City of Charles Sturt

Infrastructure guidelines

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Summary

This guide and accompanying documents have been prepared to provide a guideline for the construction of public infrastructure and development of land within the City of Charles Sturt (CCS).

The guide is provided as an addendum to the SA Infrastructure Guidelines and outlines specific procedures to follow unique to the City of Charles Sturt. The guide references a number of standards and/or requirements that are relevant and applicable to the construction of public infrastructure and development of land within the Council area. It is not intended to be comprehensive or totally definitive due to the wide range and nature of development at times requiring site specific provisions. In this regard applicants should be aware that each development is required to be treated individually, and that approval is dependent on the overall impact of the development and not solely on compliance with minimum engineering standards.

Ultimately the aim of the guide is to facilitate the efficient processing of design plan approval and the construction of public infrastructure. The guide should be read in conjunction with the Infrastructure Guidelines SA to ensure infrastructure associated with any development is designed and constructed to be safe, serviceable, economical to maintain, meet community expectations and Council's minimum standards and requirements.

It is not intended for this guide to be limiting, nor to remove the use of discretion by Council's Manager Engineering Strategy & Assets or the nominated representative to vary any necessary engineering requirements in respect to a development, having due regard to best engineering practice.

The information in this guide sets minimum requirements for the construction of public infrastructure and development within the City of Charles Sturt. The guideline provides a safe, functional and attractive environment to enhance the amenity of the locality and to minimise Council's future maintenance cost on public infrastructure such as roads, footpaths, stormwater drainage, open spaces and other public services while maintaining a service standard consistent with community expectations. Other requirements may arise throughout the Development Assessment process.

These, along with other strategic documents, are key in contributing to the formulation of the guideline;

- Community Plan 2016 - 2027
- Corporate Plan 2016 - 2020
- Transport Plan 2016 - 2031
- North-West Growth Corridor Transport Study
- Strategy for Walking & Cycling
- Path Policy and Guideline
- Parking Controls Policy
- Outdoor Dining Policy
- Open Space Strategy 2025
- Living Green to 2020
- Asset Management Plans

IMPORTANT NOTES

The applicant is required to meet with officers from Council's Engineering Strategy & Assets and Open Space portfolio's to discuss the approved Development Plan prior to developing concepts and detailed design. The purpose of the meeting is to discuss peculiarities of the development site, to become familiar with Council's Infrastructure guidelines requirements, and agree on any variation to them.

These discussions are typically facilitated through Council's Technical Working Group (TWG) scheduled meetings. These meetings are specifically allocated for discussions in regard to new external development across the city. Early discussion with relevant Council officers will prove invaluable in identifying and resolving any issues that arise as early as possible and thus expedite the approval process. Please contact the relevant coordinating officer in the contacts list on the next page.

Development applications seeking engineering approval must be accompanied by a full set of engineering documents including but not limited to engineering design plans and supporting specification/s, reports, existing services information and/or computations as required by this guide.

Failure to meet the requirements of this guide will result in Council notification that your submission cannot be assessed for engineering approval.

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General Procedures

This section outlines the general procedures and practices that Council expects applicants to comply with regarding the Engineering Requirements for the subdivision and development of land within the City of Charles Sturt. Our aim in providing this information is to ensure applicants understand Council's requirements before commencing design thereby minimising delays in approving applications.

Overview of Construction of Public Infrastructure process for the applicant

This section of the guide sets out the steps an applicant should follow once a "Decision Notification Form" has been issued by Council and or other planning authority, giving Provisional Development Plan Consent to a development application.

Decision Notification Form

The applicant shall read all pages of the Decision Notification Form including the conditions of approval issued with the Decision Notification Form. Where the applicant is unsure of the meaning or extent of any of the conditions he/she should contact the Council and seek clarification by quoting the Development Application Number (commonly referred to as the DA Number).

Consultant/Contract Superintendent

Any consultant engaged and his/her representatives must be adequately qualified and have the required expertise to carry out either the project design, administering conditions of contract and overseeing construction until final completion. The consultant/contract superintendent is required to work together with Council to ensure strict compliance with the documentation approved by Council and as issued for construction. The applicant shall provide the consultant with a copy of the Decision Notification Form including all the conditions of approval and with any additional approved plans or other documents that are related to the development.

NOTE: All public infrastructure shall be constructed strictly in accordance with the construction detail/s approved by Council and as shown on the approved engineering design plans unless otherwise approved by Council.

Easements

Where works involve the provision of drains across land owned by others, evidence that the necessary easements have been created must be lodged with Council. Details of the easement and proposed works must be shown on the engineering plans. In addition, owners consent to carry out the proposed works must be provided to Council.

Easements for sewer, water and electricity shall be created as required for the subject development in conjunction with the relevant service authorities. The easements are to be registered on the land division plans.

Building over drainage easements is generally prohibited. Where it is proposed to construct footings or foundations in the vicinity of drainage easement and/or encroach onto a drainage easement, Council reserves the right to impose such conditions as it considers necessary to protect the structural integrity of the existing or proposed drainage asset. This may require

the execution of a Land Management Agreement (LMA).

Services

Adequate provision shall be made within the development for the installation of all services in conjunction with the relevant authorities, with all fees and charges associated with the provision of these services paid by the developer. The location of services shall be in accordance with current best practice industry standards.

Heritage Items

All recognised and/or identified heritage items, including natural features of the site and man-made structures, shall be identified in the development application and shown accordingly on the engineering design plans with all relevant notes, and the Heritage Council should be contacted for details and verification. All such heritage items shall be retained wherever possible and sufficient area shall be retained around an item to protect its setting.

Design Requirements

All drawings (irrespective of scale required) shall be presented on B1 size drawing sheet.

This section outlines the requirements of design plans that are specific to the City of Charles Sturt. This is in addition to the requirements of the Infrastructure Guidelines SA.

Engineering and landscape plans are to be submitted in triplicate, with a covering letter, by the consultant. The preparation of drawings for developments and subdivisions will be carried out in accordance with Council's standard presentation format listed below.

Design plans will be checked by Council for compliance with these guidelines. It is the responsibility of the applicant/consultant to ensure that the designs, calculations and specifications comply with Consent Conditions, this guide, relevant Australian Standards and other Council requirements that may be applicable to the subject development. Approval of any design plans does not absolve the applicant from rectifying any errors or omissions which become evident during construction or the maintenance period.

The applicant is required to comply with Council's current standards at all times and if the work has not substantially commenced within twelve (12) months of the date of the endorsed approval, Council may require that revised drawings, calculations and specifications be submitted for a renewed approval.

Point of contact with Council during design

Once a consultant has been engaged to design a project, it is important that he/she provides a single point of contact for coordinating progress of the development with Council. Consultants shall ensure they contact Council's Development Project Engineer to coordinate progress of approval. Applicants attempting to share the project management role often contribute to costly time delays due to lack of effective communication/coordination between the parties (i.e. applicant/consultant/council).

The consultant must arrange the survey and engineering design that fulfils the conditions of the Provisional Development Plan Consent (conditions of approval). Once approved, the design plans can be "issued for construction" and these are the plans that must be used by the appointed contractor to construct the works.

NOTE: Approval for commencement of works will not be issued until all requirements and/or conditions of the Provisional Development Plan Consent have been satisfied.

Engineering and Landscape Plans

Engineering and landscape plans, together with specifications, calculations and/or any other documents/clearances from other government authorities, and all other information required to satisfy the conditions of Provisional Development Plan Consent, must be lodged with Council.

Council will notify the applicant of the development fees. Once the fees are paid to Council's Planning Department, Council will assess the Engineering Plans to ensure compliance with the conditions of Provisional Development Plan Consent and other related Council

requirements.

Council will advise the consultant of any amendments to the plans that may be required and/or any other outstanding items that need to be addressed prior to final assessment and engineering approval being granted.

The consultant must carry out all the necessary amendments and seek clarification of any requirements from Council (if necessary) prior to re-lodging the engineering plans with Council. The consultant must ensure the re-lodged plans include all the required amendments to avoid further costly delays and that all amendments are clearly identified (revisions and dates) on the Engineering Plans.

Approval

Once Council is satisfied the Engineering and Landscape Plans meet all requirements and the plans have been approved by Council, the consultant shall forward a copy (both in hard and soft/DWG format) of plans "issued for construction".

Design Standards

The following plans are a minimum requirement for drawings sheets that shall be provided for Council assessment. A cover page should also be included in the drawings sheet detailing a full list of any applicable drawings and relevant drawings numbers.

For all design plans, ensure that the largest standard scale that will fit on a B1 sheet is no less than 1:500 unless otherwise agreed by the relevant Council Officer.

Site Works Plan which shall include all general information including:

- Road widths, names, chainages
- Footpath locations
- Stormwater pipes and pits
- Signage and line marking
- Notes and legend(s)
- Driveway inverts
- Gutter flow directions
- Allotment boundaries
- Other civil, infrastructure and traffic control devices
- Lighting and services
- Common service trench locations

Stormwater Drainage Plan which only shows the following information:

- Stormwater pipes and pits (all pipes should reflect the actual size of pipe or box culvert)
- Stormwater drain schedule
- Allotment fill and retaining wall locations
- Locations of GPTs

Road longitudinal sections which should include the following:

- Chainage, existing levels and design levels of all proposed roads (including vertical I.P's)
- Stormwater drainage pipes including invert level information
- Stormwater drainage cross pipes shall be shown on separate longitudinal sections
- Scales shall be H 1:200 & V 1:10 or H 1:200 & V 1:20
- Hydraulic Grade Line (including pit losses)
- Plan view with corresponding long section above
- Pipe sizes and class of pipe (minimum shall be class 4 pipes)
- Show level of drain and services at crossing point with stormwater drain

Road cross sections which shall include the following:

- Chainage, existing levels and design levels for each section
- Scales shall be H 1:200 & V 1:20 or 1:50
- Typical road cross section which should include level information, common service trench location, lighting, trees, footpath and kerb type
- Maximum 20m intervals with a minimum of three per street

Traffic Control Plan:

- Traffic control devices
- Line marking
- Signage
- Street signs

Road Design Contour Plan which shall include the following:

- Road layout
- Stormwater pits
- Road design contours

Pavement Treatment Plan which shall include the following:

- Road Pavement treatment types and locations

Recycled Water Services Plan which shall include the following:

- Recycled water reticulation main location and size
- Road offset dimensions
- Locations of all valves, sockets, joints and ends
- Sizing of connection shall be shown on plans

Environmental/Soil Erosion and Drainage Management Plan which shall include the following:

- Shaker pad, silt trap, silt fence and hay bale locations including design details.

Landscape Plan which shall include the following:

- Surface materials

- Design levels, with drainage layout
- Sections and Details of surfaces
- Furniture and Equipment, including product details
- Tree and Plant species, with locations and spacings
- Irrigation, including water meter location

In development where the subject site is disturbed, adequate measures for erosion and sedimentation control shall be adopted in accordance with current EPA requirements and a Soil Erosion and Drainage Management Plan shall be prepared and submitted to Council for approval. This plan shall be implemented on site prior to construction commencing and shall be maintained in working order during construction. Appropriate measures shall also be incorporated for dust suppression on a daily basis, or as required during construction works on site.

Bench Marks

Engineering survey shall be carried out to Australian Height Datum (A.H.D.) and Map Grid of Australia (MGA) 2020. The survey shall accurately show the landform to facilitate the best possible design and construction of all works consistent with minimum interference to the existing amenity of the area.

Bench Marks shall be established at intervals consistent with current best practice and are to be placed where they will not be disturbed.

Grading of Allotments

A site plan showing the proposed allotment ground levels shall be submitted to Council. The ground levels of the development shall be graded towards adjoining street/s and shall not be raised/lowered or retaining walls constructed (except as shown) on the boundaries unless specific details are submitted and approved by Council. The proposed ground levels shall be inspected and/or confirmed on site during or after the work and before any building activity by the project engineer(s) and Council.

Dwelling Finished Floor Levels (FFL's) & Access

In all cases, dwellings must comply with the minimum finished floor level requirements for the National Construction Code of Australia (NCC) and be set a minimum 300mm above the road water table invert level. The FFL shall also satisfy any applicable additional requirements for flood mitigation purposes as identified by Council's flood plain mapping.

Garage Access and FFL's

In all cases, garage setback must achieve Council requirements for the garage floor level to be set at 300mm minimum above the road water table invert level. The FFL shall also satisfy any applicable additional requirements for flood mitigation purposes as identified by

Council's flood plain mapping. The garage setback design must also allow for service meters, post box etc. to be accommodated and minimum vehicle turning movements and grade transitions to be achieved.

Access into garages shall be in accordance with AS 2890.1 and in particular Figure C1, B85 vehicle for domestic driveways. All garage access shall be designed to cater for site specific issues.

Laneways

In well drained laneways buildings/structures adjacent to these laneways shall have a finished floor level of 200mm (minimum) above the lowest point of the adjacent laneway and a minimum set back of 2m to protect these buildings/structures from not being inundated by the 1:5 year storm event.

In laneways with no public drainage applicants will be required to provide details of how they intend to prevent inundation of their proposed buildings/structures based on the 1:5 year storm event.

Development located within an area subject to Stormwater Inundation must ensure 150mm freeboard is provided for FFL's to 1 in 100 year flood levels.

Refer to Water Infrastructure section in this guideline for more information.

Street Lighting

All street lighting shall comply with requirements outlined in the SA Infrastructure guidelines and relevant Australian standards. Developers must ensure that once lighting designs are complete an NICC 402: Public Lighting – Ownership and Approval form is submitted to Council for assessment and acceptance of the asset.

Prior to Practical Completion, electrical compliance certificates must be provided to Council along with As Constructed plans of all electrical infrastructure.

Other Notes

Kerb type details as per CCS standard details with preferred kerb details being:

150mm vertical kerb – abutting residential properties

200mm vertical kerb – abutting open space reserve areas

Road designs shall be designed to accommodate CCS Waste Vehicle access swept paths (refer to Appendix A for waste vehicle specifications).

Refer to sample drawings available on the hyperlink below. This information provides standards for presentation and layout of drawings. Civil details shall include all relevant details required to construct the project.

Click the following link for access to CCS standard drawings

Transport Infrastructure

The requirements for transport are closely aligned with the City of Charles Sturt Development Plan and are considerate of local community expectation of streets and transport systems and the principles of "Living Neighbourhoods". This is consistent with the 30-Year Plan for Greater Adelaide that facilitates a sustainable city through more compact communities, provision of opportunities for multiple land uses and reducing reliance on the use of private vehicles through investment in – walking, cycling, public transport and shared mobility platforms.

The City of Charles Sturt aims to encourage transport design that promotes a sense of place for people and the sharing of streets to meet all their community, transport and service needs. Our transport network objectives include:

Protect our environment and minimise our ecological footprint

The City of Charles Sturt is committed to protecting and enhancing our natural environment while balancing the needs of the built environment. Creating a diverse environment is integral to promoting the wellbeing of residents and businesses and needs to be balanced with the needs of the transport network.

Create a safe, healthy and supportive community which encourages participation, creativity and diversity

The City of Charles Sturt aims to establish connected communities and spaces that create and embrace social inclusion and healthy, liveable environments. A planned transport network is integral to connecting communities with spaces, and land use planning is the key to positioning communities with transport infrastructure.

Build an economically thriving and competitive city

An efficient transport network is vital to providing cost efficient freight services for the economy which benefits the whole community. Development and land zoning challenges have caused recent changes to manufacturing and service based industries in our council, and this has resulted in needing a flexible transport system.

Demonstrate effective leadership with strong community collaboration

The City of Charles Sturt works with many partners, including all levels of governments, and our community. Community partners include residents, businesses, investors and developers, community interest groups, and service providers. We work with our partners in many ways to show leadership, develop innovative approaches and share risk. Our community partners play an important role in providing feedback through consultation and collaboration.

Build healthy, functional and attractive neighbourhoods

This action develops local places for our residents to provide them with a sense of community and place. By developing neighbourhood 'hearts', such as main streets, meeting places and community open spaces, this will create locations where residents can interact and build community ties. These ties are critical to creating social inclusiveness and developing healthy and active communities.

Roads within developments of higher density may require very different road layouts and

these are to be negotiated on a case by case basis. Generally, streets in high density areas are to incorporate shared spaces, wide paths, road design to encourage low speeds, Water Sensitive Urban Design treatments and opportunities for additional landscaping. The City of Charles Sturt North-West Corridor Transport Study contains further information.

Transport Impact Assessment

Transport impact assessment (when required) shall be prepared by a suitably qualified transport practitioner and submitted to council for relevant stages of the proposed development. Refer to requirements of SA Infrastructure Guidelines for Road Safety Audits and Traffic Impact Assessments.

Road Pavement

A pavement report, containing all the information supporting the design of road pavements for the proposed roads associated with the development, must be provided. The report should outline the minimum required pavement thicknesses for a flexible, bound or unbound pavement assessed for each pavement area based on design traffic volumes and recommended subgrade CBR value using mechanistic design software such as CIRCLY.

Relevant geotechnical testing must be provided to support assumptions and design criteria used in the design of road pavements (e.g. nominated CBR etc.).

It is expected that the report and pavement design comply with the following design guidelines;

- Austroads: Pavement Design – A Guide to the Structural Design of Road Pavements (2004)
- Austroads: Guide to Pavement Technology Part 2: Guide to Pavement Technology – Part 2: Pavement Structural Design (2008)
- DPTI Supplement: Supplement to the Austroads Guide to the Structural Design of Road Pavements (2006)
- DPTI Supplement: Supplement to the Austroads Guide to the Design of Rehabilitation Treatments for Road Pavements (2006)

Traffic volumes must be based on traffic generations that are either existing or generated through advice from a suitably qualified Traffic Engineering Practitioner and also include allowances for construction and garbage type vehicles.

It is expected that pavement design life is a minimum of 30 years.

In addition to the above standards and guides the City of Charles Sturt do not accept pavers being integrated as part of the road pavement.

Bridges and other structures

A design report containing all the information supporting the design of bridge or other structures associated with the development must be provided. The report shall provide maintenance regimes, any specific operational and maintenance documentation, geotechnical investigations, specific safety in design register and design calculations.

It is expected that the report and structural design comply with the following design guidelines;

- Austroads: A Guide to Bridge Technology
- Australian Standards AS5100 – Bridges

Water Infrastructure

Technical

All new development must identify a method of stormwater disposal with supporting documentation. In large scale land development (in particular multi-staged development), where large scale detention, ASR, WSUD etc. is proposed within open space reserve areas, in order to progress with planning approval, stormwater design approval shall be based on approval of a stormwater management 'concept' plan and report. The stormwater management report and concept plan containing all the information supporting the design of the drainage network for the runoff associated with all stages of the proposed development must be provided. The report should provide all supporting calculations and hydraulic modelling for Council review.

The concept plan and report shall address both stormwater design and reserve design with a reserve matter requiring more detail design that is consistent with the approved concept at each stage of development. Such detailed design can be provided at a later stage prior to Council granting engineering approval.

Stormwater design requirements are that the post development peak rate of runoff from the development site from a 1 in 100-year ARI (1% AEP) "major storm event" must not exceed that from the pre-development site from a 1 in 5 year ARI (0.2 EY) "minor storm event".

As a minimum all stormwater flows for 1 in 5-year ARI storms shall be fully contained in the proposed underground stormwater network. All flows for major storms shall be fully contained within the Council road reserve.

In minor storm events, discharge time and frequency of inundation of reserves shall be kept to a minimum. Existing system Hydraulic conditions shall also be considered during modelling analysis.

In all major storms, all overflow routes shall be identified and a minimum of 150mm freeboard from all flood levels shall be provided to all Finished Floor Levels to buildings and dwellings. The detailed design of the stormwater infrastructure shall incorporate assessment and provisions for alterations of any affected existing stormwater systems and catchments from adjacent properties. Any future revisions to the approved concept as may arise in the detailing phase may impact on or void issues related to the planning approval and must be discussed with Council.

Appropriate stormwater quality management measures shall also be incorporated that are not limited to the use of proprietary gross pollutant traps (see WSUD section).

All K&G surface flows must be intercepted at maximum 120m intervals unless otherwise

agreed by Council Engineering staff.

It is expected that the report and design for drainage networks comply with the following design guidelines;

- Australian Rainfall and Runoff 2016 Guidelines
- Queensland Urban Drainage Manual
- Austroads: Guidelines for treatment of Stormwater Runoff from the Road Infrastructure
- Australian Standards 3500.3 Plumbing and Drainage – Stormwater drainage

Site Drainage

The site stormwater drainage plans shall primarily show the proposed method of managing stormwater.

Plans should identify but are not limited to the following;

- All above and/or below ground existing and proposed features on the site including any easements.
- Grading (contours)
- Expected drainage patterns (direction of flow)
- Pervious and impervious areas (buildings and covered/paved areas, paths and driveways with materials used, landscaping)
- Existing Council owned and other public service infrastructure (trees, footpaths, light poles, stormwater entry pits)
- Stormwater management devices (downpipes, sumps, u/ground pipes, spoon drains, culverts, detention, retention and/or other devices)
- Above and/or below ground stormwater discharge points into Council's existing drainage infrastructure.
- An allotment grading plan shall be incorporated in the Site Drainage Plan above.
- Only 1 stormwater drain per property shall be provided unless otherwise approved by CCS. Underground connection to residential properties must be avoided where possible.

CCTV Reporting

A thorough cleaning of the entire stormwater drainage system including all junction boxes and side entry pits followed by a CCTV report demonstrating the quality of infrastructure shall be carried out and submitted to Council prior to Practical Completion.

CCTV must identify and inspect all features of interest (e.g. cracks, joints connections etc.) and comply with WSA inspection requirements.

Stormwater Drainage Infrastructure

All stormwater drainage shall be located within the road pavement width at a distance of 1.0 m – 1.5 m from the face of the kerb unless otherwise agreed in written form by Council. All design efforts shall be made to minimize tight angles of entry into pits and or junction boxes and where this is not possible, additional pits and/or junction boxes shall be incorporated into the design. Pipes and pits shall be constructed at a location where they

can be accessed for maintenance without restrictions.

All stormwater drainage pipes in public areas shall be class 4 steel reinforced concrete with a minimum diameter of 375mm.

WSUD

The City of Charles Sturt encourages an integrated approach to urban water cycle management (potable, wastewater, stormwater) for new urban release areas and urban renewal development.

The extent to which water sensitive urban design principles are incorporated into the design of a development shall be discussed with Council before design commences.

Water Quality Targets

All water quality leaving the site must be compliant with the water quality disposal requirements of the EPA as per the following performance targets;

- Total Suspended Solids (kg/yr) 80%
- Total Phosphorus (kg/yr) 60%
- Total Nitrogen (kg/yr) 45%
- Total Gross Pollutants (kg/yr) 90%

Developments that cannot achieve these targets will be asked to contribute to the surrounding catchment to improve water quality targets.

Recycled Water

General

Recycled water shall comply with SA Water design standards and Office of the Technical Regulator requirements. Pipes and lids shall be of lilac colour.

Recycled Water for Irrigation Purposes

Where a development proposes to irrigate open space with recycled water the irrigation system shall be backed up with dual supply (recycled and potable). The irrigation system will need to be designed to accommodate both systems, this may require tanks/pumps and approval by the Office of Technical Regulator. The applicant shall be responsible for all fees, charges for connection, testing and commissioning.

Open Space and Landscape Infrastructure

The City of Charles Sturt Open Space Strategy direction for the provisions, distribution and development of Open Space across the Council.

The City of Charles Sturt aims to encourage well planned and innovative landscape design has the potential to enhance the quality, amenity, usability and value of open space, streetscapes and suburbs.

All new development must identify the type location and distribution of Open Space and how each area will be developed referencing the City of Charles Sturt Open Space Strategy. Applicants will ensure that the distribution of Open Space integrates with the surrounding suburbs and that proposed developed is consistent with the Open Space Strategy Appendix A.

Specific information of design details and required products can be found on the council website. This includes tree planting details, irrigation sleeves, and specific irrigation materials.

Maintenance Guidelines

As part of the specification provided for the design, a maintenance guideline shall be provided which outlines all maintenance tasks and timeframes required to maintain the landscape, this information will be subject to any approvals and handover.

Construction Process

Start Up Meeting

Once drawings are approved a Development Start Up Meeting between Council, the developer and Consultant/Contract Superintendent must be conducted with council prior to any construction works commencing.

Bonding Agreement

Developers must enter into a bonding agreement with council and provide securities for works being conducted.

Bonding Agreements will call for the requirement of bonds in the form of a bank guarantee or cash deposit to be lodged as security to cover development works. This security shall be lodged with Council prior to commencing any construction and to the issue of Section 51 Clearance for the release of the Certificate of Titles. If Section 51 Clearance is requested prior to practical completion the applicant/consultant shall submit an itemized schedule of all outstanding works associated with the development for Councils approval.

The security amount shall be for the full value of public infrastructure works or as determined by Council based on this information. The total bond amount shall be permitted as two separate bank guarantees to cover all the outstanding work at the time of requesting the Section 51 Clearance.

EXAMPLE:

Total bond amount required as determined by Council = $300,000

Bank Guarantee 1- 90% component released at PC = $270,000

Bank Guarantee 2 - 10% component for Maintenance Period released at FC = $30,000

The following shall apply to each stage of multi-staged development works.

90% security will only be released at a time of issuing the certificate of Practical Completion for the stage to which it relates. No claim against the 90% component shall be made during progress of works. Furthermore, under this arrangement, once Stage 1 (for example) has been completed (PC) and 90% of security bond is returned, no construction traffic shall use Stage 1 as access to the next stage.

The 10% security held for the duration of the twelve (12) month Maintenance Period (MP) shall be released upon acceptance by Council of the Certificate of Final Completion.

Construction Industry Training Levy

Evidence of payment of the Construction Industry Levy must be submitted to Council prior to commencing civil construction works on site.

Construction Program and Project Updates

Prior to the construction works commencing, a detailed construction works program shall be submitted to Council for approval and to schedule timely inspections to be carried out by Council. Council shall be invited to all site meetings to ensure they are aware of project progress.

Construction of Works

The consultant must engage a suitably qualified contractor to carry out construction of the works in accordance with the approved Engineering Plans. During construction Council will carry out inspections to ensure the contractor carries out the work in accordance with the approved plans and the specification. Appropriate project updates and test results shall be forwarded to Council for acceptance and approval, during construction.

All construction work shall be carried out strictly in accordance with the approved plans and specification. No deviation or amendment of the works from these plans or specifications shall occur without Council issuing its written approval prior to the deviation or amendment.

Hold Points

The consultant must give at least two working days' notice for inspection of work subject to a Hold Point.

Work that is subject to a Hold Point or which is dependent on completion of work that is the subject of a Hold Point must not proceed until approval has been given or a relevant direction is issued. All hold and witness points shall be identified at the Start Up Meeting and the consultant must make arrangements for the following Council hold points to be incorporated in the Construction Inspection Test Plan (ITP) and submit the ITP for Council approval:

Road and Concrete Construction

- Inspection and approval of prepared sub-grade prior to commencement of road pavement works and as constructed survey levels
- Approval of soaked CBR values prior to sub-base works commencing
- Inspection and approval of prepared sub-base layer and as constructed survey levels
- Inspection and approval of prepared base layer and as constructed survey levels
- Inspection and approval of as constructed levels of completed kerb and gutter/concrete edge treatment for approval of compliance to specification tolerances (survey levels at 2m intervals and to 3 decimal points)
- Inspection and approval of as constructed levels of completed traffic control devices for approval of compliance to specification tolerances and DPTI requirements (survey levels to 3 decimal points)
- Inspection and approval of the base layer after primer/tack coat and prior to asphalt
- Asphalt core samples and void ratios must be submitted upon completion of surface prior to PC

Stormwater Construction

- Inspection and approval of trench prior to backfill for stormwater drains
- Inspection and approval of stormwater connection points prior to backfill to Council's existing infrastructure
- Inspection and approval of Gross Pollutant Traps (GPT) prior to backfill
- Inspection and approval of all underground detention tanks prior to backfill
- Inspection of formwork, reinforcing and jointing
- Inspection, level check and approval of bio retention construction levels

Recycled Water Construction

- Inspection and approval of trench prior to backfill for recycled water main
- Inspection and approval of recycled water connection points prior to backfill to Council's existing infrastructure
- Witness of pressure testing as per project specifications

Landscape works

- Evidence of compliance with Australian Standards for play equipment
- Irrigation main lines and feeds
- Garden bed irrigation drip system

Other

- Practical completion of work
- Final completion of work
- Further inspections may be required dependent on other activities and construction requirements (e.g. retaining walls, bridges etc.)

Testing compliance and certificates

The consultant shall arrange for the following tests and provide test certificates. As a minimum, carry out trenching, sub-grade and granular pavement compaction tests to AS1289 as follows:

- Asphalt – Density - one test per 100m with a minimum of 3 tests;
- Asphalt – Core Samples and void ratio/compaction results - one per 100m with a minimum of 3 tests
- Concrete – Cylinder test - one test per 100m length of kerb and gutter/concrete edge treatment
- Base – Compaction - one test per 100m with a minimum of 3 tests;
- Sub-base – Compaction - one test per 100m with a minimum of 3 tests;
- Sub-grade – Compaction - one test per 100m with a minimum of 3 tests;
- Bedding– Compaction - one test per 50m length of drain;
- Backfilling – Compaction - 1m vertical intervals for every 100m length of drain (or part thereof);
- Footpath Base – Compaction - one per 50m length of footpath construction or part thereof;
- As required by State Government agencies for work in areas under the care and control of the agencies (e.g. DPTI).

Prior to Section 51 Clearance, practical completion or at the appropriate hold point, all relevant certificates must be lodged with Council including but not limited to the following Certificates:

Compaction Certificates
Lodgement of the road pavement certificates for all stages of the road pavement construction, lot filling and lot classification which have been prepared by a N.A.T.A. approved laboratory.

Material Compliance Certificates
Lodgement of the Material Compliance Certificates for all the road pavement materials and concrete works used for all stages of the road pavement construction.

Engineer's Certificates
Lodgement of Engineering Certificates for work that requires independent engineer's certification.

Easement Certificates
Lodgement of Surveyor's Certificate where applicable to certify that all pipes and drainage infrastructure are located within the proposed drainage easements.

Electrical Certificates of Compliance
Lodgement of Electrical Certificates of Compliance for all new public lighting and electrical infrastructure.

Practical Completion and Liability/Maintenance

When the Consultant/Contract Superintendent considers that the construction works is completed, Council will inspect the work with the consultant and any defects and/or omissions will be identified for rectification. The Consultant/Contract Superintendent will then prepare a Certificate of Practical Completion with a list of all defects and/or omissions identified for rectification. Once Council is satisfied the Certificate adequately addresses the identified issues the Certificate of Practical Completion is accepted.

Documentation

The Consultant/Contract Superintendent shall arrange for As Constructed Plans of the completed works, in both hard and soft versions (AutoCAD DWG File & PDF File). Along with these plans the consultant shall also provide all testing certificates, Inspection Test Plans and an itemized breakdown of the cost of the works and its components.

These shall be submitted to Council prior to the practical completion inspection OR prior to practical completion being agreed to by Council.

Defects Liability/Maintenance Period

Upon acceptance by Council of the Certificate of Practical Completion, the works will enter a twelve (12) month Maintenance Period for Civil works and twenty four (24) month Maintenance Period for Landscape works. During this period, any defect which becomes evident will be the responsibility of the applicant to rectify. At the end of the Maintenance Period all security bonds held by Council against the works shall be released. The applicant

shall be responsible for all maintenance of the works until the end of the Maintenance Period, including the payment of service fees incurred or compliance testing fees.

Final Completion

Following the end of the maintenance period and rectification of all defects, Council will re-inspect the works with the Consultant and the contractor to confirm the works have reached the stage of Final Completion. Upon acceptance of the Certificate of Final Completion the infrastructure becomes the responsibility of Council for ongoing ownership and maintenance.

Partial Security Bond Release (Practical Completion)

Upon acceptance by Council of the Certificate of Practical Completion for each stage of the development, the 90% security bond held by Council will be released for that stage.

Complete Security Bond Release (Final Completion)

At the end of the twelve (12) month Maintenance Period for each stage of the development, after all defects and or omissions (if any) have been rectified and upon acceptance by Council of the Certificate of Final Completion, the 10% security bond held by Council will be released.

Other Matters

Suitably Qualified Personnel

Unless otherwise stated in this guide, Council requires that engineering design plans be prepared to Council's standards by a suitably qualified person either holding qualifications acceptable for Corporate Membership of the Institution of Engineers Australia or who has proven experience in the preparation of engineering design plans and specification for land development.

Consultation with Council

Applicants/Consultants must consult with Council and or other relevant authorities during the preparation of engineering design plans.

Inspection of Works

All engineering works carried out by the applicant that will be handed over to Council as public infrastructure will be required to be inspected by Council's engineer in accordance with Council's standards and specification.

In addition to all engineering works associated with land divisions, Council's engineer will also approve and carry out inspections for road and drainage works on public roads, on-site stormwater detention/retention systems, stormwater quality improvement devices (GPT's), WSUD features, stormwater flow paths and channels, and community title/private access roads.

Site Facilities

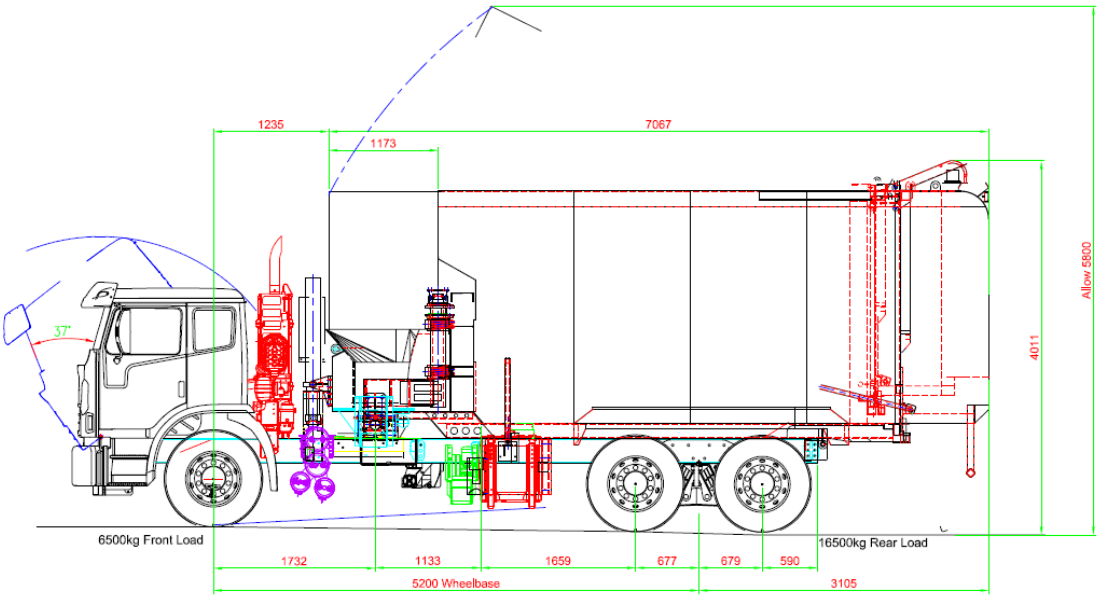
Site facilities for eating, storage and meetings shall be provided as required by industry/union standards. The construction site must be provided with at least one toilet for use by persons working on site.

Street Name Signage

The City of Charles Sturt has developed a unique Street Sign Design and holds the license for the font used on the street signs. Positioning, fittings and posts used for street sign installation have all been standardised to ensure consistency throughout the City. The standard street sign must be used in all redevelopments.

Developers can either source the street signs from suitable suppliers or contact our Field Services team on 8408 1111 to order any street signs required for Land Divisions. A minimum of six (6) week's notice is required for supply. The street signs will be supplied and charged back to the client. Street signs shall be located as identified on the approved FOR CONSTRUCTION Drawings set.

Appendix A – CCS Waste Vehicle



The vehicle has a 35m^3 chassis, is 10.0 metres long and is the largest of the waste collection vehicle fleet.

72 Woodville Road, Woodville
www.charlessturt.sa.gov.au