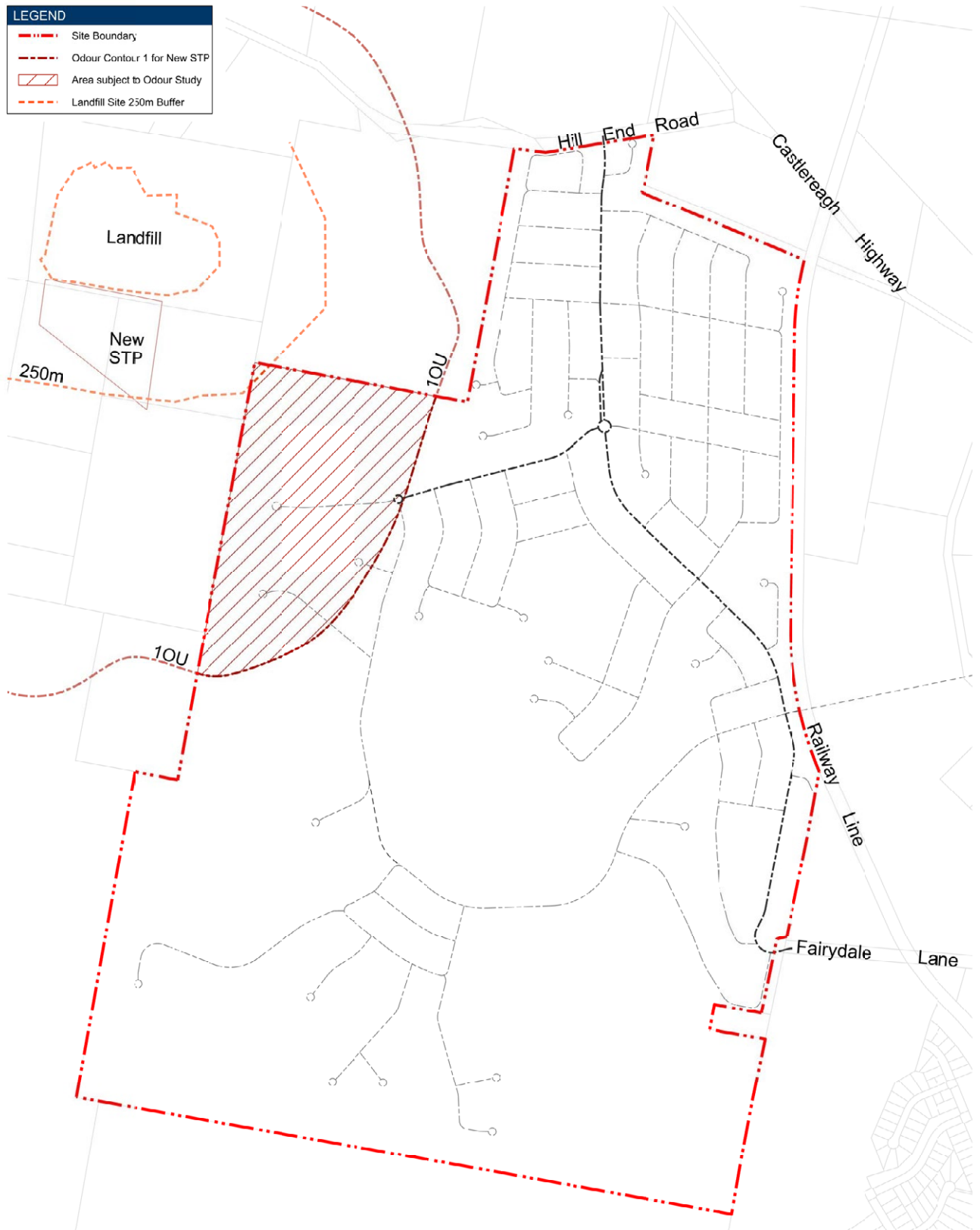


Figure 9. Indicative Odour Plan

7.6 Aboriginal Heritage

- » The location of sites where Aboriginal objects have been identified during Aboriginal Heritage investigations, are mapped in the *'Mudgee Residential Rezoning Aboriginal Heritage Due Diligence Assessment- Preliminary investigation'* (July, 2012) and shown in **Figure 10**.
- » All sites of Aboriginal objects should be avoided in the future development of the land, unless resolved through controls 3 and 4 below.
- » Where avoidance of an Aboriginal object site (or a site of potential archaeological sensitivity) cannot be achieved and there is potential for disturbance of the site, further investigations and impact assessment is to be undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*. An Aboriginal heritage impact permit (AHIP) will be required for any activity which may harm an Aboriginal object.
- » Aboriginal consultation shall be undertaken prior to, and with, the Subdivision Application process where an AHIP application is required. The consultation process with Aboriginal stakeholders shall be undertaken in accordance with the *National Parks and Wildlife Regulation 2009* and *Aboriginal cultural heritage consultation requirements for proponents 2010: Part 6 National Parks and Wildlife Act 1974*.

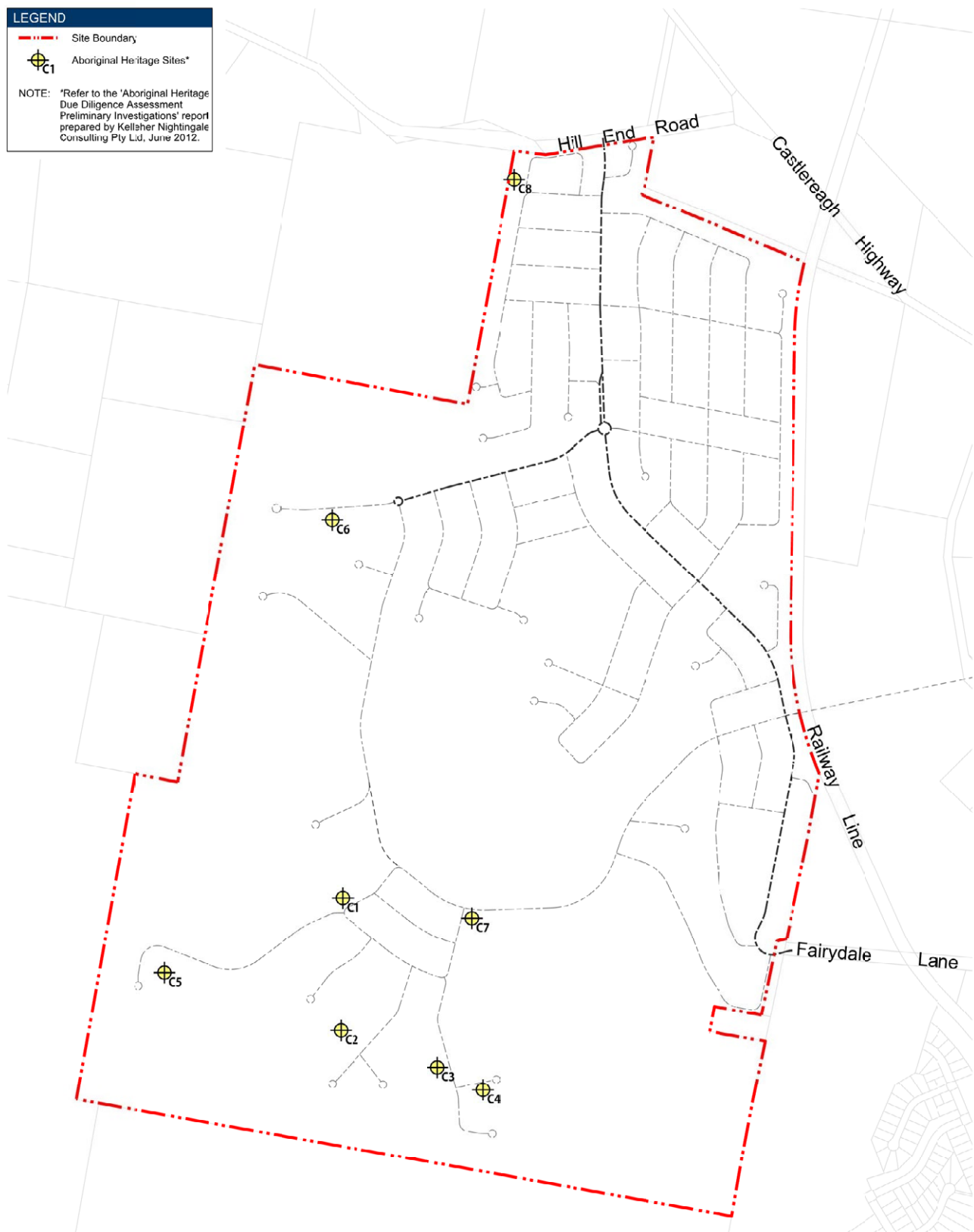


Figure 10. Indicative Aboriginal Heritage Plan

8. Utilities

8.1 Water Supply

- » Potable water is to be supplied from the existing water treatment facility in Mudgee. Initial stages of the development are proposed to be served from the existing potable water reticulation system located adjacent to the southern boundary of the site.
- » A new 5ML reservoir will be constructed by Mid-Western Regional Council to serve the development.

8.2 Waste Water

- » The new Waste Water Treatment Plant (WWTP) being constructed adjacent to the western area of the site is sized to cater for waste water treatment from all future development in Caerleon.
- » A new Sewage Pump Station (SPS) will be required to serve the site, with waste water being pumped from the SPS via a new rising main to the WWTP.

8.3 Electricity and Telecommunications

- » Primary utilities such as electricity and telecommunications must be made available to serve any future development.

9. Torrens, Strata and Community Title Subdivision

- » Allotments where free standing dwelling houses, dual occupancy dwellings or multiple dwellings (such as terraces that share a boundary wall) are proposed or exist may be Torrens Title.
- » Where buildings are attached or share common areas, such as driveways, entry foyers, car parking facilities or structural and non-structural building components that overlap, allotments may be Torrens Title or be subdivided under a Community or Strata Scheme.
- » Proposed Torrens Title allotments that are attached or share common areas must provide easements for right of way (where relevant) registered as a right of way on a survey or registered on title.

Note: To ensure Subdivision Applications can be subdivided in an appropriate manner it is recommended that you consult an appropriately qualified professional, such as a Land Surveyor at the outset of your project.

Appendix A

Land to which this DCP Applies

Lot 1 DP 1146227	Lot 223 DP 756894
Lot 1 DP 132086	Lot 224 DP 756894
Lot 10 DP 132086	Lot 225 DP 756894
Lot 129A DP 756894	Lot 226 DP 756894
Lot 130 DP 756894	Lot 227 DP 756894
Lot 131 DP 756894	Lot 228 DP 756894
Lot 1321 DP 1113075	Lot 229 DP 756894
Lot 1322 DP 1113075	Lot 230 DP 756894
Lot 1323 DP 1113075	Lot 231 DP 756894
Lot 133 DP 756894	Lot 232 DP 756894
Lot 134 DP 756894	Lot 233 DP 756894
Lot 135A DP 756894	Lot 234 DP 756894
Lot 136 DP 756894	Lot 235 DP 756894
Lot 137 DP 756894	Lot 236 DP 756894
Lot 139 DP 756894	Lot 237 DP 756894
Lot 140 DP 756894	Lot 3 DP 132086
Lot 141 DP 756894	Lot 341 DP 756894
Lot 151 DP 756894	Lot 4 DP 132086
Lot 189 DP 756894	Lot 5 DP 132086
Lot 19 DP 1113002	Lot 6 DP 132086
Lot 2 DP 132086	Lot 7 DP 132086
Lot 218 DP 756894	Lot 8 DP 132086
Lot 219 DP 756894	Lot 9 DP 132086
Lot 220 DP 756894	
Lot 221 DP 756894	
Lot 222 DP 756894	

Implementing a Subdivision Consent

This section of the Plan provides guidelines for the implementation of subdivision consent.

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1.0 Introduction

A development consent is the first step in the subdivision of land. The following steps may also be relevant to the subdivision process;

- Prepare Construction drawings of any road works, sewer main or water main extensions, stormwater management systems;
- Lodge Construction Certificate (CC) to be reviewed by Council's Development Engineer;
- Receive approval for Construction Certificate;
- Once CC is approved, subdivision works may occur on site;
- Carry out works and get inspections for infrastructure such as roads and main extensions;
- Obtain Final inspection for all subdivision works;
- Prepare linen plans for lodgment;
- Lodge subdivision certificate application with form, linen plans, Section 94 and Section 64 Contributions, final inspection report (if required), telecommunications supply certificate, electricity infrastructure certificate, water meter and sewer junction payments.
- Gain Subdivision certificate and signed linen plans
- Get your solicitor or registered surveyor to lodge plans with Land Property Management Authority (LPMA) for registration of the lots.

1.1 Construction Certificates

A Construction Certificate is needed before commencing Subdivision Work such as sewer or water main extensions, road works or stormwater management infrastructure;

- The "Construction Certificate" (CC) is in effect, an approval of detailed engineering plans and attachments for the subdivision works. The accuracy of the engineering designs and plans must be checked and duly certified by the applicant/consultant, as Council will not check their accuracy.
- The DA conditions will designate what subdivision works are to be provided and how they are to be designed and constructed. These conditions will require the subdivision works to be designed in accordance with this manual, Aus-Spec # 1 and Water Services Association of Australia – Water Supply code of Australia and the Sewerage code of Australia.
- A valid (in accordance with the regulations) construction certificate application may be approved and a construction certificate issued only if the detailed plans and specifications accompanying the application comply with the conditions of DA consent. Once these plans have been endorsed by the construction certificate, they are referred to in this manual as the *Approved Design Plans*.

Variation of Works Approved in a Construction Certificate

If the subdivider wishes to amend the subdivision works approved by the construction certificate, an amended construction certificate application must be submitted accompanied by amended plans and attachments. The amended construction certificate must be issued before any works amended by that certificate are commenced.

Construction Certificate Documentation

The detailed engineering plans to be submitted with a construction certificate application for subdivision works are specified as required engineering plans and attachments are summarised in Table 10.1. The construction certificate application must also be accompanied by a compliance certificate (see the Appendix E).

Table 10.1 - Required Engineering Plans:

No	Plan Group	No	Plan Group
1	Title/cover	13	Hydrologic & hydraulic calculation sheets
2	Overall layout and key plan	14	Permanent stormwater quality improvement devices and controls
3	Road set-out plans	15	Water supply reticulation and details
	Bulk earthworks and site regrading	16	Sewerage catchment plans
4	Typical cross section & pavement details	17	Sewer long sections
5	Road long-sections	18	Sewage rising mains
6	Road cross sections	19	Street, car park and public place lighting
7	Intersection, kerb return details	20	Open space and landscaping
8	Cycleways and pathways		
9	Line marking, signage & traffic facilities		
10	Drainage catchments		
11	Drainage details, structures, schedules		
12	Drainage long sections		

Required Engineering Plan attachments:

No	Attachment Group	No	Attachment Group
1	Erosion and sediment control plan	5	Pavement Design
2	Stormwater management plan	6	Bushfire Management Plans
3	Traffic management & Traffic control plan		
4	Other utilities, electricity gas & telephone		

1.3 Subdivision Work- Construction & Certification

Completion of Subdivision Works

- The subdivision works must be constructed in accordance with the “*Approved Design Plans*”, DA conditions of consent and legislative requirements. Subdivision works must be constructed in accordance with Aus-Spec #1 Part A & B, and the WSA Codes – Water Supply Code and Sewerage Code.
- The quality control requirements for subdivision works and the means by which they are compliance certified are set out in **Appendix C**.

Bonding Incomplete Subdivision Works

What Works Have To Be Completed and What Can Be Left Incomplete and Bonded?

Prior to issue of a subdivision certificate the subdivision works must be completed, except the consent authority may enter into an agreement to accept cash or security for designated minor works. Key infrastructure that is required to service the subdivision and lots therein *must be completed* and this includes:-

Roads

- roads and ancillary traffic facilities, all internal roads (except final seal if agreed upon can be bonded)
- all external arterial/connector road improvements, intersection upgrades etc.
- all internal drainage
- all downstream works to the legal point of discharge
- all permanent stormwater quality treatment facilities

Sewerage

- all internal sewerage facilities
- all pumping stations, rising mains, odour control facilities and any external works necessary to deliver subdivision sewage to designated discharge point

Water Supply

- all internal water supply works
- all connecting mains and any other external works necessary to ensure adequate water supply to the subdivision lots

Electricity Supply – all works

Telecommunications – all works

Infrastructure that may be bonded includes

- acoustic fencing,
- final seal of road pavements under some circumstances,
- other minor structures approved by the Council.

The Council may require the above works to be bonded in cases where future dwelling house construction and the traverse of construction vehicles is likely to result in premature damage and reduced life span.

Nature of Bond and Assessment of Amounts

The amount of bond shall be 135% of the agreed estimated value (or contract value if applicable) of outstanding works. All valuations are to include GST and any other statutory costs. The bond shall be in the form of cash or an unconditional, unlimited time bank guarantee lodged with the consent authority.

The developer has two options:

Option 1

Lodgement of Security Deposit in the form of Bank Guarantee or cash deposit together with the execution of Council's standard Deed. The amount of security is 1.35 times of the estimated cost. When approximately 80% of created allotments have been built upon or 1 year since the date of completion whichever comes first, the developer may notify the Council of their intention to start the work. Upon satisfactory completion, the security deposit will be released.

Option 2

Monetary Payment can be made by the developer towards the cost of the works. The amount of payment will be calculated using Council's pricing Schedule Plus an administrative fee. The amount due must be paid prior to release of the subdivision certificate. This option frees the developer from servicing a bank guarantee and other administrative commitments.

Remedying Defects after Completion of Subdivision Works

(a) Defects Liability Period

For a period of 2 years after completion, the subdivider must remedy any defects or omissions in the subdivision works.

Defects do not include reasonable wear and tear or damage caused to the works by inappropriate use (e.g. damage or abuse from traffic accidents or vandalism).

A defects liability bond must be submitted to the Council, with the subdivision certificate application. For the purpose of defining the defects liability period, the works (or the part of works in the subject stage) are considered to be "completed" when the subdivision certificate is registered.

(b) Defects Liability Bond

The subdivision works defects liability bond must be submitted with the subdivision certificate application.

The bond must be in the form of cash or unconditional bank guarantee for an amount of 5% of the agreed value of the subdivision works or \$2000.00 whichever greater.

(c) Remedying Defects during the Defects Liability Period

At any time during the defects liability period, the consent authority may direct the subdivider to rectify any omission or defect in the subdivision works.

Defects will include

- any damage to the subdivision works that occurs in the maintenance period from legitimate use of the infrastructure, but, will exclude reasonable wear and tear.

The direction will identify the scope of works to rectification and state the time by which the subdivider shall complete the work of rectification (or stages of the rectification) and may state the time by which rectification shall commence. The directions may initially be given verbally, but, must be confirmed in writing within 7 days.

Where public safety is involved the consent authority may require the rectification to be carried out within 5 hours of notification.

Where the defect or omission is causing a loss of service to occupied subdivision lots or interference with traffic the consent authority may require rectification within 12 hours.

If the defect is such that public safety is involved, Council will initially install appropriate signs/barricades to exclude the public from the area and may at its discretion carry out emergency repair works. The subdivider shall perform the remedial works in accordance with the consent authority's direction and in the time period specified in the direction. If the subdivider fails conforming to the direction or part of the direction, the consent authority may perform the works and charge costs to the subdivider. The Council will deduct the following costs from the defects liability bond:-

- Council's costs to perform remedial works when the subdivider fails to perform the remedial works in accordance with Council's direction and the time period specified in the direction.
- Where public safety is involved, Council's costs to install appropriate signs/barricades to exclude the public from the area and emergency repair works deemed necessary by the Council.

(d) Off Defects Liability

- At the expiry of the defects liability period the subdivider may apply to the consent authority for an off defects liability inspection and request a return of the defects liability bond.

The Council staff responsible will conduct the inspection which may include:-

- Inspection of earthworks and road works
 - Concrete kerbs and walkways/bikeways
 - Pavements and surfacing for deformation/damage and may include random load testing
 - Landscaping, surfacing and tree planting of road verges
 - Street signs, lighting, furniture and line marking (Note: unserviceable line marking must be reinstated and will not be considered to be the result of legitimate wear and tear)
- Public open space
 - Coverage of open spaces with surfacing, turf or ground cover as specified in approved plans
 - mowable surfaces satisfactory for easy maintenance

- Successful establishment of landscaping and tree planting free from noxious weeds
- Embellishments, playground equipment, structures, buildings in good order and fully functional
- Landscaping, surfacing and tree planting of road verges and public open spaces, embellishment of public open spaces
- Stormwater systems, overland flow paths and treatment facilities functional and in good order
- Stormwater drainage
 - roads, pipes, structures, inlets, outlets, flowpaths clear of silt and debris
 - no ponding on roads, in pipes, structures, kerbs or flowpaths
 - turfing/surfacing of open drains
 - pipes for damage/movement
 - exposure or corrosion of reinforcing steel
 - overland flow paths for profile
 - stormwater treatment facilities fully functional, cleaned out (where appropriate eg GPT, silt traps etc) and in good order
 - inter-allotment drainage system
 - downstream culverts/pipes and water courses cleared of siltation
- Water Supply
 - system functioning satisfactorily, no visible leaks or malfunctions, pressures and flow at service connections satisfactory
 - hydrants, valves and other fittings functioning and surrounds and associated markings still clearly visible
 - height of valves and hydrants in accordance with approved design plans
 - no signs of surface subsidence along alignment
- Sewerage
 - system functioning satisfactorily, no visible faults or malfunctions
 - no infiltration of groundwater into sewer lines/system
 - no signs of any surface deformation along alignment
 - no ponding of surface water above manholes
 - pump stations, odour control systems and the like functioning to design specifications

On completion of the *off defects liability inspection*, if the Consent Authority/Council is satisfied that all defects and omissions in the subdivision works have been satisfactorily remedied, Council will issue a *Infrastructure Release Notice* for the off defects liability, scheduled inspection and the Council return the balance of the defects liability bond.

If unremedied subdivision work defects or omissions are detected by the Council in the off defects liability inspection, the subdivider must remedy these works and re-apply for an off defects liability inspection. When the Consent Authority has advised that the subdivision works are off defects liability, the balance of the bond to be returned shall be calculated as follows:

Defects liability bond amount submitted with subdivision certificate:

- minus Council costs (plus on costs and overheads) to perform remedial works if the subdivider, fails to perform the remedial works in accordance with the Council's direction and the specified time period
- minus Where public safety is involved, Council costs (plus on costs and overheads) to install appropriate signs/barricades to exclude the public from the area and emergency repair works deemed necessary by the Council.
- minus Council costs for attending the off defects liability inspection(s).

1.4 Complying With Other (Not Related To Subdivision Works) Conditions Of Consent

Other Statutory Authority Terms of Approval (Integrated Development)

The subdivider must comply with the terms of other statutory authority approvals, which in integrated development become part of the DA conditions of consent. These terms of approval may also impact on the manner and timing of parts of the subdivision.

1.5 Subdivision Certificates

Before Lodging Subdivision Certificate Application

The applicant should have the following:

- Certification by the Consulting Engineer/Registered Surveyor stating that the work conforms to approved design plans and Conditions of Consent.
- Work as Executed plans in *dwg* format and hard copy with certification by the Consulting Engineer/Registered Surveyor that implemented work is in within tolerable limits.
- List of incomplete items of work to be bonded and calculation of agreed bond amount.
- Final inspection of the subdivision work by Council

Requirements with Lodgement of Subdivision Certificate Application

The following documents should be in the application:

- Application for Subdivision Certificate duly filled up with fee and signature(s).
- Upfront payment of contributions or bank guarantees (s94, s64, Water & Sewer).
- Linen plans (1 original + 2 duplicate copies)
- Section 88 B Certificates (if required)
- Maintenance bond (5% of estimated cost or \$2000 whichever is greater)
- Payment of agreed bond amount for incomplete work (if approved)
- Occupation Certificate (if applicable)
- Satisfactory inspection report by Council
- Any other item in accordance with the Conditions of Consent.

SUBDIVISION WORKS - DEVELOPMENT DESIGN SPECIFICATIONS

Design Specifications to be used in Subdivision Design;

Subdivision works and infrastructure are to be designed in accordance with Aus-Spec #1, "Development Design Specification" series specified below:-

Specification No.	Specification Title
D1	Road Design
D2	Pavement Design
D3	Structures Bridge Design
D4	Subsurface Drainage System
D5	Stormwater Drainage Design
D6	Site Regrading
D7	Stormwater Quality
D9	Cycleway and Pathway Design
D10	Bushfire Protection

Water supply and sewerage reticulation infrastructure is to be designed to comply with the Water services Association of Australia Codes (WSA Codes);

- Water Supply Code of Australia;
- Sewerage Code of Australia

Designs, and Associated Plans and Attachments to Accompany Applications

Detailed requirements for plans and attachments associated with subdivision works that are to accompany:

- Development Applications (for subdivisions)
- Construction Certificate Applications (for subdivision works)
- Subdivision Certificate Application

Preparation of Designs, Plans and Attachments for Subdivision Works

In the preparation of designs, plans and attachments for subdivision works the subdivider shall:-

- engage suitably qualified, experienced and competent persons and comply with this manual, Aus-Spec, WSA Codes and Council guidelines,
- comply with occupational, health and safety requirements, traffic control and safety, and environmental requirements relating to noise, dust, air, water and sediment discharges,
- carry out all site investigations (including geotechnical) to provide adequate information to prepare designs and assess construction methods. This may also include investigations of the immediate subdivision area which may include investigation of connections to existing works and services, traffic analysis of adjoining areas etc.

- be responsible for all necessary geotechnical investigation and analysis to ensure that the subdivision and all works associated with the subdivision are stable and will not be subject to subsidence, landslip, mass movement or significant erosion in the short and long term.

Where it will be necessary for the execution of works to enter upon or construct works (such as connecting drainage, pipelines, roads etc) on property not owned by the subdivider must obtain necessary permits or easements or acquire land to construct such works.

SUBDIVISION WORKS – DEVELOPMENT CONSTRUCTION SPECIFICATIONS

Subdivision works and infrastructure are to be constructed in accordance with the *approved design plans* and attachments approved with the Construction Certificate.

Water supply and sewerage reticulation infrastructure is to be designed to comply with the Water services Association of Australia Codes (WSA Codes) Water Supply Code of Australia and Sewerage Code of Australia

All other infrastructure is to comply with the Aus –Spec #1, Part A, B & C, Development Construction Specification, specified below:-

C101 General	C245 Asphaltic Concrete
C201 Control of Traffic	C247 Mass Concrete Sub base
C211 Control of Erosion and Sedimentation	C248 Plain or Reinforced Concrete Base
C212 Clearing and Grubbing	C255 Bituminous Microsurfacing
C213 Earthworks	C254 Segmented Paving (deleted)
C220 Drainage	C261 Pavement Markings
C221 Pipe Drainage	C262 Signposting
C222 Precast Box Culverts	C263 Guideposts
C223 Drainage Structures	C264 Non Rigid Road Safety Barrier Systems
C224 Open Drains Including Kerb and Gutter	C265 Boundary Fence
C230 Subsurface Drainage General	C271 Minor Concrete Works
C231 Subsoil and Foundation Drains	C273 Landscaping
C232 Pavement Drains	C501 Bushfire Protection Perimeter Tracks
C233 Drainage Mats	CQC Quality Control Requirements
C241 Stabilisation	All of C101 – General,
C242 Flexible Pavements	C201 – Control of Traffic,
C244 Sprayed Bituminous Surfacing	C211 - Control of Erosion and Sedimentation,
C213 – Earthworks	C501 – Bushfire Protection, Perimeter Tracks
The tolerances section of all other C Series construction specifications.	

Where part of the works to be constructed are not covered by the above specifications, they are to be constructed in accordance with appropriate specifications issued by an Australian state or federal statutory authority or the relevant standards of the Standards Association of Australia.

Subdivision Infrastructure Inspections

Definitions

Scheduled Inspection

Inspections scheduled in this appendix, which constitute Hold Points for the subdivision works

Hold Point: A point beyond which an activity (being part of the subdivision works) which may not proceed without the approval of the infrastructure authority (Council)

Infrastructure Authority: Mid Western Regional Council (MWRC) in this manual.

Scheduled Inspections by Council

Subdivision works must not proceed beyond the scheduled inspection Hold Points nominated in this section until an *Infrastructure Release Notice* has been issued by the Council. Table D1 nominates the scheduled inspections to be made by Council and criteria for acceptance. For staged subdivisions, these Hold Points are applicable to each stage. If the subdivider chooses to do the works in sections or sub stages, an inspection and release will be required for each section covered by the Hold Point.

Table D1-- Scheduled Inspections				
Hold Point	Description	When	Acceptance Criteria	Comments
1	Inspection of sedimentation and erosion control measures	Prior to stripping of vegetation or and/or topsoil from the site	Erosion and sediment control measures are installed in accordance with the approved erosion & sediment control plan	
2	Inspection of site	After stripping of topsoil, prior to earthworks. Not a required hold point if a geotechnical consultant has been engaged in accordance with AS3798- 1996	In-situ material is deemed to be suitable for earthworks	If in situ material unsuitable, the subdivider must import suitable replacement material
3	Inspection of completed earthworks	When earthworks completed and prior to placement of pavement materials	Finished earthworks and subgrade levels are in accordance with approved design plans, Sediment and erosion control measures (including dust control) are installed and operating in accordance with the approved erosion and sediment control plan	
4	Road sub grade levels and proof rolling	Sub grade completed, prior to placement of pavement	Levels within specified tolerance. Proof rolling does not reveal visible deflection	

5	Road sub base levels	Sub base completed, prior to placement of pavement	As per approved design	
6	Pavement under kerb & gutter	Immediately prior to pouring kerb and gutter and stringline for kerb machine is in place	As per approved design	
7	Finished road Pavement	Pavement completed, trimmed and compacted	Acceptable compaction density, grade and cross fall	
8	Kerb and gutter where grades are less than 1%	Kerb & gutter completed	Water from water truck is to be run down kerb and reveal no ponding	
9	Stormwater pollution control structures	Unit installed and fitted out unit constructed and installed in accordance with approved plans and specifications	Accepted value of Total suspended Solids (Mg/l)	
10	Sewer line	Before filling of trenches	Grade & linearity between MHs	
11	Sewer line testing	When sewerage works are complete	WSA 02-2002 or as amended	
12	Water line testing	When pipe laying finished before filling	WSA 03-2002 or as amended	
13	Final practical inspection	Subdivision works completed	No defects or non compliance found	
14	Off defects liability inspection	Expiry of defects liability period	Satisfactory outcome of inspections	