# TWEED SHIRE COUNCIL

# DEVELOPMENT DESIGN SPECIFICATION

# D13

# ENGINEERING PLANS (SUBDIVISIONS)

**VERSION 1.9**

# SPECIFICATION D13 – ENGINEERING PLANS (SUBDIVISIONS)

**CLAUSE** **CONTENTS** **PAGE**

**CITATION**

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**VERSIONS, D13 ENGINEERING PLANS (SUBDIVISIONS)**

| VERSION | AMENDMENT DETAILS | CLAUSES AMENDED | DATE ISSUED (The new version takes effect from this date) | Authorised by the Director of Engineering Services |
|---|---|---|---|---|
| 1.1 | Original Version | | 1 July 2003 | |
| 1.2 | Amended Subdivision Certificate Application process for WAX Plans | D13.12, D13.14, D13.16, D13.17, D13.18,<br>Appendix D13.A-F | 4 May 2004 | |
| 1.3 | Amended Subdivision Certificate Application process for WAX Plans | Appendix D13.A | 16 August 2004 | |
| 1.4 | All design and WAX levels to AHD | D13.03.5, D13.15.2 | 11 April 2007 | |
| 1.5 | Update format requirements for WAX plans<br>Update references from DCP16 to DCP-A5<br>Minor updates to titles of compliance certificates | D13.13<br>Various<br>Appendix D13.C & D13.D | 18 February 2011 | |
| 1.6 | Additional landforming detail required to demonstrate compliance with D6<br>Provision of additional site works details<br>New Summaries Section<br>New Notice of Commencement of Subdivision Works Defects | D13.03.5, D13.15.6<br>D13.15.6<br>Summaries<br>Appendix D.13E | 9 July 2012 | |

| | | | | |
|---|---|---|---|---|
| | Liability Period | | | |
| 1.7 | Remove SWAC certification and replace with NPER<br><br>Add typical notes plan group<br><br>Various additions to plan requirements and add scale at A3<br><br>Sewerage System Updates<br><br>Electronic lodgement requirements added | D13.06, SUMMARIES<br><br>D13.07, D13.09<br><br>D13.09, D13.10<br><br>D13.03, D13.09<br><br>D13.05 | July 2015 |  |
| 1.8 | Replace reference to Chartered Engineer with Professional Engineer (Civil) with current Engineers Australia National Engineering Register (NER) accreditation<br><br>Restore Registered Surveyor certification option and specify qualifications | D13.06, D13.17, SUMMARIES<br><br>D13.06, D13.17, SUMMARIES | 12 April 2016 |  |
| 1.9 | Minor amendments to plan requirements to implement colour coding of services | D13.03, D13.09 | 24 April 2018 |  |
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# DEVELOPMENT DESIGN SPECIFICATION D13

# ENGINEERING PLANS (SUBDIVISIONS)

## GENERAL

### D13.01 SCOPE

1. DCP-A5 specifies information required to be submitted with Development Applications; Construction Certificate Applications for subdivision works; and Subdivision Certificate Applications. Engineering plans form part of the information required with these applications.

   This specification provides details of the engineering plans and attachments required with these applications.

2 Subdivisions require works to provide infrastructure and services to lots. These works are shown on engineering plans.

   With a *Development Application*, preliminary engineering plans (and attachments) of works are required with sufficient detail to:

   (a) assess the impact of such works on other land, persons and the environment

   (b) determine if proposed infrastructure works and systems are feasible to construct, economically viable to operate and maintain and are suitable for inclusion in public realm infrastructure

   With a *Construction Certificate Application*, full working plans (and associated documents) of the works are required.

   With a *Subdivision Certificate Application*, “Work as Executed” plans of works are required to assess the compliance of completed works compared to Construction Certificate *approved design plans*.

3. In this specification, for subdivisions where Council is not the consent authority, where appropriate the word “Council” shall be substituted with “the Consent or Determining Authority”.

***When Council is not the consent authority***

### D13.02 OBJECTIVES

The objective of this specification is to provide a detailed schedule of the engineering plans and attachments required with development applications for subdivisions, Construction Certificate Applications for Subdivision Works and Subdivision Certificate Applications so that the impact and adequacy of such works can be assessed.

# DEVELOPMENT APPLICATIONS

## D13.03 PRELIMINARY ENGINEERING PLANS AND ATTACHMENTS TO ACCOMPANY DEVELOPMENT APPLICATIONS FOR SUBDIVISION

1. The requirements set out in the following sections are applicable to large subdivisions. It is recognised that the amount of information and level of detail required will differ depending on the size, location and nature of a proposed subdivision.

2. For smaller subdivisions in established areas, the location of roads, drainage and services may be largely set and portion the required information may be unnecessary and an applicant may wish to submit a shortened application. In such cases the application must include a written statement justifying the deletion of each item.

3. Where subdivisions are to be staged or a management lot structure is to be adopted, additional information will be required to ensure that such proposals conform with an overall master plan.

4. For staged subdivisions the engineering plans and attachments must demonstrate that the road network, landforming, drainage systems, water supply systems and sewerage systems for each stage (as the stages progress), will be viable in their own right in the event that future stages are not constructed.

5. The following preliminary engineering plans and attachments are to accompany a development application for subdivision. The level of detail required with each plan and attachment is specified in following sections of this specification.

   Unless indicated otherwise plans of the subdivision site are to be a minimum scale 1:1000 (A1) or 1:2000 (A3)

   **(a) Site plan showing existing and proposed levels**

   Required:

   (i) Plan of existing topography of site, including existing drainage lines with contour interval 1.0m.

   (ii) Plan of proposed finished landform of site with contour interval 1.0m on background plan of proposed lot layout

   (iii) The above plans shall extend a minimum 5m (see note) into adjoining land beyond the perimeter boundary of the proposed subdivision.

   Note: the above plans shall extend as far into adjacent land as is necessary to determine if there are any landform/drainage impacts on adjacent land and to assess these impacts.

   (iv) Where cut or fill will exceed 5m in any part of the subdivision (or 8m in the case of industrial, business or mixed use subdivision), the

following additional information is required

- Plan (i) above is to be accompanied by an additional plan showing natural surface slope analysis showing the following slope categories: 0 – 5%, 5 – 10%, 10 – 15%, 15 – 20%, 20 – 25%, 25 – 30%, 30 – 35%, over 30%.

- Plan of subdivision showing the areas of finished landform where cut or fill will exceed 5m height (or 8m in height in the case of industrial, business or mixed use subdivision), The plan is to show areas and computations to demonstrate that the proportion of a subdivision that contains cut or fill areas with finished surface levels that depart from natural surface levels by more than 5m does not exceed 10% (or by more than 8m does not exceed 20% in the case of industrial, business or mixed use subdivision). (See Development Design Specification D6 – Site Regrading).

- Data Terrain model (DTM) of (i) above with a layer depicting proposed lot layout and alignment. The DTM may be

    - Land XML file

    - Triangle mesh file (DXF)

    - AutoCAD file with 3D contours

(iv) All levels shall be to Australian Height Datum (AHD), with benchmarks referenced on plans.

**(b) Drainage catchment plans**

Required:

(i) Upstream external catchments (at appropriate scale)

(ii) Existing and proposed internal catchments (on background plan of proposed lot layout) and upstream external catchments

**(c) Roads**

Required (see D1 for design criteria):

(i) Traffic study to determine expected traffic volumes and impact on surrounding road network. To include recommended internal hierarchical classifications and intersection treatments; plus necessary upgrading of existing roads, intersections and connecting roads to accommodate increased traffic. A traffic study is not necessary for subdivisions which create no more than 15 new lots and do not create new intersections.

(ii) Plans of proposed road network on background plan of lot layout and final levels (contours) showing:

- road/kerb edges.

- indicative road drainage location

- major structures
- intersections and traffic control devices
- connecting roads (to existing road network)
- upgrading of existing roads and intersections
- indicative landscaping of movement network (includes roads, pathways and cycleways)

(iii) Indicative long sections, or on above plans note centreline levels every 10m and levels at all crests and sags

**(d) Drainage System**

Trunk drainage is defined as

(i) Drains conveying runoff through the development site from upstream catchments

(ii) Drains conveying runoff from the development site boundary to legal points of discharge off the site

(iii) Any internal drainage serving a catchment of greater than 1ha

Controlling Minor drainage is defined as:

(i) Minor drainage systems that drain areas of critical surface level (particularly in low, flat or filled areas) that will control the level of downstream trunk drainage

Required:

(i) Plan of proposed drainage system (shown in LILAC / PURPLE), on background plan of proposed lot layout, or may be shown on road network plan in 1 above, showing indicative locations of:

- Trunk drainage
- Controlling minor drainage
- Minor drainage paths from sag points
- Q100 overland flow paths
- Drainage structures, stormwater quality devices

(ii) Preliminary assessment of trunk drainage flows and hydraulic grade line analysis, indicative trunk drain invert levels, indicative trunk drain sizes (or cross sections). Indicative levels on trunk drains at site boundaries (upstream and downstream); intervals of not more than 100m within the site; and at legal point of discharge off the site. Indicative levels of controlling minor drainage.

(iii) Plan with levels and sizes of controlling minor drainage, to indicate its impact on the balance of the system.

**(e) Water Supply System**

Required:

(i) Water supply study (see D11 for design criteria) to include projected demand, adequacy of existing system to supply additional demand at proposed connection points, supply strategy options, hydraulic analysis.

(ii) Indicative plan of proposed system (with proposed water reticulation shown in BLUE and proposed recycled water shown in LILAC / PURPLE), on background plan of proposed lot layout, with indicative sizing, connections to existing system, route location and easement requirements, any required augmentation of existing system beyond connection points. The background plan is to also show existing and proposed electricity / power supply and telecommunications / telemetry.

**(f) Sewerage System**

Required:

(i) Sewerage study (see D12 for design criteria) to include assumptions, calculations and plans used in determining design flows, adequacy of existing system to receive additional flows, and all other pertinent considerations including pipeline self cleansing, detention time in rising mains, septicity and odour control and staging of capacity, comparison of options and recommended preferred option (if applicable).

(ii) Indicative plan of proposed reticulation system (with proposed sewer reticulation shown in GREEN and proposed sewer rising main shown in ORANGE), on background plan of proposed lot layout, with catchment boundaries, pump station locations, indicative gravity sewer location, sizes and invert levels.

(iii) Indicative plan of proposed rising main location, indicative sizing and minimum velocities; and easement requirements.

(iv) Proposed sewer pumping station/s, indicative lot layout including access driveway, indicative well size and invert level, pump duty points, associated power supply and telemetry, collector manhole and overflow location.

(v) Indicative location, type and indicative sizing of septicity and odour controls.

**(g) Earthworks**

Required:

(i) Plan of site, on background plan of proposed lot layout, showing depths of proposed cut and fill; batter location, gradient and drainage system (see Development Design Specification D6 - Site Regrading).

**(h) Electricity**

Required:

(i) Details of consultation with supplier

(ii) Details of proposed alterations to existing services

(iii) Electricity supply strategy

(iv) Plan of street and open space lighting, on background plan of proposed lot layout, and indicative details of proposed street lights

**(i) Telecommunications**

Required:

(i) Details of consultation with suppliers

(ii) Details of alterations to existing services

(iii) Telecommunications services strategy

**(j) Gas**

If gas is to be reticulated in the subdivision then the following is required:

(i) Details of consultation with supplier

(ii) Details of proposed alterations to existing services

(iii) Gas supply strategy

**(k) Landscaping and embellishment of public open space**

Required:

(i) Indicative landscaping and embellishment of public open spaces plan

**(l) Preliminary erosion and sediment control plan**

Required:

(i) Preliminary Erosion and Sediment Control (ESCP-P), see Development Design Specification D7.B1 for detailed requirements.

**(m) Preliminary stormwater management plan**

This plan addresses permanent stormwater quality treatment proposals.

Required:

(i) Preliminary Stormwater Management Plan (SWMP-P) see Development Design Specification D7.B1 for detailed requirements.

**(n) Master plan (for staged or management lot subdivision)**

Where a subdivision is to be developed in stages or where “management” lots are to be created, a master plan must accompany the initial application and each progressive stage application. This is in addition to the information which is required for each individual stage.

Required Master Plan:

(i) Stage or management lot layout

(ii) Traffic study to determine expected traffic volumes and impact on surrounding road network for each stage, cumulative stages and total development. To include recommended internal hierarchical classifications and intersection treatments; plus necessary upgrading of existing roads, intersections and connecting roads to accommodate increased traffic for each stage, cumulative stages and total development.

(iii) Proposed portion of road network to be constructed to service each management lot.

(iv) For staged development, subsequent proposed internal street and lot layout, all stages

(v) Existing and proposed levels all stages, particularly at stage and management lot boundaries

(vi) Proposed earthworks/landforming for each stage, cumulative stages and total development. Full details to be given for treatment and levels at management lot/stage interfaces as each stage/management lot progressively developed.

(vii) Drainage catchment plans all stages

(viii) Indicative drainage system all stages or management lots, identification of downstream and cross stage/management lot legal stormwater discharge paths for each stage or management lot and total development.

(ix) Water supply study (see D11 for design criteria) to include projected demand, adequacy of existing system to supply additional demand at proposed connection points, supply strategy options and hydraulic analysis and for each stage, cumulative stages and total development. Proposed water supply system for each stage, cumulative stages and total development.

(x) Sewerage study (see D12 for design criteria) to include anticipated

flows, adequacy of existing system to receive additional flows, septicity controls, catchment options, sewerage strategy options, life cost estimates of options, comparison of options, recommended preferred option for each stage, cumulative stages and total development. Proposed sewerage system for each stage, cumulative stages and total development.

(xi) Proposed electricity and telecommunications system for each stage, cumulative stages and total development.

(xii) Proposed implementation strategies for ESCP and SWMP for each stage, cumulative stages and total development.

(xiii) If a subsequent stage application deviates from the initial approved master plan, a revised master plan incorporating these (and any other proposed) deviations is to be submitted with that application.

## CONSTRUCTION CERTIFICATE APPLICATIONS

### D13.04 DETAILED ENGINEERING PLANS TO ACCOMPANY SUBDIVISION CONSTRUCTION CERTIFICATE APPLICATIONS

All applications for a Construction Certificate in accordance with S81A(4) of the Environmental Planning and Assessment Act must be accompanied by Detailed Engineering Plans prepared in accordance with this specification. The Detailed engineering plans are to consist of engineering plans and attachments specified below. Once these plans have been endorsed with a construction certificate, they are defined as the *Approved Design Plans.*

### D13.05 PRESENTATION

1. Plans may be produced on A0, A1, A2 or A3 sized sheets. The choice of which size to adopt will be determined by the size of the subdivision, therefore ensuring that the plans can graphically illustrate the intent of the designer without sacrificing clarity. In other words, as long as the maximum reduction scales are maintained, the plans may be submitted on any of the aforementioned sheet sizes listed.

   They are to be clear and legible and prepared in consistent lettering and style. The minimum pen thickness is to be 0.24 millimetres and the minimum text height is to be 2.5 millimetres. Plans copied from other works will not be accepted. All plans shall be clearly referenced with notations and tables as appropriate. The designer should always be mindful that apart from being a permanent record and legal document, plans should be easily read and understood by the Contractor, and others involved in the construction of the works. Terminology should be kept in 'Plain English' where possible. Council may refuse construction certificate applications that have plans that do not meet these drafting requirements.

2. Attachments are to be produced in the format defined in this specification.

3. Construction Certificate applications may be lodged electronically via the Tweed Shire Council's Web site at www.tweed.nsw.gov.au or via Council's secure Data Box file sharing service. The plans are to be submitted in PDF format and not scanned. The electronic plans are to be submitted in separate

PDF groups as detailed in Table 13.2. The Engineering Plans nominated as item 8 in Table 13.2 shall be submitted as one pdf and index/bookmarked as per Table D13.1.

## D13.06 CERTIFICATION

All plans for earthworks (site regrading), roadworks, drainage works, water supply, sewerage works and foreshore works are to be certified by a Professional Engineer (Civil) who is currently registered on the Engineers Australia National Engineering Register (NER) or a Registered Surveyor with NSW Board of Surveying and Spatial Information (BOSSI) accreditation. All plans for bridgeworks, retaining walls, earthworks batters exceeding 2.5m height, other major structures, reservoirs and pumping stations are to be certified by a professional engineer (NER) with structural or geotechnical engineering experience.

Each sheet of the plans and each attachment design or report shall bear the signature of an approved design consultant.

## D13.07 SUMMARY OF REQUIRED DETAILED ENGINEERING PLANS

1. Detailed engineering plans accompanying a Construction Certificate application, shall be in accordance with the format and groups shown in Table D13.1. For some applications additional plans to those in Table D13.1 may be required to fully specify the proposed works.

| No | Plan Group | No | Plan group |
|---|---|---|---|
| 1 | Title/cover | 18 | Drainage details, structures, schedules |
| 2 | Overall layout and key plan | 19 | Hydrology and hydraulic calculations sheets |
| 3 | Typical Notes | 20 | Erosion and sediment control |
| 4 | Road set-out plans | 21 | Permanent stormwater quality devices and controls |
| 5 | Bulk earthworks and site regrading | 22 | Water supply strategy plans |
| 6 | Detail plans | 23 | Water supply reticulation and details |
| 7 | External works plans | 24 | Water supply pumping stations, reservoirs, special structures, power supply, control systems and telemetry |
| 8 | Typical cross section template and pavement details | 25 | Sewerage strategy and catchment plans |
| 9 | Road long-sections | 26 | Sewer reticulation and details |
| 10 | Road cross sections | 27 | Sewer long sections |
| 11 | Intersection, kerb development details | 28 | Sewage rising mains |
| 12 | Off street parking areas | 29 | Sewerage pumping stations |
| 13 | Cycleways and pathways | 30 | Sewerage septicity controls; special systems, structures, control systems and telemetry |
| 14 | Linemarking, signage, traffic facilities and signals | 31 | Street, carpark and public place lighting |
| 15 | Structures | 32 | Other utilities, electricity, gas, telecommunications |
| 16 | Drainage catchments | 33 | Open space and landscaping |
| 17 | Drainage long sections | | Bushfire Management |

**TABLE D13.1**

**DETAILED ENGINEERING PLAN GROUPS**

2. Any one set of engineering plans may require more than 1 sheet for each of the groups listed and may also require supplementary sheets for site specific details.

3. Scales are required to be nominated on all plans. Required drawing scales are shown on the tables in D13.09. If it is desired to use other scales, the prior approval of Council's Development Engineering Unit is required.

4. To maintain clarity and legibility generally separate sheets are required for each group, but, where space permits, topics that are relative i.e.: typical cross-sections sheet and long-section sheet, may be combined, but, only if clarity is not adversely affected by doing so.

5. Section D13.09 lists the plans in each group that are to accompany a Construction Certificate application. The Director of Planning and Regulation may allow a variation to the above for minor subdivisions as long as the clarity and intent of the plans are maintained.

6. Engineering plan attachments accompanying a Construction Certificate application shall be in accordance with the format and groups shown in Table D13.2. For some applications additional attachments plans to those in Table D13.2 may be required to fully specify the proposed works.

| No | Attachment Group |
|---|---|
| 1. | Erosion and sediment control plan |
| 2. | Stormwater management plan |
| 3. | Traffic management control plan |
| 4. | Water Supply Strategy |
| 5. | Sewerage Strategy |
| 6. | Pavement Design |
| 7. | Bushfire Management Plans |
| 8 | Engineering Plans |

**TABLE 13.2**

**REQUIRED ENGINEERING PLANS ATTACHMENT GROUPS**

## D13.08 STAGING

1. The construction certificate plans are to be for the whole development of a nominated stage approved in the development consent.

2. The construction certificate works and plans shall be such that each stage is complete in itself and will be viable in the event that no further stages are constructed. In this regard plans for each stage must demonstrate:

   (a) Downstream (to a legal point of discharge) drains, waterways, water quality devices and any ancillary works are constructed and title dedicated

   (b) Internal trunk drainage is completed to the extent that there will be no adverse impact on upstream land

   (c) Where proposed earthworks levels are inconsistent with existing levels at the interface with future stages, any batters (or other encroachments) on future stages must be secured by means of a temporary easement which may be surrendered (with Council's approval) when no longer necessary as future stages progress.

   (d) The road network, landforming, drainage system, water supply and sewerage systems for each stage (as the stages progress) must be viable in their own right in the event that future stages are not constructed.

(e) For staged subdivisions the engineering plans and attachments must demonstrate that the road network, landforming, drainage systems, water supply systems and sewerage systems for each stage (as the stages progress), will be viable in their own right in the event that future stages are not constructed.

## D13.09 DETAILED REQUIREMENTS FOR PLAN GROUPS

### Group D1. Title/cover

These plans are to show :

| Content | Comments | Scale |
|---|---|---|
| Title<br>Estate name (where applicable)<br>Description of works<br>Locality name ( road /suburb)<br>List of plans and plan numbers<br>Locality &/or neighbourhood sketch ( N.T.S )<br>Contact information re: designer & client.<br>A typical project sign detail may be illustrated on the cover sheet | | |

### Group D2. Overall layout and key plan

| Content | Comments | Scale |
|---|---|---|
| Overall Layout Plan<br>• Overall road layout<br>• Road names/numbers<br>• Lot boundaries/numbers<br>• Northpoint<br>• Benchmarks/co-ordinate datum reference marks - minimum 3 per site<br>• Stage boundaries | | To suit site. Larger sites may need more than one plan to maintain clarity. |
| Key Plan | Key to detail plans (group 6) | To suit site. One plan preferable. |

**Group D3. Typical notes**

| Content | Comments | Scale |
|---|---|---|
| Typical notes plan<br>• General notes<br>• Stormwater drainage notes<br>• Sewer notes<br>• Water notes<br>• Pavement notes<br>• Soil erosion and sediment control notes<br>• Retaining wall notes<br>• Site preparation notes<br>• Any additional notes | | |

**Group D4. Road set-out plans**

| Content | Comments | Scale |
|---|---|---|
| Overall road layout<br>Road names/numbers<br>Stage boundaries/numbers<br>Northpoint<br>Benchmarks / Co-ordinate datum reference marks - minimum of 3 per site<br>Construction centre-line information showing;<br>(a) chainages<br>(b) bearings<br>(c) all intersection points<br>(d) offset centre-line where applicable<br>(e) curve radii<br>(f) arc length<br>(g) TP and IP chainages | Alternatively for centreline information, provide a setout table in AMG coordinates | 1:1000 (A1)<br>1:2000 (A3) |

### Group D5. Bulk earthworks and site regrading

| Content | Comments | Scale |
|---|---|---|
| Overall plan(s):<br>a) Proposed lot boundaries<br>b) Shading of cut and fill areas<br>c) Depth contours for cut and fill at appropriate interval<br>d) Typical section locations | | an appropriate scale but not less than 1:1000 (A1)<br><br>1:2000 (A3) |
| Earthworks detail plans is to show:<br>a) Shading areas to identify cut and fill<br>b) legend of symbols used<br>c) Existing and proposed contours at an appropriate interval but not less than 0.5m<br>d) Lot boundaries / numbers<br>e) Benchmarks / Co-ordinate datum reference marks - minimum of 3 per site<br>f) Northpoint<br>g) Access points with shakedown areas<br>h) Limit of earthworks<br>i) location of retaining walls, batter tops and toes,<br>j) Associated drainage system including batter and retaining wall catch drains, relief drains, flumes, energy dissipaters etc.<br>k) Earthworks staging - cut to fill | | 1:500 (A1)<br><br>1:1000 (A3) |

### Group D6. Detail plans

| Content | Comments | Scale |
|---|---|---|
| a) Northpoint<br>b) Limit of construction<br>c) Road centreline & chainages, setout table<br>d) Access-ways to lots<br>e) Stormwater drainage (surface and underground) with pit numbers<br>f) Kerbline<br>g) Top and toe of cut and fill batters and retaining walls<br>h) Interallotment drainage with setout information<br>i) Existing services/structures<br>j) Footpaths/cycleways/pram ramps/steps<br>k) Pavement surfaces<br>l) Lot boundaries and numbers | Details to be shown on faint lined background of lot boundaries, with the proposed drainage system shown in LILAC / PURPLE. A mosaic of the detail plans must cover the whole development site or stage. Works external to the site to be shown in group 7.<br>Detail plans must overlap onto adjoining land and stages to demonstrate continuity and absence of adverse impact on such land. Pavement surfaces if complicated may need to be on separate sheets. | 1:500 (A1)<br>1:1000 (A3) |

### Group D7. External works plans

| Content | Comments | Scale |
|---|---|---|
| Detail plans as for group 6 for works external to the development | Required for all works external to the development site | 1:500 (A1)<br>1:1000 (A3) |
| Plans of external upstream and downstream drainage works, external water supply and sewerage works. | As above | 1:500 (A1)<br>1:1000 (A3) |

### Group D8. Typical cross section template and pavement details

| Content | Comments | Scale |
|---|---|---|
| Road names and numbers<br>Road reserve width<br>Pavement width at nominal gutter line<br>Offset chainages and design reduced levels for:<br>a) centreline and crown if offset<br>b) lip of kerb<br>c) top of kerb<br>d) footpath/cycleway<br>e) property boundary<br>Type of kerb<br>Subsoil drainage<br>Batter profile<br>Type and depth of each pavement layer<br>Road crossfall in percentage<br>Notes on benching for filling works<br>Typical section chainage<br>Verge crossfall in percentage | Pavement structure, layer material and thickness designated on this plan will initially be on a preliminary basis and subject to final design in accordance with A6 in D13.10. | 1:100 natural (A1)<br>1:200 (A3) |

### Group D9. Road long-sections

| Content | Comments | Scale |
|---|---|---|
| Chainages and design levels for :<br>a) centreline at 20m intervals on straights and 10m intervals on curves<br>b) centreline horizontal curve tangent points<br>c) intersection with adjoining roads<br>d) vertical curve T.P's and H.P /L.P<br>Grade I.P chainage and level<br>e) existing services and proposed utility and drainage services<br>Vertical curve length<br>Centreline grade as a percentage<br>Existing natural surface levels ( post bulk earthworks)<br>Road name/number<br>Start/end of construction<br>Extension of 60m min beyond limit of work to show match with existing road or future stages.<br>Finished surface<br>Cut and fill depths | Potential conflicts with other services must be identified and resolved. | 1:500h and 1:100v (A1)<br>1:1000h and 1:200v (A3) |

### Group D10. Road cross sections

| Content | Comments | Scale |
|---|---|---|
| X-sections at 20m intervals on straights and 10m intervals on curves min.<br>X-sections at T.P's, cul-de-sac centres<br>Natural surface information<br>Design levels for centreline top of kerb and property boundary<br>Where design batter profile meets natural surface<br>Existing services<br>Proposed utility and drainage services invert levels<br>Footpath/cycleway locations<br>Pavement and verge grades | Potential conflicts with other services must be identified and resolved. | 1:100 natural (A1)<br>1:200 (A3) |

### Group D11. Intersection, kerb development details

| Content | Comments | Scale |
|---|---|---|
| Intersection plan showing property boundaries, kerb and pavement edges, pavement surfaces, traffic facilities, lane markings, medians and islands, roundabouts, channelisation, traffic signals.<br>Centreline (and other appropriate alignment) bearings and curve data<br>Centreline kerb T.P chainages<br>Kerb radii to nominal gutter line<br>Design contours to lip line/ level at 200mm intervals<br>Kerb return longsections (including those on medians, traffic islands and roundabouts) at 1:200h/1:20v with intervals ,arc length, no greater than 5m, showing top of kerb levels, kerb chainage, road chainage, grade, LP or HP.<br>Setout point details in table format | | 1:200 (A1)<br>1:400 (A3) |

### Group D12. Off street parking areas

| Content | Comments | Scale |
|---|---|---|
| Detail plan of off street parking areas showing property boundaries, kerb and pavement edges, pavement surfaces, linemarking, signage, lighting and landscaping<br>Levels and sections as required to define construction. | | 1:200 (A1)<br>1:400 (A3)as appropriate |

### Group D13. Cycleways and pathways

| Content | Comments | Scale |
|---|---|---|
| The cycleway plan sheet may be incorporated into the group 6 group 7 plans where clarity permits. | | 1:500 (A1)<br>1:1000 (A3) |
| Typical cross section with details indicating pavement materials and layer depths. | | 1:100 natural (A1)<br>1:200 (A3) |
| Detail sheet showing crossings, pavement jointing, markings and signage, structures and any other special requirements. | | As appropriate |
| Long section for off road sections | | 1:500h and 1:100v (A1)<br>1:1000h and 1:200v (A3) |
| Cross Sections for off road sections where cross falls vary from typical or superelevation is provided. | | 1:100 natural (A1)<br>1:200 (A3) |

### Group D14. Linemarking, signage, traffic facilities and signals

| Content | Comments | Scale |
|---|---|---|
| Linemarking and signage plans and details | Details already shown in group 11 need not be repeated | As appropriate |
| Traffic facilities and signals plans | | |

### Group D15. Structures

| Content | Comments | Scale |
|---|---|---|
| Plans of non standard structures | Water supply, sewerage and drainage structures shown elsewhere. | As appropriate |

**Group D16. Drainage catchments**

| Content | Comments | Scale |
|---|---|---|
| External catchment plan<br>a) proposed contours and existing (where to be altered) in faint line<br>b) existing road names<br>c) lot boundaries for existing/future development<br>d) existing drains and drainage structures<br>e) identification of existing overland flow paths discharging onto and off the development site | | 1:1000 (A1)<br>1:2000 (A3) |
| Site catchment plan<br>a) drains and drainage structures with line/pit numbers<br>b) catchment boundaries and areas<br>c) flow direction arrows<br>d) design finished contours<br>e) existing contours for 20m outside development boundary<br>f) proposed lot boundaries & road centreline<br>g) overland flow paths<br>h) Proposed drainage easements or reserves | | 1:1000 (A1)<br>1:2000 (A3) |
| External Works<br>a) External downstream flow paths to and including designated lawful point of discharge<br>b) Proposed drainage easements or reserves for a). | Documentary evidence of a lawful right to discharge over downstream land is to accompany construction certificate plans. | 1:1000 (A1)<br>1:2000 (A3) |

**Group D17. Drainage long sections**

| Content | Comments | Scale |
|---|---|---|
| Is to show the following for all stormwater lines (including IAD and subsurface drains):<br>Pit details including:<br>a) numbers, type, dimensions<br>b) lintel length<br>Pipe details including:<br>a) size, class, installation type<br>b) grade in %<br>c) depth to invert<br>d) invert levels, pit upstream/downstream)<br>e) finished surface levels<br>f) HGL levels ( not IAD)<br>g) pipe chainage<br>h) service crossings i.e.: water, power, sewer etc<br>i) line number<br>j) pipe material type<br>Long sections for open channels or swales are to delete above details that | | 1:500h and 1:100v (A1)<br>1:1000h and 1:200v (A3) |

| | | |
|---|---|---|
| are not applicable<br>k) Pipe flow velocity (m/s)<br>l) Pipe flow ($m^3$/s)<br>m) Pipe capacity at grade ($m^3$/s) | | |

**Group D18. Drainage details, structures, schedules**

| Content | Comments | Scale |
|---|---|---|
| (a) Standard TSC gully pit detail<br>(b) Any non standard pit details i.e. Central junction pit, pit benching<br>(c) Flushing point/side drain details<br>(d) Details for any non standard outlets / inlets<br>e) Installation type details<br>(f) Pit schedule showing pit: (alternative method to showing detail on longsection) number, type, size; grate, lintel, road chainage, and co-ordinate data.<br>(g) Open channel designs, cross sections and transitions | | 1:20 (A1)<br>1:40 (A3)<br><br>1:100 (A1)<br>1:200 (A3) |

**Group D19. Hydrology and hydraulic calculations sheets**

| Content | Comments | Scale |
|---|---|---|
| (a) Hydrological and hydraulic design table in accordance with Q-DUM or approved derivative thereof.<br>(b) Details for Q100 major storm for overland flow paths with calculations for flow width; depth plus freeboard; and velocity | Copies of computer data files for both hydrological and hydraulic models are to be provided to Council. | NA |

**Group D20. Erosion and sediment control**

| Content | Comments | Scale |
|---|---|---|
| Plans required with a detailed Erosion and Sediment Control (ESCP), see D7.B2. for requirements | | As appropriate |

### Group D21. Permanent stormwater quality devices and controls

| Content | Comments | Scale |
|---|---|---|
| Plans required for devices and controls nominated in the detailed Stormwater Management Plan (SWMP), see D7.B2 for requirements | | As appropriate |

### Group D22 Water supply strategy plans

| Content | Comments | Scale |
|---|---|---|
| Overview showing<br>(a) Connection points<br>(b) External works<br>(b) Indicative reticulation layout<br>(c) Associated headworks installations and upgrades<br>(d) Calculations confirming compliance with pressure/flow criteria within the subdivision | | As appropriate |

### Group D23. Water supply reticulation and details

| Content | Comments | Scale |
|---|---|---|
| Plan showing<br>(a) Lot layout and numbers<br>(b)Road c/line chainages<br>(c) Location of existing/proposed:- hydrants, valves, pipe lines, pipe sizes, pipe material and class, conduit crossings, typical section for service layout, general notes, legend<br>(d) Schedule of conduit crossings showing: conduit type, road chainage, special structures details ( 1:20 ), relevant TSC details<br>(e) Proposed water pipeline depths in streets, verges and road crossings. Provide long sections for non standard situations and in the vicinity of other conflicting services. | Proposed water reticulation to be shown in BLUE and proposed recycled water to be shown in LILAC / PURPLE. | 1:500 (A1)<br>1:1000 (A3) |

### Group D24. Water supply pumping stations, reservoirs, special structures, power supply, control systems and telemetry

| Content | Comments | Scale |
|---|---|---|
| Detailed plans of general layout; civil, structural, mechanical, electrical works; control systems and telemetry required for the construction/installation and operation of water supply pumping stations, reservoirs and special water supply structures. | | As appropriate |

### Group D25. Sewerage strategy and catchment plans

| Content | Comments | Scale |
|---|---|---|
| Plans showing<br>(a) Areas and catchments to be reticulated, type of reticulation (gravity, vacuum, pressure etc) outline of proposed reticulation, catchment boundaries, limits of existing reticulation and connection points to existing system<br>(b) External works, headworks upgrades<br>(c) Pumping station locations and operating characteristics<br>(d) Rising main location and sizes<br>(e) Septicity control device characteristics, component sizing, location and mode of operation. | | 1:1000 (A1)<br>1:2000 (A3)<br><br>As appropriate |

### Group D26. Sewer reticulation and details

| Content | Comments | Scale |
|---|---|---|
| Plan plans showing:<br>(a) Lot layout and numbers<br>(b) Location and chainages of manholes, vacuum pots, junctions and dead-ends<br>(c) Location and size of gravity and rising mains, vacuum lines, Manhole numbers, Sewer line and manhole numbers.<br>(d) Existing sewer mains, junctions and manholes<br>(e) Special structure details ( 1:20 )<br>(f) Relevant TSC details<br>(g) Easement locations<br>(h) House connection locations | Proposed sewer reticulation to be shown in GREEN and proposed sewer rising main to be shown in ORANGE. | 1:500 (A1)<br>1:1000 (A3)<br><br>1:20 (A1)<br>1:40 (A3) |

### Group D27. Sewer long sections

| Content | Comments | Scale |
|---|---|---|
| To show:<br>a) Manhole numbers, size and class<br>b) Line numbers<br>c) Lots served<br>d) Capacity (ET)<br>e) Existing lines/manholes<br>f) Line junctions<br>g) Existing/proposed service/stormwater crossings<br>h) Manhole type<br>i) Pipe diameter<br>j) Pipe grade in % and 1/x (length of pipe only)<br>k) Pipe length<br>l) Pipe material and class<br>m) FSL Depth to invert<br>n) Invert level for inlet and outlet<br>o) Design finished surface level<br>p) Existing surface level<br>q) Pipe chainage<br>r) Special valve locations | | 1:500h / 1:100v (A1)<br>1:1000h/1:200v (A3) |

### Group D28. Sewage rising mains

| Content | Comments | Scale |
|---|---|---|
| To show:<br>(a) Invert levels<br>(b) Existing surface levels<br>(c) Design finished surface level<br>(d) Existing/proposed service/stormwater crossings<br>(e) Air valves, scour outlets<br>(f) Pipe diameter, chainage from pumping station, material and class<br>(g) Invert level at pump station and receiving manhole<br>(h) Design finished surface level<br>(i) Existing surface level | | 1:500h / 1:100v (A1)<br>1:1000h/1:200v (A3) |

### Group D29. Sewerage pumping stations

| Content | Comments | Scale |
|---|---|---|
| To show:<br>(a) Detail plan / cross section showing: pipe work layout; concrete details with reinforcement information; roof slab details;<br>(b) Switch Cabinet footing details<br>(c) Pipe work schedule<br>(d) Pumping system performance curves<br>(e) Detail notes on: general information; concrete performance requirements; steel reinforcement details; pipe work details; pump details<br>(f) Pumping Station site plan | | 1:200 (A1)<br>1:400 (A3)<br><br>1:20 (A1)<br>1:40 (A3)<br><br>1:500 (A1)<br>1:1000 (A3) |

### Group D30. Sewerage septicity controls; special systems, structures, control systems and telemetry

| Content | Comments | Scale |
|---|---|---|
| Detailed plans of civil, structural, mechanical, electrical works, control systems and telemetry required for the construction/installation and operation of sewerage septicity controls, special systems, sewerage structures, control systems and telemetry. | | As appropriate |

### Group D31. Street, carpark and public place lighting

| Content | Comments | Scale |
|---|---|---|
| Detailed plan showing location and characteristics of all street, car park and public place lights.<br>To include notes/detail plans of pole type and dimensions, foundation requirements, mounting details, light fitting type, characteristics and output, vandal protection and power supply requirements | | 1:500 (A1)<br>1:1000 (A3) |

**Group D32. Combined Services(electricity, gas, telecommunications)**

| Content | Comments | Scale |
|---|---|---|
| Electricity reticulation on background plan of lot layout and numbers showing:<br>(a) Line/pole/trench/conduit/pillar location<br>(b) Transformer/substation details and locations<br>(c) Road crossing locations and details<br>(d) Trench depth, separation, protection and warning tape requirements | Proposed electricity / power supply infrastructure to be shown in RED (including Street Lights). | 1:500 (A1)<br>1:1000 (A3) |
| Telecommunications reticulation on background plan of lot layout and numbers showing:<br>(a) Line/pole/trench/conduit/pit/rim/splitter location<br>(b) Road crossing locations and details<br>(c) Trench depth, separation, protection and warning tape requirements | Proposed telecommunications / telemetry to be shown in ORANGE (including Fibre Optic). | 1:500 (A1)<br>1:1000 (A3) |
| Gas reticulation on background plan of lot layout and numbers showing:<br>(a) main and service pipeline size and location<br>(b) Road crossing locations and details<br>(c) Trench depth, separation, protection and warning tape requirements | Proposed gas to be shown in YELLOW. | 1:500 (A1)<br>1:1000 (A3) |
| | Plan to also show location of proposed / existing water connections, street lighting, street landscaping and driveway locations. | |

### Group D33. Open Space and landscaping

| Content | Comments | Scale |
|---|---|---|
| (a) Plans of landscaping and embellishment for each area of proposed public open space area to include:<br>• layout plan with finished surface contours; internal movement (pathways) network; location of furniture, structures and facilities; access and parking<br>• surfaces, drainage and irrigation plan<br>• detailed plans of special landscaping features<br>• planting plans and schedules of species, sizes, spacing and planting notes<br>• detailed plans of car parking, fencing, paving, structures and landscaping furniture | | as appropriate |
| (b) Plan of all streets, pathways and cycleways and any other elements of the movement network not in (a) above showing<br>• streetscape and other movement network elements, surfaces and street furniture plan<br>• tree, shrub and groundcover planting plan and schedules of species, sizes, spacing and planting notes<br>• detailed plans of paving, and landscaping structures and furniture | | 1:500 (A1)<br>1:1000 (A3)<br><br>as appropriate |

### Group D34. Bushfire Management

| Content | Comments | Scale |
|---|---|---|
| Plan showing all bushfire management features including:-<br>(a) Asset protection zones<br>(b) Outer protection zones<br>(c) Inner protection zones<br>(d) Perimeter road or fire trail<br>(e) Access - Public roads<br>(f) Minimum building setbacks from bushfire prone areas and building construction levels (levels 1,2 &3)<br>(g) Water sources, dams etc for bushfire fighting<br>(h) Radiation shields<br>(i) Fire fighting infrastructure | | 1:500 (A1)<br>1:1000 (A3) |

## D13.10 DETAILED REQUIREMENTS FOR PLAN ATTACHMENT GROUPS

**Group A1. Erosion and Sediment Control Plan**
To contain :

| Content | Comments |
|---|---|
| A Detailed Erosion and Sediment Control (ESCP) is required in accordance with D7.B2 | D7.B2 contains a comprehensive check list of all the items and issues to be addressed in an ESCP. |

**Group A2. Stormwater Management Plan**
To contain :

| Content | Comments |
|---|---|
| A Detailed Stormwater Management Plan (SWMP) is required in accordance with D7.B2 | D7.B2 contains a comprehensive check list of all the items and issues to be addressed in an SWMP. |

**Group A3. Traffic Management Control Plan**
To contain :

| Content | Comments |
|---|---|
| (a) A traffic control plan that complies with the provisions of the RMS document "Traffic Control at Work Sites" shall be prepared by a person who is qualified, authorised and has passed an RMS approved training course, and submitted to Council, prior to issue of the Construction Certificate. Safe public access shall be provided at all times.<br>(b) Details on signage for the control of traffic<br>(c) Details of traffic detours at significant construction stages. | |

**Group A4. Water Supply Strategy**
To contain :

| Content | Comments |
|---|---|
| Report containing<br>(a) Overview of proposed system, connection points and headworks upgrades.<br>(b) Calculations and final network analysis confirming adequacy of connection point and compliance with pressure/flow criteria within the subdivision.<br>(c) Details of any special operation/maintenance, control system or telemetry features. | This report is to be submitted to and endorsed by Council, prior to submission of a formal construction certificate application.<br>Report will reference plans in group D22. |

**Group A5. Sewerage Strategy**

To contain :

| Content | Comments |
|---|---|
| Report containing<br>(a) Overview of proposed system (catchment allocations, pumping station and rising main characteristics, external works, septicity controls etc).<br>(b) Whole of life economic analysis of options for collection, pumping systems, discharge point selection, catchment allocations and septicity controls.<br>(c) Justification for selection of proposed system.<br>(d) Details of any special operation/maintenance, control system or telemetry features.<br>(e) Operation and staging of septicity controls | This report is to be submitted to and endorsed by Council, prior to submission of a formal construction certificate application.<br>Report will reference plans in group D25. |

**Group A6. Pavement Design**

To contain :

| Content | Comments |
|---|---|
| (a) All considerations, assumptions, subgrade test results, and calculations for the pavement design<br>(b) Pavement and surfacing design for each pavement section within the subdivision<br>(c) For each road section the proposed pavement structure, layers; material types and layer thickness.<br>(d) Pavement design to be completed in accordance with Development Design Specification D2 | The report accompanying a construction certificate application may be submitted on a preliminary basis.<br>A final report shall be submitted after completion of bulk earthworks and prior to the commencement of road pavement construction containing:<br>(a) Revised pavement designs for each road section to include proposed structure, layers, material types and layer thicknesses. |

**Group A7. Bushfire Management Plans**
To contain :

| Content | Comments |
|---|---|
| (a) Bushfire Management Plan to include<br>• Objectives of plan, issues, location<br>• Assessment of bushfire risk<br>• Details of subdivision bushfire management design and infrastructure including:- Subdivision design layout, location of perimeter roads, access tracks, asset protection zones, water sources, radiation shields, building setback requirements, required building construction levels, signage<br>(b) Bushfire Maintenance Manual to include:<br>• Description and location/boundaries of areas/zones and bushfire infrastructure requiring regular maintenance<br>• Maximum permitted fuel levels in asset protection zones<br>• For each area/zone, infrastructure item, and equipment a detailed maintenance plan to explain what maintenance is required and how it is to be undertaken, including required machinery, equipment, methods and manpower.<br>• Seasonal maintenance chart to detail times each year when fuel reduction is required<br>(c) Bushfire Management Plans and bushfire certifications to be prepared by FPA accredited BPAD certified practitioners | The Rural Fire Service (RFS) have advised that the Fire Protection Association Australia (FPA) is the authority responsible for certification programs to accredit bushfire practitioners<br><br>The FPA have prepared a list of accredited Bushfire Planning and Design Certified Practitioners (BPAD) |

# SUBDIVISION CERTIFICATE APPLICATIONS

## D13.11 CERTIFICATION OF PLANS REQUIRED IN SUBDIVISION CERTIFICATE APPLICATION PROCESSES

*Approved design plans* are defined as the required engineering plans of subdivision works as detailed in D13.07 and D13.09, that have been endorsed with a Construction Certificate in accordance with S81A(4) of the Environmental Planning and Assessment Act (1979).

Prior to issue of a subdivision certificate, The Principal Certifying Authority (Council or consent authority) must be satisfied that the subdivision works have been completed in accordance with the *approved design plans*. Work as executed (WAX) plans as detailed in this specification, are to be submitted so that Council may determine if the works as constructed conform to the geometry detailed in the approved design plans.

If the WAX plans indicate that the works as constructed conform to the geometry of the approved plans Council will:-

(a) Issue a *Subdivision Work as Executed Plans Compliance Certificate*

If the WAX plans indicate that the works as constructed do not conform to the approved design plans, depending on the significance of variance, Council may:

(a) Advise the applicant that the works as constructed do not constitute satisfactory completion of the subdivision works, and in accordance with regulation 109J(2)(a) subdivision certificate will not be issued or

(b) If the geometric departures in the works as constructed from the geometry in the *approved design plans*, are considered by Council to be of minor significance and not contrary to the objectives of the development consent conditions Council will issue a *Subdivision Work as Executed Plans Compliance Certificate*.

Applications for Subdivision Certificates, for subdivisions that require subdivision works, must include a *Subdivision Work as Executed Plans Compliance Certificate*.

## D13.12 WORK AS EXECUTED (WAX) PLANS

WAX plans are certified plans showing details of work as actually constructed, they also identify departures, additions and deletions from approved design plans. Data for preparing WAX plans is obtained by measurement and survey as and/or after works are completed. Two categories of WAX plans as detailed in this specification are to be submitted with an *Engineering Consultant Subdivision Work as Executed Plans Compliance Certificate*, being

(a) Amended Design WAX Plans and

(b) Summary WAX Plans

**1. Amended Design WAX Plans**

These are certified copies of all *approved design plans* with *as constructed* departures, deletions and additions clearly noted and detailed on the plans. Exceptions are:- road cross sections within tolerances; standard details

**2. Summary WAX Plans**

These plans are to be prepared on a background plan of lot layout and kerblines with a set of separate plans for each of the following.

(a) Stormwater Drainage

(b) Sewerage

(c) Water supply

(d) Site Works

Summary WAX Plans are not required, in a rural subdivision where only roads were constructed and there are no drainage structures.

## D13.13 WAX PLANS, GENERAL FORMAT AND QUALITY

Amended Design WAX Plans are to be submitted to Council in the following formats:-

(a) 2 paper copies of the same scale and format as the approved design plans, but, marked appropriately for as constructed information

(b) Electronic copy of above in PDF format and provided to Council on CD, DVD or via email. Electronic signatures to be included on the PDF.

Summary WAX Plans are to be submitted to Council in the following formats:-

(a) 3 paper copies at a suitable scale for sufficient clarity and with original signatures.

(b) Electronic copy of the above in AutoCAD DWG or DXF format and provided to Council on CD, DVD or via email.

(c) Electronic copy of above in PDF format and provided to Council on CD, DVD or via email. Electronic signatures to be included on the PDF.

## D13.14 AMENDED DESIGN WAX PLANS

General Requirements

Amended-Design WAX plans shall include:-

(a) Copies of all *approved design plans* (except road cross sections), certified as being a true representation of works as constructed, and endorsed with

distinguishable notations showing any as constructed alterations, geometric departures, deletions or additions to the approved plans.

(b) *Approved design plans* include

(i) all plans of electrical circuits, switchboards, control, mechanical and process plans associated with pumping stations, reservoirs, treatment facilities and other water and sewerage works.

(ii) street lighting, signage, traffic control devices, linemarking

(iii) all plans of structures, bridges, culverts, drainage structures, retaining walls etc.

(iv) all plans of pollution control devices and permanent erosion and sedimentation control devices.

(v) Water Supply, Sewerage and Drainage Works Special Requirements

(c) Geometric departures (level, location, dimensions, gradient etc) from *approved design plans* must be noted in all circumstances where the works or part of the works as constructed, fail to meet the tolerances designated in the Tweed Shire Council Development Specifications.

## D13.15 SUMMARY WAX PLANS

### 15.1 Presentation

Summary WAX Plans are to be legible and comprehensible and comply with the requirements of relevant SAA standards. They are to be generally in accordance with the format and quality indicated on example Summary WAX Plans issued by Council. Pen sizes must be selected to ensure there is clear definition of pipes etc compared with property boundaries. Sewerage and drainage pipeline plans may contain complex sections where it is difficult to clearly show details. In these cases information boxes or separate detail plans are required. Information boxes to present specific pipeline sizes, inlet/outlet levels etc must have leader-lines/arrow heads to connect information boxes with the section of pipe line.

### 15.2 General Requirements

(a) All information is to be retained within the borders of the sheet

(b) Northpoint to be shown on all plans

(c) All information to be on 1:1000, 1:500 or 1:200 scale. The scale chosen must be sufficiently large to enable all required information to be clearly marked and legible. Catchment plan scales may be selected as appropriate for the site.

(d) All levels shall be to AHD and shall be shown on plans in italics or sloping text

(e) Each plan is to be uncluttered with no other irrelevant information on the plan

(f) Each plan is to be on a background plan showing lot boundaries, lot numbers, rights of way, easements and other cadastral details, kerb lines, retaining walls, structures and other significant features

(g) Lot numbering is to be correct in accordance with the linen plan.

(h) Future lots are not to be displayed. Should services be provided for future lots then limited dimensions are required to locate lines, pits, fittings, manholes etc. This is to avoid confusion when future lot layouts and numbers change.

(i) All information is to be captured by accurate survey including location of pipelines, structures, headwalls, pits, inlets, manholes, sidelines, junctions, fittings (valves, hydrants, scours, thrust blocks), kerblines.

(j) Any complex arrangements or unusual fittings are to be detailed on the plans.

(k) All services are to be fully detailed including existing and newly installed.

(l) Drainage, water supply and sewerage summary WAX plans are to show the horizontal location of all other underground services and utilities (including, electricity, telecommunications and gas). Dimensioning is required for the horizontal location of all these services and associated pits and structures, distances from lot boundaries may be acceptable where lines are parallel to boundaries, in other circumstances ties may be necessary. Depths from finished surface level and levels (AHD) are to be shown on all these services in the following locations - below kerbs, at changes of grade and direction, dead ends, where they cross the horizontal location of other services.

### 15.3 Stormwater drainage

(a) Plot accurately on plans all underground drains, open drains, interallotment drains, subsoil drains, pits, manholes, grates, entries, headwalls, junctions, branches, drainage structures, footbridges, pollution control devices, permanent erosion and sedimentation control devices.

(b) Plot minimum of 2 downstream existing manholes/gully pits

(c) Show sizes, type and class of all underground drains. Show dimensions and cross sections of all open drains. Show dimensions and type of drain lining or revetment.

(d) Plot and show details of all interallotment drainage including location of pits, branches and junctions

(e) Plot and show details and dimensions of scour protection, riprap, energy dissipaters etc.

(f) Show centreline distances along drains between pits, inlets, outlets, junctions and other structures

(g) Provide invert levels for all underground drains at pit inlets and outlets, headwalls, outfalls, inlets, changes of grade and at intervals of not less than 20m.

(h) Show gradients on all sections of open and underground drains.

(i) Provide invert levels for all open drains at inlets, outlets, junctions, changes of grade and at intervals of not less than 20m.

(j) Dimensioning is required for the horizontal location of all pits, inlets, outlets, headwalls and structures. Distances from lot boundaries may be acceptable where lines are parallel to boundaries. In other circumstances ties may be necessary.

(k) Provide catchment plans of all contributing areas to the constructed system. Show catchment areas contributing to each inlet.

(l) For pits and manholes, provide internal chamber dimensions and invert levels.

### 15.4 Sewerage

(a) Plot accurately on plans all sewers, manholes, sidelines, junctions, pumping stations, valve pits, rising mains.

(b) Show all pipe sizes and type (It is acceptable to include a note on plan to the effect:- *All sewer pipes are 150mm unless specified otherwise*).

(c) Show all sewer invert levels at manholes (upstream and downstream) and dead ends.

(d) Show manhole location and invert levels.

(e) Sewer junctions serving allotments. The distance of all junctions is to be measured from the nearest downstream manhole and shown on the plan. The depths of sewer junctions to finished surface level is to be accurately determined and shown adjacent to the sewer junction information.

(f) The location and length of sidelines (house branch lines) is to be measured, plotted and dimensioned on the plan. The ends of sidelines are to be located on the plan by distances from boundaries or ties.

(g) The horizontal location of all sewers, manholes, rising mains and pumping stations is to be unambiguously shown on the plan by suitable dimensioning. Distances from lot boundaries may be acceptable where lines are parallel to boundaries. In other circumstances ties are required.

### 15.5 Water Supply

(a) Plot accurately on plans all water mains, hydrants, stop valves, reflux valves, air valves, scours, any other significant fittings, thrust blocks, pumping stations, reservoirs, services and conduits.

(b) Show all pipe sizes and type (It is acceptable to include a note on plan to the effect:- *All water mains are 100mm unless specified otherwise*).

(c) The horizontal location of all mains, fittings, structures, services and conduits is to be unambiguously shown on the plan by suitable dimensioning. Distances from lot boundaries may be acceptable where lines are parallel to boundaries. In other circumstances ties are required.

(d) Water services. The type and diameter of all services and conduits and depth to top of service or conduit from invert of kerb are to be shown on the plan.

### 15.6 Site Works

(a) Plot accurately on plans finished levels and contours. Maximum horizontal spacing for contours is to be 10 metres. Contour information is to extend a minimum 10 metres past all new allotment boundaries including 10 metres into existing adjoining allotments or land.

(b) Appropriate spot levels are to be surveyed to fully represent the as constructed surface. A 5 metre grid may be required on flat allotments to determine any low points. Changes of grade, open drains and other formations are to be fully surveyed and detailed.

(c) Plans are to show areas of filling, depth of fill, and pre-existing surface levels.

(d) Plot and provide spot levels, and verify dimensions (widths / heights etc) as appropriate, of all features including kerb and gutter, road crown, pathways, cycleways, park furniture, retaining walls, revetments, wharves, jetties, public transport facilities and other structures. Spot levels taken on kerbs and road crowns shall include all tangent points and sag points, and match original design chainages where possible. Identify sections of pathways/cycleways/concrete works that have special strengthened vehicle crossing segments.

(e) Plot location of all streetlights, linemarking, signage and traffic control devices.

## D13.16 SUBMISSION OF WAX PLANS

When all subdivision works required by the conditions of development consent have been completed, the applicant may lodge WAX plans with Council and request a *Tweed Shire Council Subdivision Work As Executed Plans Compliance Certificate*.

The request for a *Tweed Shire Council Subdivision Work as Executed Plans Compliance Certificate* must be accompanied by:-

Amended Design WAX plans, with each plan being endorsed with a certificate (may be a stamp) in the form of Appendix D13.A

Summary WAX Plans, with each plan being endorsed with a certificate (may be a stamp) in the form of Appendix D13.B

A certificate in the form of Appendix D13.C (being the *Engineering Consultant Subdivision Work as Executed Plans Compliance Certificate*) certifying that:

(a) the WAX plans have been prepared in accordance with this specification;

(b) all geometric departures, additions and deletions from approved

design plans are clearly shown on the Amended Design WAX Plans and

(c) the geometric departures detailed in the WAX plans will not cause engineering systems to malfunction, under perform or operate outside design criteria or the requirements of DCP-A5.

## D13.17 CERTIFICATION OF WAX PLANS

### 17.1 Who May Certify Work As Executed Plans

Appendix D13.A certificates must be certified by a Professional Engineer (Civil) (NER) or Registered Surveyor.

Appendix D13.B certificates must be certified by a registered surveyor.

Appendix D13.C certificates must be certified by the Professional Engineer (Civil) (NER) or Registered Surveyor who certified the approved plans (see D13.6), or if unavailable a Professional Engineer (Civil) (NER) or Registered Surveyor approved by Council.

### 17.2 Certification Principles

Appendix D13.A, B and C certification guarantees that

(a) WAX plans represent a true and accurate record of works as actually constructed and

(b) WAX plans are based on accurate survey and measurement of works as constructed and comparison of this information with approved design plan geometry.

Appendix C certification guarantees that, despite the geometric departures, the works will function in accordance with their original design objectives, at no increased total life cost, for the duration of their design life

### 17.3 Liability for Errors in Work as Executed Plans

Council relies on the accuracy of Work As Executed Plans to

(a) Ensure the geometry of assets constructed by the subdivider comply with *approved design plans*

(b) Provide details of infrastructure assets for the purpose of

(i) operating and maintaining these assets and integrating the operation and maintenance of these assets with other Council infrastructure assets.

(ii) advising interested parties of the location of the assets

(iii) designing future extensions, additions, modifications etc.

(iv) assessing infrastructure for planning purposes and future infrastructure requirements

If at any future date Council is required to carry out rectification or repair works that arise from Certified Work As Executed Plans failing to accurately note and detail departures from approved design plans, Council will hold the certifier and/or his/her consulting firm jointly and severally liable for all such expenditure plus an administration fee of 10%. Default on acceptance of such liability will be grounds for Council's refusing to accept further certification from such firms.

## D13.18 SUBDIVISION WORK AS EXECUTED PLANS COMPLIANCE CERTIFICATE

If the WAX plans indicate that the works as constructed conform to the geometry of the approved plans Council will:-

(a) Issue a *Tweed Shire Council Subdivision Work as Executed Plans Compliance Certificate*

If the WAX plans indicate that the works as constructed do not conform to the *approved design plans*, depending on the significance of variance, Council may:

(a) Advise the applicant that the works as constructed do not constitute satisfactory completion of the subdivision works, and in accordance with regulation 109J(2)(a) subdivision certificate will not be issued or

(b) If the geometric departures in the works as constructed from the geometry in the *approved design plans*, are considered by Council to be of minor significance and not contrary to the objectives of the development consent conditions Council will issue a *Tweed Shire Council Subdivision Work as Executed Plans Compliance Certificate*.

Where the WAX plans indicate that there are departures in the geometry of the works as constructed from the geometry in the *approved design plans*, Council will determine if a *Tweed Shire Council Subdivision Work as Executed Plans Compliance Certificate* is to be issued in accordance with the following considerations:

(a) Will the works as constructed comply with the objectives of the conditions of consent, DCP-A5 and the development specification

(b) Will the works function and have the longevity as originally designed

(c) Will there be any additional operation, maintenance or cleaning costs

(d) Will the geometric departures cause any adverse impact on visual amenity or aesthetics.

A *Tweed Shire Council Subdivision Work as Executed Plans Compliance Certificate* will be in the form of Appendix D13.D.

# SUMMARIES

***SUMMARY 1 – Appointing a Certifying Engineer or Surveyor***

- Prior to the commencement of subdivision works, the applicant must appoint a suitably qualified Certifying Engineer or Surveyor who is responsible for certifying the compliance of completed subdivision works. (A5.C.2 – Certification Arrangements – Appointment of a Certifying Engineer

- A Certifying Engineer or Surveyor must be appointed by the applicant to ensure that subdivision works are completed in accordance with the conditions of development consent and approved construction certificate engineering drawings. The Certifying Engineer or Surveyor issues an "Engineering Certification" for the subdivision works, upon completion. (example shown DCP-A5 Appendix C Attachment C1 – Subdivision Works Compliance Certificate)

- A Certifying Engineer shall be a Professional Engineer (Civil) with current Engineers Australia National Engineering Register (NER) accreditation.

  A Certifying Engineer shall be required to provide documentary evidence to Council demonstrating current NER accreditation

- A Certifying Surveyor shall be a Registered Surveyor with Board of Surveying and Spatial Information (BOSSI) NSW accreditation

  A Certifying Surveyor shall be required to provide documentary evidence to Council demonstrating current BOSSI NSW accreditation

***SUMMARY 2 - Procedure for applicant to obtain a Subdivision Certificate***

Step 1 – Work as Executed Plans Compliance Certificate

The applicant must arrange for the preparation of the following plans and certificate to obtain a Work as Executed Plans Compliance Certificate from the consent authority (Council) prior to the lodgement of a Subdivision Certificate;

1) Amended Design Work as Executed plans prepared by the consulting engineer (example of stamp to be placed on plans see Development Design Specifications D13 – Appendix D13.A).

2) Summary Work as Executed plans prepared by the consulting surveyor (example of stamp to be placed on plans see D13 – Appendix D13.B).

3) Engineering Consultant Subdivision Works as Executed Plans Compliance Certificate to be completed by the consulting engineer (example of certificate see D13 – Appendix D13.C).

4) Application form for Engineering Consultant Work as Executed Plans Compliance Certificate to be completed and submitted to the consent authority (Council) with the above mentioned plans and certificate.

5) The consent authority (Council) will issue a Tweed Shire Council Subdivision Works as Executed Plans Compliance Certificate if the WAX plans and certificate are satisfactory (example of certificate issued by Council see Appendix

D13.D)

Step 2 – Certifying Engineer or Surveyor information to be submitted with Subdivision Certificate

Following approval and issue of the Tweed Shire Council Subdivision Works as Executed Plans Compliance Certificate from the consent authority (Council), the applicant is required to obtain an “Engineering Certification” for the subdivision works from the Certifying Engineer or Surveyor (example of certificate shown DCP-A5 Appendix C Attachment C1 – Subdivision Works Compliance Certificate).

The applicant may then lodge the complete Subdivision Certificate package accompanied by the certification from the Certifying Engineer or Surveyor (being the Engineering Certification).

# APPENDIX D13.A

### Form of Certificate, Amended Design Work As Executed Plans

The following certificate is to be placed (may be in the form of a stamp) on each sheet of Amended Design Work As Executed Plans:-

"D13.A CERTIFICATE

I ……....., acting as the representative of .....……..... (Consulting Firm) certify that

** subject to point 1 hereunder,*

this plan is a true and accurate record of works certified in Construction Certificate No …… , as actually constructed.

** 1.In this regard I have relied upon the accuracy of dimensions provided by ..... (certifier of summary WAX plans) shown on the associated "Summary Work as Executed Plans".*

** 2. I accept all responsibility for any other necessary dimensions and preparation of the plans pursuant to Clause D13.14 "Amended Design WAX Plans" of Development Design Specification D13 – Engineering Plans (Subdivisions).*

The works as plotted and dimensioned are within the tolerances for constructed works required in the approved specification. I further certify that all works or parts of works (including alterations, amendments, additions and deletions) that departed, outside specification tolerances, from approved design plans are noted as such and detailed on these plans.

.....……....Name ……..…….Signature ...……..…Title ……...…… Firm ...……..……Date"

* Delete if there is no reliance on accuracy of dimensions provided by "Summary Works as Executed Plans" for preparation of this plan.

# APPENDIX D13.B

### Form of Certificate, Summary Work As Executed Plans

The following certificate is to be placed (may be in the form of a stamp) on each sheet of Summary Design Work As Executed Plans:-

"D13.B CERTIFICATE

I .....……....., acting as the representative of .....……....(Consulting Surveying Firm) certify that this plan is a true and accurate record of works certified in Construction Certificate No……, as actually constructed, and that this plan has been prepared in accordance with Development Design Specification D13 – Engineering Plans (Subdivisions), Part D13.15 "Summary WAX Plans".

.....……....Name ...…….....Signature
....…….....Title ……..... Firm
...…….....Date"

# APPENDIX D13.C

The following *Engineering Consultant Subdivision Work as Executed Plans Compliance Certificate* in accompany with the *Amended Design Work as Executed Plans* and *Summary Work as Executed Plans* is to be submitted to Council with a request for a *Tweed Shire Council Subdivision Work as Executed Plans Compliance Certificate* :-

"D13.C CERTIFICATE

I ....., acting as the representative of .....(Consulting Firm) certify that:

a) The WAX plans listed in Schedule A and Schedule B, and the electronic copies listed in Schedule C (and any supporting details relevant to parts b & c of this certificate), have been prepared in accordance with Tweed Shire Council's D13 Specification;

b) All works or parts of works (including alterations, amendments, additions and deletions) that departed, outside the specification tolerances, from approved design plans are clearly noted on the plans detailed in Schedule A;

c) I have examined the WAX plans detailed in Schedule A and Schedule B and analysed the designs on which these plans are based. I hereby certify that notwithstanding the geometric departures detailed on these plans, they will not cause any subdivision works to malfunction, under-perform, operate outside design criteria or function contrary to the objectives of DCP-A5.

SCHEDULE A

*Insert title and plan number of Amended Design Work as Executed Plans covered by this certificate*

SCHEDULE B

*Insert title and plan number of Summary Work as Executed Plans covered by this certificate*

SCHEDULE C

*Insert file name of electronic copies of Amended Design and Summary Work as Executed Plans covered by this certificate*

.....Name
.....Signature .....Title
..... Firm .....Date"

# APPENDIX D13.D

**Tweed Shire Council Subdivision Work as Executed Plans Compliance Certificate**

Note: if WAX plans are unsatisfactory (D13.13-17), this certificate will not be issued, but, the applicant will be advised that the geometry of the works as constructed is unacceptable and that on this basis there has not been satisfactory completion of the subdivision works, and in accordance with regulation 109J(2)(a) the subdivision certificate will not be issued.

"TWEED SHIRE COUNCIL

ENVIRONMENTAL PLANNING AND ASSESSMENT REGULATION 2000

T.S.C. SUBDIVISION WORK AS EXECUTED PLANS COMPLIANCE CERTIFICATE (D13.D)

SUBDIVISION WORKS

**DA Certifying Authority** Tweed Shire Council

**Description of Development** Subdivision

**Development Consent No.** .....

**Date of Determination** .....

**Construction Certificate No.** .....

**Date of Determination** .....

**Address of land on which development is being carried out**

**.....**

**.....**

**Description of work inspected**

Work as Executed plans and associated certificates as required by Development Specification D13

**How has work been inspected?**

Visual inspection of plans and certificates

**Date and time inspected** .....

I certify that Based on an inspection of the work as executed plans and associated certificates,

(strike out not applicable paragraphs)

The works as constructed conform to the geometry in the Construction Certificate *approved design plans*, the geometry of the works are therefore acceptable to Council.

The works as constructed have geometric departures from the Construction certificate *approved design plans*, but the departures are considered to be of minor significance, and the geometry of the works as constructed is acceptable to Council.

Signature on behalf of

Tweed Shire Council .....

Date .....

# APPENDIX D13.E

## Notice of Commencement of Subdivision Works Defects Liability Period

TWEED SHIRE COUNCIL

ENVIRONMENTAL PLANNING AND ASSESSMENT REGULATION 2000

NOTICE OF COMMENCEMENT OF SUBDIVISION WORKS DEFECTS LIABILITY PERIOD (D13.E), as per TSC DCP Section A5.7.4

**DA Certifying Authority** Tweed Shire Council

**Description of Development** Subdivision

**Address of land on which development is being carried out**

.....

.....

**Development Consent No.** .....

**Date of Determination** .....

**Subdivision Certificate No.** .....

**Date issued** .....

**Defects Liability bond (received)** .....

**Description of the works or stage of the works covered by the notice**

.....

.....

**DP No. (Department of Lands)** .....

**Registration Date (Department of Lands)** .....

**Date of commencement of the Defects Liability (maintenance) period, being the date that all pre-requisite conditions were met (refer Council's DCP section A5 – A5.7.4)** .....

**Defects Liability Period (months)** .....

I certify that based on the documentation provided, the Defects Liability Period may commence for the above referenced works

Signature on behalf of

Tweed Shire Council .....

Date .....