# **Tenterfield Shire Council**

# **Subdivision Guidelines**



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**Tenterfield Shire Council** 

April 2013

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# 1. Executive Summary

These Subdivision Guidelines (previously the Subdivision Code) provide developers with an overview of the subdivision process within the Tenterfield Shire Council. When applying for, constructing and completing a subdivision, developers will deal with both the Environmental Services and Engineering Services of Council.

Environmental Services are responsible for the planning and approval in accordance with Council policies, the Council's Local Environment Plan (LEP) and state and federal legislation and guidelines.

Engineering Services are responsible for ensuring the physical infrastructure is correctly specified and that long term maintenance obligations for roads, stormwater, sewer, water and other services are not impacted by the transfer of poorly constructed or poorly designed infrastructure to Council control.

It is important to note that this document provides guidelines to the subdivision process and does not, in any way override the content of Council planning documents, specifically the LEP, or any other Council policy.

# 2. Overview and Process

The purpose of this code is to provide a useful set of guidelines to developers, and to encourage a consistent approach to land subdivision across the whole Shire. The code is not meant to be a strict set of rules, but rather a flexible set of guidelines. Developers and consultants are encouraged to submit imaginative, efficient and aesthetically pleasing land development designs.

In this code, the words "must" or "shall" indicate a regulatory stipulation with no flexibility. However, in most cases, the words "in general" or "may" or "should" are used to indicate that flexibility is intended.

## 2.1 Submission of applications

The subdivision of land requires the submission of a Development Application for approval by Council. In order to determine exactly what is required, applicants are advised to have initial discussions with Council's Town Planning officers prior to formal submission of applications.

Application for subdivision must be lodged on the prescribed "Development Application" form which is available from Council on request. The application must be accompanied by the prescribed fees. Council will not consider an application before all of the appropriate fees have been paid in full.

In general, the application should be accompanied by 3 copies of the plans and specifications. Plans should show by firm lines the proposed boundaries of each lot, area, approximate boundary dimensions, location of existing dwellings, adjoining information such as roads, portion numbers, creeks or rivers, as well as the Parish and County. Further guidelines for the preparation of plans and specifications are provided in Sections B (Rural) and C (Urban) of this code.

Application may be made on behalf of the owner of the land involved in a proposed subdivision but when this happens, the consent of the owner (each party where the land is held by joint tenants or tenants in common) must be furnished. In general, Council will only communicate with the person actually making application for development consent.

## 2.2 Subdivision and Supervision Fees

Refer to Council's current fees and charges in the Operational Plan.

## 2.3 Contributions

#### 2.3.1 Section 94 and section 94A.

Where applicable, Council may charge contributions under Section 94 or Section 94A of the Environmental Planning and Assessment Act 1979. Contributions may be required for open space, car parking, community facilities, infrastructure or other purposes outlined in the Section 94 or Section 94A plan.

Developers should check with Council's Town Planning Department to see if Section 94 contributions apply. The value of contributions is defined in Council's Section 94 and Section 94A plans available on Council's website.

## 2.3.2 Section 64

Charges for water and sewerage infrastructure are applied to development applications to contribute to the capital cost of infrastructure under Section 64 of the Environmental Planning and Assessment Act 1979. The value of contributions is defined in Council's Development Servicing Plan for sewer and water available on Council's website.

## 2.4 Responsibilities of Developer

Where a subdivision requires civil works (e.g. the provision of roads, services, or access), and the civil works are to ultimately become the responsibility of Council for ongoing maintenance, then before the developer commences the civil works, satisfactory engineering plans and specifications for the proposals shall be submitted to and approved by Council.

Where the work is carried out in stages, before each stage is commenced an engineering plan of the proposal covering the stage must be submitted to and approved by Council. Alternatively, Council may give Engineering approval to the plans for the whole subdivision before the commencement of Stage 1. In accordance with Section 99(2) of the Environmental Planning and Assessment Act, Council has determined that consent for subdivision applications shall lapse after a period of 5 years.

Details of the standards required for the plans, and guidelines for design are given in Section B (Rural) and C (Urban). In general, the standards which apply will be no more or less stringent than the standards which apply to Council's own new works.

When approval to a subdivision includes conditions of construction which are embodied in the approved plans and specifications, then the onus is primarily on the applicant to whom the approval is given to see that the work is properly carried out. A contractor carrying out subdivision works is responsible to his principal, the developer, not to Council. The Council will therefore hold the developer solely responsible for constructing the required subdivision works to its satisfaction and maintaining them during any specified period of maintenance.

## 2.5 Council Approval Process

The consent of Council is required for subdivision of land as outlined in Clause 2.6 of Tenterfield Local Environmental Plan 2013.

Where consent is required, the following steps will apply:-

## 2.5.1 Step 1

Lodge Development Application for approval by Council. The Development Application shall be accompanied by 3 copies of the subdivision plan along with the appropriate fees. Please consult Council's Environmental Services Department for a detailed list of requirements for lodging and payment of relevant fees.

Subdivisions in excess of 10 new lots or those considered to be significantly outside the provisions of these guidelines, will be considered by the full Council and all other subdivisions will be approved under delegated authority by the Director of Environmental Services.

## 2.5.2 Step 2

Council staff will undertake an assessment of the proposed subdivision including an inspection of the site.

The applicant will be notified in writing of determination of the development application as soon as possible. The notice of determination will include any relevant conditions of consent.

#### 2.5.3 Step 3

If engineering works are required for roads, drainage, access etc., these works may commence after:

- The plans and specifications have been submitted and approved along with the appropriate fees, contributions and bonds.
- A pre start meeting has been held with TSC Engineering Services and written approval granted to commence work.

#### 2.5.4 Step 4

When all major works are complete to Council's satisfaction and any other relevant conditions of consent complied with, the final plan of survey will be signed and released by Council upon lodgement of the plan and Subdivision Certificate Application with Council. Completion of works must be agreed by TSC Engineering Services through a successful "on-maintenance" inspection. The maintenance period does not commence until TSC Engineering Services provides written advice of acceptance of the works as "on-maintenance".

Where works, fees or maintenance obligations remain outstanding, a monetary bond or security may be applied (a bank guarantee may be accepted). If a bond is required, then the bond shall be submitted by the developer before the final plan of survey is signed and released.

#### 2.5.5 Step 5

Subdivision plan forwarded by the developer, surveyor or solicitor to Land and Property Information for registration.

## 2.5.6 Step 6

When all outstanding works have been completed by the developer, and at the expiry of the maintenance period, an "off-maintenance" inspection must be successfully completed. After all infrastructure is assessed as meeting the required standard and any defects rectified, TSC Engineering Services will provide written acceptance of the project as "off-maintenance" and Council will release the bond to the developer.

## 2.6 Final Plan of Survey of Subdivision

The original plan of subdivision (plus 5 prints), prepared by a registered surveyor, may be submitted to Council for certification provided that:

- An application for a Subdivision Certificate is made, accompanied by the scheduled fee;
- All conditions of development consent have been complied with;
- All prescribed fees and contributions have been paid by the developer;
- All engineering works are complete, or a bond submitted for outstanding work;
- An on-maintenance inspection has been completed.

The certified plan will then be released to the surveyor, owner or solicitor who prepared and submitted the plan. The plan should show details of any proposed public roads, easements, reserves or rights of way, which shall be transferred by the developer to Council.

## 2.7 Naming of New Roads and Streets

Tenterfield Shire Council retains the exclusive right to the naming of new roads and streets throughout the Shire. However, the developer may submit one or more suggested names for each road or street which will be created in the subdivision. The suggested names should be submitted at the time of submitting the plans of the proposed subdivision. Streets will be named in accordance with Council's street naming policy.

#### 2.8 Inspections

This clause applies where engineering works are required, and where such works are carried out by the developer or a contractor appointed by the developer (i.e. not by Council).

The whole of the road, drainage, kerb and gutter, water and sewerage construction works, which the developer is required to carry out in respect of a development will be inspected by Council. A minimum forty eight (48) hours notice should be given by the developer (or his contractor) to Council in respect of each of the following:

- Completion of formwork/stringlines for kerb and gutter
- Opening of trenches ready for pipe laying
- Placing of pipes in trenches prior to backfilling
- Testing of water and sewer mains
- Completion of subgrade preparation before placing of pavement
- Completion of each pavement layer ready for testing

- Sealing of roadworks
- Final inspection for Engineering Approval.

The developer shall if required submit to the supervising Engineer concrete testing dockets from the supplier of ready-mixed concrete in order that the quality of the concrete supplied may be checked.

The developer should within seven (7) days of the sealing of any pavement, supply to the supervising Engineer all supply dockets and spraying records in respect of such works.

If for any reason the Council should relieve the developer of the obligation to carry out construction works under the direct supervision of Council's staff, then the developer should, at the conclusion of the work, supply to Council a Certificate from the inspecting Engineer stating that the whole of the works have been carried out in accordance with the approved plans and specifications.

# 2.9 Approvals from Other Authorities

It is the developer's responsibility to obtain the necessary approvals from all relevant Authorities as advised by Council.

For example, for land abutting public land, approval may be necessary from the authority which is responsible for the public land. The NSW Office of Water or Environmental Protection Authority may need to be consulted where a river or stream is affected by the proposed development. Soil conservation measures may need to be designed and carried out in accordance with the requirements of the Office of Environment and Heritage -NSW. The developer may also need to consult with the National Parks & Wildlife Service, and the Environment Protection Authority.

The above is not intended to be a complete list of the Government Departments and Authorities which may need to be consulted. Council staff will be prepared to provide advice if asked, but it is the responsibility of the developer to find out which Authorities need to be consulted, and to ensure that the necessary consultations are carried out and the requirements complied with.

Council will require the developer to produce evidence of any necessary approvals, as a condition of approval of the subdivision.

Where the access to the subdivision is from a Highway or Classified Main Road or if it is a large subdivision on any road, Council will ask the Local Traffic Committee to assess the safety of the proposed access. The Local Traffic Committee will particularly consider the adequacy of available sight distance, and the need for bitumen sealing of the access. Ribbon development along a Highway or Classified Main Road will be discouraged. The developer will need to obtain RMS approval to any proposed access onto a Highway or Classified Main Road.

# 2.10 Open Space

In general, Council will encourage designers to incorporate an amount of open space or common recreation area in a new subdivision. However, keeping in mind that on-going maintenance of the open space may ultimately become the responsibility of Council, any park establishment, gardens, or playground equipment

will need to be low-maintenance and will need to meet Council's quality standards especially with regard to public safety.

The following guidelines are suggested for the assistance of designers:-

- 1. 1 hectare per 100 lots may be considered a reasonable area of open space;
- 2. The provision of open space might not be considered necessary if there is already an adequate amount of open space nearby in the neighbourhood;
- 3. A drainage detention basin may be dedicated as public open space for recreation, provided that it is suitable for that purpose. Hilly or rough areas, and steep gullies would not be considered suitable for public recreation;
- 4. Where the dedication of land as open space is not convenient, Council may accept a cash contribution from the developer in lieu thereof, in accordance with Council's Section 94 Contribution Plan.

## 2.11 Access

Council is generally not in favour of "community title" or "right-of-ways" for roads. Generally, Council will require dedication as a public road, where the new road provides access to more than 2 lots. Roads providing access to 1 or 2 lots only, may at Council's discretion, be left as Crown roads which are not maintained by Council.

The number of accesses from the main through road should be minimised. Intersections with the main through road should be designed and constructed to appropriate AUSTROADS standards. Written concurrence of the RMS should be obtained for intersections with Highways and Main Roads.

The access to individual lots should be carefully located to ensure safe sight distance, and the type of access construction may depend on drainage requirements. Common types are pipe culverts or gravel causeways, but other types may be specified by the Director of Engineering Services, depending on the specific locations.

Accesses must be constructed in accordance with TSC's standards for accesses and approved by the Department of Engineering Services.

## 2.12 Bus Stops

If the main through road is an existing school bus route or may become a school bus route due to the proposed subdivision, then the intersection with the main through road should incorporate a school bus stop designed to RMS standards.

# 2.13 Safety

It is the responsibility of the developer or his contractor to ensure that all works are undertaken in a safe manner. In particular, the contractor should ensure compliance with the Workplace Health and Safety Act 2011, all Workcover Regulations, and any other relevant Acts, Ordinances and Regulations in NSW.

The developer should not obstruct and will be held responsible for the safety of the public, traffic and utility services such as electricity, water, telephone and the like, and should provide all watchmen, lights, barriers, signs and fences necessary to prevent any accidents to public or private damage or loss. The developer should provide, erect and maintain all necessary temporary roads, bridges, footways, drains, supports, and protection in order to ensure the above.

Signs, barricades, barriers, warning lights, etc. should be placed where works are in progress and in accordance with Australian Standard AS 1742 "Manual of Uniform Traffic Control Devices".

The developer should provide and maintain adequate fire fighting equipment and take adequate fire fighting measures during the carrying out of the works and should take action to prevent damage to, or destruction by fire of property, forests, trees, shrubs or grasses.

## 2.14 Insurance

Contractors engaged on development or subdivision works shall take out Public Liability Insurance to the value of \$20 million. The policy should specifically indemnify Council from all claims arising from the execution of the works.

All plant and equipment used on the construction site shall be insured, to indemnify all third parties. Documentary evidence of current insurance will be required before commencement of works.

## 2.15 Services

It is the developer's responsibility to ensure that all services, including underground power, telephone, water, sewerage, gas, and stormwater services are located by the appropriate authority prior to commencing work.

In the event of any of the abovementioned services being damaged or interrupted, the developer should forthwith notify the responsible authority and take all necessary steps to provide for the safety of the public and to have the damage repaired as quickly as possible. The cost of all repairs shall be borne by the developer.

## 2.16 Work as Executed Plans

When the work is completed, the developer shall provide to Council a complete set of the construction plans, showing all levels and dimensions as constructed. Provision of the work-as-executed plans will normally be regarded as an essential part of the work which must be completed before the plan is released.

In general, work-as-executed plans will be required for the following:

- 1. Sewerage main installations showing the location of all manholes in relation to property boundaries, and the location depth and description of junctions. These drawings will normally be to a scale of 1:500.
- 2. The location of water mains showing all hydrants and stop valves.
- 3. The line and level of kerb and gutter and drainage lines.

All work-as-executed drawings should bear the Consulting Engineer or Consulting Surveyor's certificate stating that all information shown on the plan is correct.

## 2.17 Maintenance Period

When all of the works have been satisfactorily completed, Council will cancel the bank guarantee (if applicable) or return the bond (if applicable) with the exception of an amount of 10% of the value of total project as determined by the Director of Engineering Services, which shall be retained as a security deposit, for a maintenance period of 12 months. If no bond or bank guarantee was lodged, then the developer may be required to lodge with Council an amount equal to 10% of the value of the work as determined by the Director of Engineering Services.

The security deposit shall be held by Council to cover any defects which may arise during the 12 months maintenance period however it is acknowledged that general wear and tear will occur.

During the maintenance period, any defects notified, will be brought to the attention of the developer. If it is not rectified to the satisfaction of Council, within a reasonable time in accordance with the circumstances as determined by the Director of Engineering Services, the Council shall be at liberty to rectify the defect at the developer's cost using the security deposit. Any unexpended balance will be refunded to the developer.

Council may, at its discretion, accept a bank guarantee for the security deposit, in lieu of cash.

# 3. Guidelines for rural subdivisions

The aim of this code is to assist developers. It is intended as a guide to Council's minimum requirements, but developers and subdivision designers are encouraged to submit innovative and interesting designs. Designers are encouraged to submit preliminary or conceptual plans for Council's comment before full detailed engineering drawings are drawn.

## 3.1 Allotment size

The minimum size of rural allotments is defined in the Tenterfield Shire Council Local Environmental Plan 2013, by the relevant Lot Size Maps. Frontage onto state controlled roads such as the Bruxner Highway and New England Highway are subject to NSW Roads and Maritime Services approval.

## 3.2 Road design

In general, Council will expect new roads to be constructed in accordance with Road Network Management Plan and the Director of Engineering Services assessment of the Development Application, and a contribution to be made for general road upgrading in accordance with the Section 94 and 94A plan.

Guideposts will be required in accordance with RMS design guidelines and particularly at culverts and curves. Guardrail and Warning Signs will be required in accordance with the RMS design guidelines. The number and location of guideposts, guardrail and warning signs should be shown on the plans.

The geometric design of rural roads should be generally in accordance with current AUSTROADS standards.

# 3.3 Stormwater Design

Stormwater calculations shall be in accordance with Australian Rainfall and Runoff guidelines, and the engineering calculations will need to be presented with the plans and specifications.

Generally, rural drainage structures should be designed for a minimum return interval of 20 years, but the plans should show where the 100 year flow will go.

At points of discharge of culverts and stormwater drainage lines, necessary protective measures may need to be included to prevent scouring. All pipe selection, laying and bedding should be in accordance with the guidelines of the Concrete Pipe Association of Australia. The minimum pipe diameter will be 375mm.

# 3.4 Plans and Specifications

Council will expect the following plans for a subdivision:

- Plan
- Longitudinal Section
- Cross Sections
- Details of drainage structures

Three full sets of the drawings should be submitted to Council along with a covering letter and an electronic copy of all models and CAD files. One set will be returned to the applicant when approved and stamped. "Approved" means that the plans and specifications meet Council's requirements, but does not release the contractor from the responsibility to rectify errors in the plan which become evident during construction.

The preferred size of plans is A1. However, Council may accept other standard sheet sizes A2, A3 or A4 if these sizes are more appropriate for the particular project.

## 3.4.1 Plan

The plan should be drawn at a scale of 1:1000, and should show lot boundaries and numbers, road centreline chainages and the position of cross sections, width of road, footpaths and road pavement. The plan shall also show the location of and reduced level of the bench mark used in the survey work, the location of vehicular entrances to lots, all pipe culverts and box culverts, all public utilities, and any other relevant information to make the plan complete. The location of and reduced level of recovery pegs, bearings of lines and boundaries, and all existing features such as poles and fences etc, shall be shown on the plan.

All surveyed level work shall where practical be to Australian Height Datum (AHD).

## 3.4.2 Longitudinal Section

A longitudinal section of the centreline of all roads should be supplied at scales of:-

- 1:1000 horizontal
- 1:100 vertical

The longitudinal section should show chainages, reduced level of the natural surface and of the finished level of the road, design grades and length of vertical curves. Longitudinal levels should be provided at 20 metre intervals on straights, and at 10 metre intervals on curve transitions.

Longitudinal sections and cross sections shall be taken along existing intersecting roads for a sufficient distance (approximately 50 metres) to enable the design of intersections and any necessary drainage.

#### 3.4.3 Cross Sections

Cross sections should be provided at intervals not exceeding 20 metres, at scales of 1:100 horizontal and vertical. Cross sections should show chainage, reduced levels of natural surface, and the finished level of the pavement.

Cross sections should not necessarily be terminated at the fenceline, but should be levelled sufficiently far enough beyond the road boundaries to enable batters of cutting and embankment to be shown. Commonly adopted batter slopes are 2 horizontal to 1 vertical in earth cuttings, and 3 horizontal to 1 vertical on embankments.

## 3.4.4 Specifications

A written specification shall be provided unless the work is to be done by Council. Three copies of the specification should be provided for Council's approval along with the plans. The specification should contain full and precise instructions on the extent of the work, the quality standards to be achieved, and the methods of supervision and testing to be used.

## **3.5** Road Construction

All testing of concrete and soils shall be carried out and certified by a laboratory which is registered for the appropriate tests by the National Association of Testing Authorities (NATA).

Minimum depth of gravel pavement is to be determined depending on material to be used and subgrade testing in accordance with RMS standards. Cover required is to be determined for normal loading unless otherwise instructed by Council. As a guide the minimum depth of gravel, for gravel roads is 150mm compacted and for sealed roads 300mm compacted in two 150mm layers for the full formation width in both cases.

Surface and Base course should conform to the requirements of the RMS's guidelines for the supply of natural gravel or crushed rock for road pavements.

Proposed application and sealing requirements should be discussed with the Director of Engineering Services. As a general rule, Council will usually require a prime seal and a single coat bitumen seal, as follows:

- Prime coat 7mm aggregate
- Bitumen coat 14mm aggregate.

Sealing with hot bitumen is not usually carried out during the months of April to September, however a prime coat can be usually applied at any time during the year.

## 3.6 Soil Conservation

Generally, land should be subdivided into lots which suit the needs of the landholder and which take account of the physical and environmental characteristics of the site. Potential land use activities should be considered in the subdivision design.

A drainage system should be designed so that it will assist with the stability of existing drainage lines and associated drainage plains rather than initiate or aggravate erosion and sedimentation within them. Batters should be properly formed and subsequently stabilized by vegetation or by structural measures.

Topsoil should be stockpiled and respread after earthworks for the purpose of revegetation.

#### 3.7 Fencing

The developer may be required to fence property boundaries along the road frontage to avoid the need for cattle grids, and provide appropriate access gates along roads and frontages.

# 3.8 Power, Telephone and Lighting

The above services may be required depending on the location and if so determined by Council. Refer Council policy "Subdivision for the Purpose of a Dwelling, or Other Purpose, Without the Supply of Reticulated Electrical Power"

# 4. Guidelines for urban subdivisions

The aim of this code is to assist subdividers. It is intended as a guide to Council's minimum requirements, but developers and subdivision designers are encouraged to submit innovative and interesting designs. Designers are encouraged to submit preliminary or conceptual plans for Council's comment before full detailed engineering drawings are drawn.

## 4.1 General considerations

#### 4.1.1 Footpaths

Where streets adjacent to the proposed subdivision have existing paved footpaths, then Council may require paved footpaths. Council may also require paved footpaths where a large volume of pedestrians or aged pedestrians are expected.

## 4.1.2 Cul-de-sacs

All no-through roads should have a cul-de-sac at the end. Generally, the minimum radius for a cul-de-sac is 14 metres.

## 4.1.3 Testing

All materials testing (e.g. concrete or soils) should be carried out by a laboratory registered by the National Association of Testing Authorities for that test.

## 4.2 Allotment Layout and Size

The minimum frontage or square width of all lots is to be 18 metres, with the exception of :-

- 1. Corner lots minimum frontage to be 21 metres;
- 2. Lots other than corner lots fronting main roads minimum width at building line to be 18 metres;
- 3. Fan shaped lots minimum width to be 17 metres taken at a distance 4.5 metres back from the street alignment.

Corner lots should have corners splayed a minimum of 3.5 metres each way in the case of square lots, and in the case of acute-angled lots, the minimum base of the isosceles triangle created should be 4.5 metres.

## 4.3 Street design

In general, Council will expect all new roads to be kerb and guttered and bitumen sealed from kerb to kerb. Council may require kerbing and guttering for subdivisions which front existing roads if determined.

The following guidelines are suggested for the benefit of designers:-

- Minimum road reserve width = 20 metres
- Pavement Design Life = 60 years
- Typical crossfall = 3%.
- Kerb to kerb width = Dependant on existing streets and traffic projections.

Subsoil drains may be required in certain locations, particularly at intersecting drains and behind kerbs, and as mitre drains under pavements.

Services should be provided in the footpath as per Council's Road Network Management Plan or as otherwise approved by the Engineering Services Department.

## 4.4 Stormwater

Stormwater calculations shall be in accordance with Australian Rainfall and Runoff guidelines, and the engineering calculations will need to be presented with the plans and specifications. Outlet structures to streams may require a rubbish collection pit in accordance with the E.P.A. requirements.

The underground stormwater system including pipes, pits and inlet structures, should be sufficiently sized to accommodate "Minor" flows will be calculated from an ARI of 10 years. Overland flow paths should be determined from a storm of ARI 100 years.

All pipe selection, laying and bedding should be in accordance with the guidelines of the Concrete Pipe Association of Australia. The minimum pipe diameter will be 375mm.

## 4.5 Kerb and Gutter

All urban street construction where there is bitumen sealing and stormwater drainage, shall have concrete kerb and gutter and shall have roofwater drainage outlets included. Standard kerb and gutter section details are in accordance with Council's Standard Drawings.

In general, 150mm high integral kerb and gutter should be used for all arterial, sub-arterial, collector, and industrial streets. Council may permit the "Rollover" or "Layback" profile in local, local access and cul-de-sac streets. Kerb profiles should be shown on the plans for all kerb returns and cul-de-sac bulbs. A scale of 1:500 horizontally and 1:100 vertically is suggested. Machine moulded kerb and gutter will be permitted, provided that it is laid over a minimum of 150mm of road base compacted to 98% Reduced Dry Density (RDD).

Council may require details of the proposed kerb and gutter concrete mix before approval is given.

## 4.6 Water

All urban subdivisions shall be provided with a reticulated water supply, designed in accordance with the Department of Public Works guidelines. Separate water services should be provided to the boundary of allotments and to all public areas.

The following design guidelines are suggested:-

Water mains should be sized to provide a continuous water supply for both domestic and fire-fighting purposes.

In general, Council would prefer to construct all new water mains and services using Council staff at the developer's cost. Council would provide an estimate for this work. However, in the case of a major subdivision, Council may permit this work to be carried out by an experienced contractor who is approved by Council. In any case, all connections to Council's mains will be by Council at the developer's expense.

Water mains should be RRJ PVC, minimum Class 12, minimum size 100mm diameter. The class of pipe should be 1.33 times the maximum system working pressure. E.g. for a maximum working pressure of 900 kPa, use Class 12 (1200 kPa).

Fire hydrants should be provided at maximum spacings of 60 metres.

Stop valves should be provided at all street intersections and branches so that each section can be isolated separately. The contractor is not permitted to close or open values on Council's mains.

Stop valve and hydrant marker plates should be 100mm x 150mm reflectorised, and attached to the nearest utility pole or fence, or if not practical, to a white painted post placed at the property boundary. The distance from the marker to the stop valve or hydrant should be clearly shown on the marker. Road reflector markers are to be located opposite all hydrants on the centreline of the road.

Dead ends in the reticulation system should be avoided. Ring mains are preferred to avoid "stale" water and the need for flushing.

Thrust blocks should be provided to restrain the pipe system against all unbalanced forces generated by the water supply pressures. Design and construction of thrust blocks should be in accordance with the IPWEA standards and Council's standard drawings.

All water mains shall be tested under pressure in the presence of Council's nominated inspector before the trench is backfilled. Sections may be isolated and tested separately. Testing should be in accordance with the Public Works Department Standard W316-D. Test pressure at the lowest point in the section under test is to be the rated safe working pressure as determined by the class of pipe.

## 4.7 Sewerage

Most areas of Tenterfield have access to the Council's sewer. Details of unsewered regions of town can be obtained from the Engineering Services Department. All urban subdivisions with access to the sewer system should be provided with a sewer connection, positioned so that all of the allotment can be served. Where a subdivision is not currently served by sewer, connection to the network may be specified as a development condition.

The sewerage reticulation system should be designed in accordance with the Department of Public Works guidelines, relevant IPWEA standards and Council's Standard Drawings.

In general, Council would prefer to construct all new sewers using Council staff at the developer's cost. Council would provide an estimate for this work. However, in the case of a major subdivision, Council may permit this work to be carried out by an experienced contractor who is approved by Council. At any rate, where it is necessary to cut into or divert an existing main, this work shall be done only by Council's staff, at the developer's expense, paid in advance.

Design flows should be calculated in accordance with the NSW Public Works standards, but the following criteria may be used as a guide:-

- Average dry weather flow = 273 litres per person
- Peak wet weather flow = 1590 litres per person
- Average no. of people per tenement = 3.5.

The sewer system components should be designed generally in accordance with NSW Public Works Department standards. Additional information regarding guidelines for individual elements of the sewer system are included below.

#### 4.7.1 Pumping stations

Wet well capacity is to be sufficient for the total ultimate Peak Wet Weather Flow (PWWF). Pumps are to be sized for a maximum 10 starts per hour and provide a self-cleansing velocity of 0.6 metres per second in the rising main. Minimum volume from top water level to bottom water level should be the volume pumped in 90 seconds. The combined detention time in the wet well and rising main should not exceed 4 hours.

#### 4.7.2 Reticulation mains

Sewer capacity should be greater than or equal to PWWF, and grading sufficient to achieve self-cleansing velocity at Peak Dry Weather Flow (PDWF). The maximum acceptable grade for any sewer is 1 in 10. Minimum cover required is 600mm. The minimum acceptable grades are as follows :-

Pipe Size (mm)	Minimum Grade
150	1 in 200
225	1 in 300
300	1 in 450
375	1 in 550
450	1 in 650

The minimum size for sewer mains is 150mm diameter.

## 4.7.3 Junctions

A 150mm diameter sewer junction is to be provided within each lot. The depth of the junction is to be such that any location within the lot can be drained to it via a pipe with a minimum cover of 300mm, laid at a grade of 1 in 60. Junctions exceeding 10 metres in length may be considered to be side lines, and may require a manhole where they enter the main.

#### 4.7.4 Manholes

Sewer manholes are required at all changes of grade, deflections, line intersections and at all dead-ends exceeding 30 metres in length. The maximum spacing of manholes should be 80 metres. Sewer manholes should not be located in road carriageways.

#### 4.7.5 Easements

3 metre wide easements are required over all sewer mains across private property.

#### 4.7.6 Marking of junctions and sidelines

The position of each riser, junction or end of a sideline should be clearly marked by the Contractor on completion of backfilling. A white survey peg should be used to indicate the location of all sewer junctions. The peg should be tied to an underground tape, connected to the sewer junction.

#### 4.7.7 Testing

All sewer mains shall be tested under pressure in the presence of Council's nominated inspector before the trench is backfilled. Sections may be isolated and tested separately. Testing should be in accordance with the Public Works Department standards.

#### 4.8 Telephone, Power & Street Lighting

In general, Council will expect the developer to provide telephone and power services to each lot, and street lighting services at the developer's cost. Street lighting must be approved by the appropriate electrical authority and utilise energy efficient luminaires.

#### 4.9 Plans and Specifications

Council will expect the following plans for an urban subdivision:

- 1. A cover sheet with a locality plan and list of drawings
- 2. Road construction
  - a. Plan

- b. Longitudinal Section
- c. Cross Sections
- 3. Drainage Construction
  - a. Contour catchment area plan with runoff calcs
  - b. Plan of K.&G., pits and stormwater pipes
  - c. Longitudinal section of stormwater pipes
- 4. Water Reticulation
  - a. Plan
  - b. Longitudinal section
- 5. Sewer Reticulation
  - a. Plan
  - b. Longitudinal section
- 6. Services
  - a. Showing Telephone, Power, Street Lighting, Gas etc
- 7. Erosion and Sediment Control Plan

In addition, Council may expect the following, depending on the circumstances:

- 1. Landscaping Plan
- 2. Traffic Management Plan

Three full sets of the drawings should be submitted to Council along with a covering letter and any electronic models and CAD drawings. One set will be returned to the applicant when approved and stamped. "Approved" means that the plans and specifications meet Council's requirements, but does not release the contractor from the responsibility to rectify errors in the plan which become evident during construction.

The preferred size of plans is A1. However, Council may accept other standard sheet sizes A2, A3 or A4 if these sizes are more appropriate for the particular project.

#### 4.9.1 The Plan

The plan should be drawn at a scale of 1:500, and should show lot boundaries and numbers, road centreline chainages and the position of cross sections, width of road, footpaths and road pavement. The plan should also show the location of and reduced level of the bench mark used in the survey work, the location of any existing or proposed kerb and gutter, vehicular entrances to lots, dished crossings at intersections, all pipe culverts and

box culvert drainage together with easements and their width, gully pits, junction boxes, existing water and sewerage mains, other public utilities, and any other relevant information to make the plan complete. the location of and reduced level of recovery pegs, bearings of lines and boundaries, and all existing features such as poles and fences etc, should be shown on the plan.

All surveyed level work shall be to Australian Height Datum (AHD).

## 4.9.2 Longitudinal Section

A longitudinal section of the centreline of all roads should be supplied at scales of:-

- 1:500 horizontal
- 1:100 vertical

The longitudinal section should show chainages, reduced level of the natural surface and of the finished level of the road, design grades and length of vertical curves.

Longitudinal levels should be provided at 20 metre intervals on straights, and at 10 metre intervals on curves and transitions.

Longitudinal sections and cross sections shall be taken along existing intersecting roads for a sufficient distance (approximately 50 metres) to enable the design of intersections and any necessary drainage.

#### 4.9.3 Cross Sections

Cross sections should be provided at intervals not exceeding 20 metres, at scales of 1:100 horizontal and vertical. Cross sections should show chainage, reduced levels of natural surface, and the finished level of the pavement, kerb and gutter and the footpath.

Cross sections should generally be terminated at the property boundary.

## 4.10 Specifications

A written specification shall be provided unless the work is to be done by Council. Three copies of the specification should be provided for Council's approval along with the plans.

The specification should contain full and precise instructions on the extent of the work, the quality standards to be achieved, and the methods of supervision and testing to be used.