ACT Government

Transport Canberra and City Services

Reference Document 8

Requirements for works as executed records

Version 3.0 Revision 5

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Review and Approval

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Document Details

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Please note: The current version of this document is on the Transport Canberra and City Services website www.tccs.act.gov.au. Printed copies may be out of date, please check before using.

..... 14/8/17

Ben McHugh, Director, Capital Works and Development Support
City Services, Transport Canberra and City Services

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Appendices

1.0 Purpose

This document establishes the Transport Canberra and City Services Directorate (TCCS) requirements for documentation and supporting materials (Requirements) to be included in Operational Acceptance or Practical Completion Submissions (OA/PC) lodged upon completion of the Works.

2.0 Scope

These requirements apply to any formal handover submission including civil, hard landscape and consolidation commencement of soft landscape works.

3.0 Summary of Latest Ref 8 Document Changes

3.1 Incorporating WAE requirements from TCCS Drafting Standard (2006) into Ref 8.

Chapter 5 from TCCS Drafting Standard, Issue 1 Revision 0, Aug 2006 has now been updated and collated into Ref 8 chapter 4.2.

3.2 Vectorworks format now accepted for landscape WAE drawing deliverables

The previous release of Reference Document Ref 08 and the TCCS drafting standard required all CAD drawings to be in AutoCAD DWG format. Landscape architects are increasingly using vectorworks instead of AutoCAD and found the process of converting a set of their WAE drawings to DWG format to be quite a challenge.

Prior to TCCS introducing summary drawings, WAE information was entered into the asset management system from content in the AutoCAD WAE drawings. Summary drawings now serve this purpose.

In this release of Ref 08, TCCS permit landscape WAE drawings to be submitted in vectorworks format with the proviso that AutoCAD DWG versions of specific drawings are supplied on request.

3.3 WAE drawing hard copies not required unless requested

With the push towards digital online submissions, hard copies of WAE drawings are no longer required unless requested.

3.4 Inclusion of some sample drawings and reports

Sample drawings and reports have been included in the Appendix.

4.0 Works as Executed (WAE) Submission Requirements

Works as Executed (WAE) documentation must be included as part of the Operational Acceptance submission.

4.1 Asset Report Elements

The submission must be in the form of an asset report and contain the information, as per table 1 below.

Table 1 Asset report elements

	Element / Deliverable	Details
1	Index	All sections of the report so that records can be easily traced and located.
2	Project Description	Project details including: • Project title; • The scope of the project (e.g. Horse Park Drive Stage 2); • A site plan; and • Any other references.
3	Set of Works as Executed (WAE) Drawings	A set of WAE drawings will typically include as constructed information for civil works, public lighting, traffic control devices (TCDs); and landscape works as applicable. Supplied in the following formats: • One full set of CAD drawings in AutoCAD DWG format (landscape WAE drawings can be in VectorWorks VWX format with the proviso that AutoCAD DWG versions of specific drawings are supplied on request); • One full set of colour drawings in Adobe® PDF format; • One full set of A1 or A3 colour hardcopy drawings (only upon request). Refer to Section 4.2 Work as Executed Drawings.

	Element / Deliverable	Details
4	Summary Drawings	Civil and Landscape Summary drawing(s) in AutoCAD DWG format in accordance with Reference Documents 11.1 to 11.5 inclusive. Refer to Section 4.3 Summary Drawings
5	Parties to the project	List all key parties involved in the project, including, where appropriate: • Applicant / developer; • Agent; • Consultant(s) identifying the specific areas of responsibility (e.g. civil, structural, town planner, landscape consultant, surveyor, etc…); • Nominated subcontractors and suppliers.
6	Certification	Certification is required that the works have been constructed in accordance with TCCS requirements and the letter of design review for operational acceptance and soft landscape consolidation commencement submissions. The following works require separate certifications from the contractor to have been endorsed by the chartered engineer or equivalent: • Civil; • Hydraulics including tie books; • Public lighting (including in open spaces) • Structural elements, and • Drainage (including playground and open space drainage) Soft and hard landscape works must be certified by suitably qualified Landscape Architect however additional certification from Level 3 Playground Inspector is required for; • Playground (including softfall) and associated

	Element / Deliverable	Details
		fitness equipment;
7	Asset Description Forms	The following asset description forms are required to be completed and submitted as applicable: • Cover sheet for asset description form submission (Form No. PC1); • Road assets (Form No. RD1); • Path and paving assets (Form No. RD2); • Car park assets (Form No. RD3); • Street lighting assets (Form No. RD4); • Bridges and other structural assets (Form No. RD5); • Stormwater assets (Form No. RD6); • Traffic assets (Form No. RD7); • Bus assets (Form No. RD8); • Soft landscaping assets (Form No. LS1); • Fence and landscape barrier assets (Form No. LS2); • Landscape structures (Form No. LS3); • Street and park furniture assets (Form No. LS4); • Landscape signage (Form No. LS5); • Irrigation assets (Form No. LS6); • Playground and fitness assets (Form No. PG1); • Water feature assets (Form No. LS7; • Sportsground assets (Form No. SG1);
8	Quality Construction Records	The submission must comprise a summary sheet for each of the key works activities only. Summary sheet must include types and numbers of tests performed for each work activity and in case of test failure,

	Element / Deliverable	Details
		information about the results of the follow up tests. Please note: QC Detail sheets are not required and must not be included in the submission. All records must be recorded, maintained and made available for inspection by the ACT Government agencies for a minimum period of seven (7) years after final handover or final acceptance (WH&S Regulation 2011 division 5.2.2 section 228 and 229).
9	Maintenance Manual	Maintenance manual, maintenance plan and the name of the supplier must be provided for the following assets: • Public lighting; • Bridges; • Road safety barriers; • Bus stop assets; • Playgrounds; • Barbeque; • Irrigation systems; • Keys and locks; • Water features including low flow outlet valves on dams and ponds and suppliers of the valves; and • Any other assets that have such manuals.
10	Keys and Locks	When applicable two sets of keys to all locks must be supplied for: • Irrigation controllers; • Toilet blocks; • Valve chambers; • Pump houses; • Barbeques; and

	Element / Deliverable	Details
		• Power bollards.
11	CCTV Report	When SW assets are handed over to the Territory, site inspection records, test certificate and Closed Circuit Television (CCTV) reports from SMEC
12	Stormwater Defect Photos	When SW assets are handed over to the Territory, one photo of each significant defect
13	CCTV Videos or DVD	When SW assets are handed over to the Territory , DVD video of all pipe work constructed including slim drains and/or similar
14	Tie Books	When applicable, A4 colour PDF certified document containing 1 or more pages showing water, sewer and stormwater tie location information in relation to property boundaries, sumps / manholes. A sample of a tie book coversheet and page are shown in Appendix A1
15	Guide Sign Inventory Forms	Standard form detailing complete design of guide sign, orientation, structural components, guide sign number and associated TCD drawing number and approval details.
16	Warranty Documents	Bridges and other structural assets Clause 5.4.5 • Proprietary barriers and end treatments Bus assets clause 5.4.6 • Proprietary shelters Street Lighting / Park Lighting assets clause 5.5.1 • Columns, including mounting base details; • Outreach arms, and • Luminaire Fences & Landscape Barriers clause 5.8.2 • For automated gates/barriers and any other assets

	Element / Deliverable	Details
		Landscape structures clause 5.8.3 • Toilets, • Shade sails, • Automated waste enclosures, and • Any other assets that have such warranties Landscape street and park furniture clause 5.8.4 • Barbeques • Seats • Benches • Table settings • Waste receptacles • Rails • Bike racks Irrigation assets clause 5.8.6 • Irrigation system • Irrigation elements such as pumps, meters and controllers etc Water feature – clause 5.8.7 • Fountains, • Drinking fountains, and • Water meters Playgrounds – clause 5.8.8 • Equipment • Softfall • Ancillary items
17	Asset Photographs	Stormwater assets clause 5.6.2 • One photo of each significant defect Traffic Control Device (TCD) Drawings Clause 5.7.2 • TCD drawings and a photo of the completed guide sign

	Element / Deliverable	Details
		Soft Landscape assets clause 5.8.2 • Photograph of each verge with an unapproved structure or treatment installed by or on behalf of the lessee/owner. Unapproved verge is a verge constructed or modified not in accordance with the approved Letter of Design Review or not in accordance with approved nature strip application. Landscape Structures clause 5.8.3 • Artworks and memorials - Four photos (in jpeg image or similar, less than 1 Mb in size each) taken from the north, south, east and west of the work; • All Other assets (e.g. shelters, decks, pergolas, jetties and boat ramps- - At least one photo identifying the structure (in jpeg image or similar, less than 1 Mb in size each); Street and Park Furniture Clause 5.8.4 • Barbeques • Seats • Benches • Table settings • Waste receptacles • Rails • Bike racks Landscape Signage clause 5.8.5 • Photo of each sign Playground and fitness assets clause 5.8.8 • Four photos (in jpeg image or similar, less than 1 Mb in size each) taken from the north, south, east and west of the work;
18	LDA Cover letter	Cover letter from LDA coordinator (for LDA projects only)

4.2 Work as Executed Drawings – Key Requirements

4.2.1 Overview

WAE Drawings are submitted to Transport Canberra and City Services (TCCS) by consultants and contractors for all works for which the ACT Government will become the ultimate owner and operator and which are managed by Transport Canberra and City Services.

WAE Drawings are to depict permanently constructed, abandoned, modified, demolished or reconstructed works and show all amendments made to the approved design during the construction phase. Each drawing is to be certified that it accurately details the completed works.

Table 2 WAE drawing deliverables

WAE Drawing Deliverables	Details
Works as Executed (WAE) Drawings	A set of WAE drawings will typically include as constructed information for civil works, public lighting, traffic control devices (TCDs); and landscape works as applicable. Supplied in the following formats: • One full set of CAD drawings in AutoCAD DWG format (landscape WAE drawings can be in VectorWorks VWX format with the proviso that AutoCAD DWG versions of specific drawings are supplied on request); • One full set of colour WAE drawings in Adobe® PDF format; • One full set of A1 or A3 colour hardcopy WAE drawings (only upon request).

A set of WAE drawings will typically include as constructed information for:

- Civil works;
- Public lighting;
- Traffic control devices (TCDs); and
- Landscape works.

4.2.2 General Requirements

Works as executed drawings must meet the following requirements:

- Contain a table showing all amendments made to the approved design during the construction phase and relevant correspondence/approval from TCCS ;

- Dimensions must be in accordance with the specified construction tolerance or of a similar accuracy to those of the design drawings.
- Terminology must be consistent with current Australian Standards.
- Contain details required for each asset class as specified in this document.
- Be submitted to TCCS online via the TTCS ProjectWise portal using the TCCS ProjectWise document submission process. Refer Appendix C.

4.3 Civil and Landscape Summary Drawings

A Summary Drawing is an AutoCAD DWG file that is used to load work as executed spatial and attribute data into the TCCS asset management system and GIS systems.
Civil Summary Drawings and Landscape Summary drawings are generally separate drawings.

These drawings are submitted as part of a design acceptance and WAE records to represent all new, amended or removed assets within the submission. These drawings must be prepared in accordance with requirements of Reference Document 11 parts 1,2,3 and 5.
These documents specify standard CAD blocks, layer naming conventions, units, coordinate systems, spatial representation and required attribute data for each asset.

Future works must not be shown but pre-existing assets or features not changed by the development may be shown if needed as contextual data for the current works on the appropriate layers.

External references may be used in the summary drawings for contextual purposes.

Table 3 Standard Requirements for Summary Drawings

AutoCAD Configuration	Details
Special Requirements	Drawings need to be drawn as per Ref 11 documents (parts 1,2,3 and 5) and pass validation Submissions to be delivered via the TCCS WAE Summary Portal. More information can be found at: http://www.tccs.act.gov.au/Development_and_Project_Support/standards-codes-and-guidelines/page/TCCS_drafting_standard
Digital Submissions	https://www.asconstructed.com/
CAD Drawing Formats	AutoCAD DWG only
Standard Co-ordinate Systems / Projections	ACT Standard Grid (Stromlo)
2D / 3D Requirements	As per Ref 11 parts 1,2 and 3 The drawings must be 2D with the Elevation set to 0.0

AutoCAD Configuration	Details
Paperspace, Modelspace	The current Ref 11 documents (parts 1,2,3 and 5) requires all spatial information including the common block (project information) is to be in modelspace.
CAD Drawing Units	All drawing units must be in metres and decimals of a metre. 1 drawing unit = 1 metre.
Drawing Insertion Points	An AutoCAD drawing's insertion point is defined by the AutoCAD system variable Base. The base system variable must be set to 0,0,0.
Standard Title Blocks / Project Information	The current Ref 11 documents (parts 1,2 and 3) require the standard block COMMON_BLOCK to include project information that would normally be present in a title block.
Standard Blocks	Only standard blocks to be used as per Ref 11 parts 1,2 and 3. The consultant may modify the standard block symbology if desired. Non-standard block names will not pass validation.
Block Insertion Points	Standard block insertion points are generally in the centre of an asset / feature. These insertion points are not to be changed.
Block Attribute Data	The current Ref 11 documents (parts 1,2,3 and 5) have very specific attribute requirements. Non-standard attribute names and values will not pass the validation process.
Scales	See requirements for Paperspace, Modelspace; CAD Drawing Units;
Standard Layers	Only standard layers are to be used as per Ref 11 parts 1,2 and 3. Non-standard layers will not pass the validation process.
Standard Layer Colours	The current Ref 11 documents (parts 1,2 and 3) have assigned standard layer colours however the consultant may use their own colours if desired. The colours will not effect the validation process.
Standard Linetypes	The consultant may use their own linetypes.
Standard Dimension Styles	The consultant may use their own dimension styles.
Standard Fonts	The consultant may use their own fonts in the summary drawings because this will not impact the validation process.
Standard Hatching	The current Ref 11 documents (parts 1,2 and 3) do not specify standard hatch patterns. The consultant may use their own hatch patterns in the summary drawings as this is not expected to impact the validation process.
Standard Plotstyles	TCCS do not require these drawings to be plotted out however the consultant may use their own plotstyle if preferred.

4.4 Specific Requirements for Civil Assets

Table 4 Standard Requirements for Civil Works Drawings

AutoCAD Configuration	Details
Special Requirements	Drawings need to be drawn as per Ref 8 Requirements to be delivered via the TCCS ProjectWise Portal. Refer http://www.tccs.act.gov.au/Development_and_Project_Support/projectwise-and-wae-portal/projectwise-portal
Digital Submissions	https://actgov.projectwiseonline.com
CAD Drawing Formats	AutoCAD DWG (preferred) or Vectorworks
Standard Co-ordinate Systems / Projections	ACT Standard Grid (Stromlo)
2D / 3D Requirements	The drawings may be 2D or 3D. Either drawn 2D with the Elevation set to 0.0 or drawn 3D with the elevation corresponding to the Australian Height Datum.
Paperspace, Modelspace	All spatial information is to be in model space. The drawings may contain multiple layouts. It is preferred that the title blocks are in paperspace.
External Reference Drawings (xrefs)	The consultant may use xrefs in their drawings.
CAD Drawing Units	All drawing units must be in metres and decimals of a metre. 1 drawing unit = 1 metre.
Drawing Insertion Points	An AutoCAD drawing's insertion point is defined by the AutoCAD system variable Base. The base system variable must be set to 0,0,0.
Standard Title Blocks / Project Information	The consultant may use their own title blocks.
Standard Blocks	The consultant may use their own blocks.

AutoCAD Configuration	Details
Block Insertion Points	Blocks used in these drawings are to have functional insertion points. For example a block depicting the plan view of a street light must have an insertion point in the centre of the street light pole (not hundreds of metres from the pole). This is important when the blocks are being imported into GIS applications. Blocks representing the plan view of a stormwater manhole must have the insertion point in the centre of the manhole. Drawings that have blocks with bizarre insertion points representing TCCS assets will be rejected and require resubmission.
Block Attribute Data	The consultant may use their own attributed blocks.
Scales	To Australian Standards
Standard Layers	The consultant may use their own layering conventions.
Standard Layer Colours	The consultant may use their own layer colours.
Standard Linetypes	The consultant may use their own linetypes.
Standard Dimension Styles	The consultant may use their own dimension styles.
Standard Fonts	The consultant may use their own fonts.
Standard Hatching	The consultant may use their own hatch patterns.
Standard Plotstyles	The consultant may use their own plotstyles.

4.4.1 Road Assets

4.4.1.1 Asset Description/Data

Complete data must be provided in detail as in Asset Description Form RD1.

4.4.1.2 WAE Drawings

Detailed information must be provided on:

- Road centrelines;
- Road kerb-lines;
- Individual pavement layers, and
- Design levels to the Australian Height Datum

Verge profiles must be provided at regular chainages different to the verge profile provided at the design stage (no more than 60 metres apart) along each road.

4.4.2 Pavements

A statement must be provided detailing the procedure adopted for the in-field confirmation of soil type boundaries, sub-grade strength, select-fill, and pavement design. The statement must be accompanied by soil classification; grading, plastic property and CBR test records.

The statement must include an as-constructed (A3 size) pavement plan detailing the various pavement configuration finally adopted and their respective boundaries. This plan must be suitably annotated with street names and numbers, chainages, block boundaries, concrete structures, and other road furniture, etc.

Pavement test results must be summarised and grouped by road and pavement strata and must include, but not be limited to:

- Compaction for sub-grade, select fill sub-base and base;
- Grading, plastic properties, CBR for select fill, sub-base and base;
- Compaction, mix and temperature tests of asphalt, and
- Bitumen spray rates and quality.

Non-complying and retest results must also be recorded and maintained. The agent must maintain and make available for inspection by the ACT Government agencies, all quality records for a minimum period of seven (7) years after final handover and acceptance.

For unsealed roads on ACT Parks and Conservation Service land, a statement of compliance with PCS Roading Manual and the design drawings must be provided.

4.4.3 Path and paving assets

Certification of compliance with the Disability Code is required where an accessible route has been provided (includes paths, pram crossings and tactiles).

4.4.3.1 Asset Description/Data

Complete data must be provided in detail as in Asset Description Form RD2.

4.4.3.2 WAE Drawings

Detailed information must be provided on:

- Path centrelines;
- Path perimeters;
- Path intersections and crossings;
- Shopping centre pavements;
- Alignment of kerb ramps;
- Design levels;
- Path construction materials;

- Segmented paving details including construction material, thickness and bedding depth;

4.4.4 Carpark assets

4.4.4.1 Asset Description Forms Asset Description/Data

Complete data must be provided in detail as in Asset Description Form RD3.

Any grassing, shrub beds and tree plantings associated with the car park must be recorded according to the requirements under section LS1 of this document.

4.4.4.2 WAE Drawings

Detailed information must be provided on:

- Roadway centrelines;
- Kerb lines;
- Individual pavement layers; or construction material and bedding depth if not an asphalt pavement; and
- Design levels.

Alternatively, if the contractors Quality Assurance system and records prove that the work has been constructed within approved design tolerances, certification may be provided and, in some of the elements above, the detailed design levels provided may be accepted.

The drawings must clearly identify the construction material of the car park.

4.4.5 Bridges and other structural assets

4.4.5.1 Construction Quality Records

Concrete strength test results must be recorded in a summary form grouped by structure: design calculations for bridges and structures must be included.

4.4.5.2 Operation and Maintenance Manuals

- Operations manuals and warranty information for any installed assets must be provided. Manufacturers' documents/drawings must be provided for:
- Proprietary barriers and end treatments (tensions to be recorded for wire rope barriers)

4.4.5.3 Asset Description Forms

Complete data must be provided in detail as in Asset Description Form RD5.

Bridges or culverts with a clear span less than 1.8m or waterway area less than 3m² are considered to be stormwater assets, refer to Section RD6 for details.

4.4.5.4 WAE Drawings

Asset Type / Works	Details
Structures	A separate set of drawings must be provided for each complete structure as follows: • Detail design elements as constructed, and • Locality site plan.
Bridges	A separate set of drawings must be provided for each complete bridge as follows: • Detail design elements as constructed; • Design load; • Maximum Ultimate Design Moments for every particular span; • Maximum Ultimate Shear Force, for every particular span; • Maximum Design Deflection; • Location of risers for subsoil drains; • A detailed level survey of the bridge deck surface and underside. (The survey must comprise levels taken at the intersecting point of a grid over the complete deck surface and underside. The grid comprises 5m lengths in the bridge longitudinal direction and 2.5m lengths in the transverse direction), and • Locality site plan. All bridge drawings must include the bridge number in the title block, (bridge numbers may be obtained from TCCS)
Road Safety Barriers	• Drawings must be provided depicting the permanent constructed Road Safety Barriers.

4.4.6 Bus Assets

4.4.6.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form RD8.

4.4.6.2 WAE Drawings

Drawings must identify the:

- Positions (ACT Standard Grid coordinates) of each new, modified and demolished asset;
- Plans of all bus shelters layouts with tactiles, shelter materials, Form type; and
- Details of any connections to services.

4.4.6.3 Operations and maintenance manuals

Manufacturers' documents/drawings must be provided for:

- Proprietary shelters.

4.5 Specific Requirements for Public Lighting Assets

4.5.1 Street Lighting / Park Lighting assets

4.5.1.1 Construction Quality Records

Records of fault loop impedance, insulation protection and circuit protection tests must be supplied.

4.5.1.2 Operations and Maintenance Manuals

Manufacturer's documents/ drawings must be provided for:

- Columns, including mounting base details;
- Outreach arms, and
- Luminaire detail drawing, factory specification, replacement parts, manufacturer's contacts, control diagrams and spacing table or isolux diagram as applicable.

4.5.1.3 Asset Description Forms

Complete data must be provided in detail as in Asset Description Form RD4.

4.5.1.4 WAE Drawings

4.5.2 Public Lighting Drawings

Note:	TCCS plan to undertake consultation with other service authorities, local councils and consultants during 2017 to collaborate in developing a common CAD standard and legend for public lighting to incorporate as part of Ref 8.

Table 5 Standard Requirements for Public Lighting Drawings

AutoCAD Configuration	Details
Special Requirements	Drawings need to be drawn as per Ref 8 Requirements. Submissions to be delivered via the TCCS ProjectWise Portal. Refer http://www.tccs.act.gov.au/Development_and_Project_Support/projectwise-and-wae-portal/projectwise-portal
Digital Submissions	https://actgov.projectwiseonline.com
CAD Drawing Formats	AutoCAD DWG
Standard Co-ordinate Systems / Projections	ACT Standard Grid (Stromlo)
2D / 3D Requirements	The drawings may be 2D or 3D. Either drawn 2D with the Elevation set to 0.0 or drawn 3D with the elevation corresponding to the Australian Height Datum.
Paperspace, Modelspace	All spatial information is to be in model space. The drawings may contain multiple layouts. It is preferred that the title blocks are in paperspace.
External Reference Drawings (xrefs)	The consultant may use xrefs in their drawings.
CAD Drawing Units	All drawing units must be in metres and decimals of a metre. 1 drawing unit = 1 metre.
Drawing Insertion Points	An AutoCAD drawing's insertion point is defined by the AutoCAD system variable Base. The base system variable must be set to 0,0,0.
Standard Title Blocks / Project Information	The consultant may use their own title blocks.
Standard Blocks	The consultant may use their own blocks.
Block Insertion Points	Blocks used in these drawings are to have functional insertion points. For example a block depicting the plan view of a street light must have an insertion point in the centre of the street light pole (not hundreds of metres from the pole). This is important when the blocks are being imported into GIS applications. Blocks representing the plan view of a stormwater manhole must have the insertion point in the centre of the manhole. Drawings that have blocks with bizarre insertion points representing TCCS assets will be rejected and require resubmission.
Block Attribute Data	The consultant may use their own attributed blocks.

AutoCAD Configuration	Details
Scales	To Australian Standards
Standard Layers	The consultant may use their own layering conventions.
Standard Layer Colours	The consultant may use their own layer colours.
Standard Linetypes	The consultant may use their own linetypes.
Standard Dimension Styles	The consultant may use their own dimension styles.
Standard Fonts	The consultant may use their own fonts.
Standard Hatching	The consultant may use their own hatch patterns.
Standard Plotstyles	The consultant may use their own plotstyles.

Drawings must identify the:

- Position (in ACT Standard Grid coordinates), and asset number of each new and existing streetlight column, streetlight control box and PE cell. (The insertion point for the block representing an asset must be located on the drawing at the actual location of the asset).
- Off-sets from the kerb-line of cables or conduits for all new and existing conduit and/or cable routes;
- Depth of cables or conduits below ground for all new and existing conduit and/or cable routes;
- Number of streetlight circuits controlled by the controller;
- List of streetlights (asset numbers) in each circuit;
- Type and size of existing and new conduits;
- Break-in points of conduits;
- Variations to the references used for measurements from kerbs and buildings;
- Columns and their street lighting asset numbers which have been removed;
- Cables which have been removed or abandoned, Note: 'Modified' means upgrade to existing light bulbs or columns or cables regarding to types, sizes, voltages, materials or timeframes of operations etc.;
- The connection point for new lights into an existing streetlight circuit;
- The connection point for new streetlight circuits to ActewAGL's network;
- Type and size of cables (e.g. single phase or three phase cable, PVC, XLPE, etc);

- Column types, heights and make with the type of base;
- Luminaire, type, make and supplier; and
- Globes type, make and wattage.

Drawings must include a wiring schematic clearly identifying any changes from the design schematic.

Note:	It is important that layering conventions used in the drawings are easy interpreted. Care must be taken to ensure data is placed on the appropriate layers. Where the consultant's layering conventions are not obvious they must provide documentation with the submission explaining the layering conventions adopted within the drawings.

4.6 Specific Requirements for Hydraulic Services and Infrastructure

Note:	TCCS plan to undertake consultation with other service authorities, local councils and consultants during 2017 to collaborate in developing a common CAD standard and legend for hydraulic services to incorporate as part of Ref 8.

Table 6 Standard Requirements for Hydraulic Services Drawings

AutoCAD Configuration	Details
Special Requirements	Drawings need to be drawn as per Ref 8 Requirements. Submissions to be delivered via the TCCS ProjectWise Portal. Refer http://www.tccs.act.gov.au/Development_and_Project_Support/projectwise-and-wae-portal/projectwise-portal
Digital Submissions	https://actgov.projectwiseonline.com
CAD Drawing Formats	AutoCAD DWG
Standard Co-ordinate Systems / Projections	ACT Standard Grid (Stromlo)
2D / 3D Requirements	The drawings may be 2D or 3D. Either drawn 2D with the Elevation set to 0.0 or drawn 3D with the elevation corresponding to the Australian Height Datum.
Paperspace, Modelspace	All spatial information is to be in model space. The drawings may contain multiple layouts. It is preferred that the title blocks are in paperspace.
External Reference Drawings (xrefs)	The consultant may use xrefs in their drawings.

AutoCAD Configuration	Details
CAD Drawing Units	All drawing units must be in metres and decimals of a metre. 1 drawing unit = 1 metre.
Drawing Insertion Points	An AutoCAD drawing's insertion point is defined by the AutoCAD system variable Base. The base system variable must be set to 0,0,0.
Standard Title Blocks / Project Information	The consultant may use their own title blocks.
Standard Blocks	The consultant may use their own blocks.
Block Insertion Points	Blocks used in these drawings are to have functional insertion points. For example a block depicting the plan view of a street light must have an insertion point in the centre of the street light pole (not hundreds of metres from the pole). This is important when the blocks are being imported into GIS applications. Blocks representing the plan view of a stormwater manhole must have the insertion point in the centre of the manhole. Drawings that have blocks with bizarre insertion points representing TCCS assets will be rejected and require resubmission.
Block Attribute Data	The consultant may use their own attributed blocks.
Scales	1:500
Standard Layers	The consultant may use their own layering conventions.
Standard Layer Colours	The consultant may use their own layer colours.
Standard Linetypes	The consultant may use their own linetypes.
Standard Dimension Styles	The consultant may use their own dimension styles.
Standard Fonts	The consultant may use their own fonts.
Standard Hatching	The consultant may use their own hatch patterns.
Standard Plotstyles	The consultant may use their own plotstyles.

Note: It is important that layering conventions used in the drawings are easy interpreted.
Care must be taken to ensure data is placed on the appropriate layers.
Where the consultant's layering conventions are not obvious they must provide documentation with the submission explaining the layering conventions adopted within the drawings.

4.6.1 Underground Services

Assurance on underground services (such as water reticulation, stormwater, sewerage, telecommunications, gas, and electricity) may be limited to data on trench back filling (e.g. materials used, compaction results, etc).

4.6.2 Stormwater assets

4.6.2.1 Construction Quality Records

Consultant must include SMEC site inspection records, stormwater tie records and Closed Circuit Television (CCTV) reports. The CCTV requirements are as follows:

- DVD video of all pipe work constructed including slim drains and/or similar (to be retained by TCCS);
- One photo of each significant defect.

4.6.2.2 Asset Description Forms

Complete data must be provided in detail as in Asset Description Form RD6.

4.6.2.3 WAE Drawings

Drawings must be provided showing the site and locality of the stormwater services including pipes, sumps, manholes, floodways, lined channels, culverts, ties, basins, end points, drop structures, head walls, gross pollutant traps (GPTs), cut off drains etc.

A structure schedule is to provided on the hydraulics drawings identifying structure number, type, easting, northing, cover type and cover rl in AHD.

Locations and levels must be provided as follows:

Table 7 Stormwater asset location and level requirements

Asset Type / Works	Details
Sumps and other covered inlet and outlet structures (i.e. KIS type structures)	• Inverts of inlet and outlet pipes and surface level on sump cover. • Levels on road sumps must be on the kerb opposite the centre of the sump cover: levels on plantation sumps must be in the centre of sump cover.
Manholes	• Invert levels of inlet and outlet pipes and surface level must be on the centre of the manhole cover.
Headwalls / Drop Structures	• Invert levels of inlet and outlet pipes / channels or box culverts and level must be on top of the headwall; details of material, height, drop height, skew angle, apron type, surface level, and depth must be provided.

Asset Type / Works	Details
Pipes	• Pipe size, pipe diameter and material type, longitudinal grade, • Upstream and downstream invert levels; • Length between structures; • Radius of curved stormwater alignments; • Show scour stops at 5m intervals where longitudinal grade >7%
Gross pollutant traps	• Invert levels of inlet pipe, outlet pipe, must be on top of the GPT; details of construction material, drying area, basin width, basin length, basin depth, number of screen panels, panel width, panel height, bar dimensions and bar openings must be provided.
Lined channels	• Details of channel material, channel shape, base width, top width, depth, length (field measured), grade and invert levels must be provided.
Floodways	• Diameter of low-flow pipe, length (field measured), grade and invert levels.
Cut-Off Drains	• Length (field measured) and invert levels. • Channel type, base width, top width and depth
Culvert with a clear span less than 1.8m or waterway area less than 3m²	• Width, height, length (field measured), grade, and invert levels
Tie (service connections)	• Material, diameter, length and distance from boundary (field measured) and invert levels. • Invert levels on long ties
End point (dead end)	• Surface and invert.

4.6.3 Sub-Soil Drains

As-constructed sub-soil drain level control must be in tabular format and show gradients between level points. For drains longer than 20m the normal upstream and downstream levels must be supplemented with intermediate levels at no more than 20m spacing.

Sub-soil drain records must include a plan showing all drain locations enabling a quality record to be assigned to each particular drain. Drain lines must be identified by adjacent upstream and downstream outlet sump numbers.

4.6.4 Dams and Weirs

4.6.4.1 Asset Description Forms

Complete data must be provided in detail as in Asset Description Form D1

4.6.4.2 WAE Drawings

Drawings to show the location of the embankment, spillway and outlet structures.

4.7 Specific Requirements for Traffic Control Device Assets

4.7.1 Traffic Assets

4.7.1.1 Asset Description/Data

Complete data must be provided in detail in Form RD7.

4.7.1.2 WAE Drawings

4.7.2 Traffic Control Device (TCD) Drawings

Traffic control devices are pavement markings, signs and signal or other devices used to inform, guide and control traffic, including pedestrians, motor vehicle drivers and cyclists. These devices are usually placed adjacent, over or along the highways, roads, traffic facilities and other public areas that require traffic control.

Caution:	Traffic control devices are to be constructed as per approved TCD drawings otherwise resubmissions for approval will be required. Works may need to be demolished, modified & reconstructed as per the originally approved TCD if the resubmission is not supported and approved.

Summary of TCD drawing technical requirements:

- Submitted in AutoCAD DWG format;
- Compliant with chapter 1 - 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0 which specifies standard layers, blocks, linetypes, linetype widths and scale factors, plot styles, colours, fonts, units, coordinates, dimension styles and scales;
- Submit A3 colour PDF of all TCD drawings using the correct standard TCD plotstyles specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.

- Only upon request, submit A1 / A3 colour hardcopy drawings of all TCD drawings using the correct standard TCD plot styles specified in Ref 11 Part 4.
- Submit a standard guide sign form detailing complete design for each guide sign. It must include fully detailed design both graphically and tabular; the orientation, structural components, guide sign number and associated TCD drawing number and approval details. File name of all guide sign documentation must contain the guide sign number.

Drawings must be provided depicting the traffic control devices and traffic signals which have been constructed, removed or relocated as part of the project.

- Separate sets of the drawings are required for Traffic Control Devices and Traffic Signals including loop locations, control box locations, and locations of conduits, size and type for future optic fibre cabling for ITS..
- One copy of the approved guide-sign inventory forms and guide-sign design drawings must be provided. Guide-sign inventory forms must include the approved TC Number associated with the TCD drawings and a photo of the completed guide sign.

For further information regarding TCD design specifications refer to TCCS website for:

- TCCS standard drawings;

http://www.tccs.act.gov.au/Development_and_Project_Support/pre-development-applications/estate-development-plans/tccs_standard_drawings

- Municipal Infrastructure Design Standards MIS 12 and MIS 13;

Refer http://www.tccs.act.gov.au/Development_and_Project_Support/standards-codes-and-guidelines/municipal_infrastructure_design_standards

- TCCS Drafting Standard Ref 11 Issue 1 Revision 0.

Table 8 Standard Requirements for Traffic Control Device Drawings

AutoCAD Configuration	Details
Special Requirements	Drawings need to be drawn as per chapters 1 – 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0. Refer http://www.tccs.act.gov.au/Development_and_Project_Support/standards-codes-and-guidelines/page/TCCS_drafting_standard and http://www.tccs.act.gov.au/__data/assets/pdf_file/0006/397257/TCCS_Reference_Document_11.pdf Submissions to be delivered via the TCCS ProjectWise Portal. Refer http://www.tccs.act.gov.au/Development_and_Project_Support/projectwise-and-wae-portal/projectwise-portal
Digital Submissions	https://actgov.projectwiseonline.com
CAD Drawing Formats	AutoCAD DWG

AutoCAD Configuration	Details
Standard Co-ordinate Systems / Projections	ACT Standard Grid (Stromlo)
2D / 3D Requirements	As per chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0. The drawings must be 2D with the Elevation set to 0.0
Paperspace, Modelspace	All spatial information is to be in model space. The drawings may contain multiple layouts. The title blocks are to be in paperspace.
External Reference Drawings (xrefs)	Xrefs must not be used in the TCD drawings.
CAD Drawing Units	All drawing units must be in metres and decimals of a metre. 1 drawing unit = 1 metre.
Drawing Insertion Points	An AutoCAD drawing's insertion point is defined by the AutoCAD system variable Base. The base system variable must be set to 0,0,0.
Standard Title Blocks / Project Information	The consultant may use their own title blocks.
Standard Blocks	Only standard blocks specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.are to be used. Standard blocks and templates can be downloaded from http://www.tccs.act.gov.au/Development_and_Project_Support/standards-codes-and-guidelines/page/TCCS_drafting_standard Block names are not to be modified. Blocks are not to be converted to dynamic blocks.
Block Insertion Points	Blocks insertion points are not to be modified
Block Attribute Data	The consultant may not add or delete attributes from the blocks
Scales	To Australian Standards
Standard Layers	Only standard layers specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.are to be used.
Standard Layer Colours	Standard layer colours specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.are to be used.
Standard Linetypes	Only standard linetypes specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.are to be used.
Standard Dimension Styles	Only standard dimension styles specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.are to be used.

AutoCAD Configuration	Details
Standard Fonts	Only standard fonts specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.are to be used.
Standard Hatching	Only standard hatch patterns specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.are to be used.
Standard Plotstyles	Only standard plotstyles specified in chapter 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0.are to be used.

4.8 Specific Requirements for Landscape Assets

4.8.1 Soft Landscape assets

4.8.1.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form LS1.

4.8.1.2 Drawing Elements

The following information must be included on the WAE summary and detail drawings.

- Trees and related infrastructure
- Planting beds
- Water plants
- Mulch areas
- Grassing
- Granite areas

4.8.1.3 Additional Information

Table 9 Additional information for soft landscape assets

Asset Type / Works	Details
All plants (groundcover, shrubs, trees)	• Date of planting • Source of stock (nursery) • Name and contact details of planting contractor • Summary of species/varieties planted • All existing and newly planted trees must be shown on the detailed drawings • Drawings must clearly show the location of all removed trees

Asset Type / Works	Details
Planting beds and mulch areas	• Extents of all planting beds and mulch areas must be shown on the detailed drawings • Irrigated planting beds must be clearly identified • This category includes plantings of wetland species adjacent to stormwater ponds and wetlands
Open space grassing	• Extents of all new or reinstated grassed areas must be shown on the detailed drawings. The areas must be clearly labelled to distinguish between the new and reinstated grass • Irrigated grassed areas must be clearly identified • The areas defined must exclude areas of path, shrub beds or any other feature that is within the grassed area • Type of grass planted/grass seed mix used • Source of grass seed/turf • Name and contact details of planting contractor
Verge Grassing	For all verges that have been constructed by the lessee without an approval the following documentation is required: • Drawings- 2 layers one showing design intent and 2nd showing block with unapproved treatment • A copy of each letter sent to the residents of the block with unapproved verge treatment Photograph of each unapproved verge
Granite areas	• Extents of all granite areas must be shown on the detailed drawings • The areas defined must exclude areas of path, shrub beds or any other feature that is within the gravel area

4.8.1.4 Maintenance and Operational Manuals

No specific maintenance and operational manuals are required for soft landscape assets. However, any manuals provided by suppliers must be included.

4.8.1.5 Construction Quality Records

No specific construction quality records are required for soft landscape assets.

4.8.2 Fences & Landscape Barriers

4.8.2.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form LS2.

4.8.2.2 Drawing Elements

The following information must be included on the WAE summary and detail drawings:

- Fences
- Gates
- Bollards/Barriers
- Walls

4.8.2.3 Additional Information

No specific additional information is required for fences and landscape barriers.

4.8.2.4 Maintenance and Operational Manuals

Maintenance and operational manuals must be provided for automated gates/barriers and any other assets that have such manuals.

4.8.2.5 Construction Quality Records

No specific construction quality records are required for fences and landscape barriers.

4.8.3 Landscape Structures

4.8.3.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form LS3.

4.8.3.2 Drawing Elements

The following information must be included on the WAE summary and detail drawings:

- Toilet blocks
- Parks shelters
- Shade sails
- Waste enclosures
- Artworks
- Any other landscape structures

4.8.3.3 Additional Information

Additional information is required for:

Table 10 Additional information required for landscape structures

Asset Type / Works	Details
Artworks (including memorials)	• Four photos (in jpeg image or similar, less than 1 Mb in size each) taken from the north, south, east and west of the work; • Information identifying the feature name; Details of the artist including; name and contact details
All other assets	• At least one photo identifying the structure (in jpeg image or similar, less than 1 Mb in size each); • A separate set of drawings for each complete structure including detail design elements as constructed and locality site plan

4.8.3.4 Maintenance and Operational Manuals

Maintenance and operations manuals must be provided for toilets, automated waste enclosures and any other assets that have such manuals.

4.8.3.5 Construction Quality Records

Required certification includes (but is not limited to):

- Certification of electrical safety and compliance with Australian Wiring Standards
- Plumbing certification

4.8.4 Landscape Street and Park Furniture

4.8.4.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form LS4.

4.8.4.2 Drawing Elements

The following information must be included on the WAE summary and detail drawings:

- Barbecues
- Seats
- Benches
- Table settings
- Waste receptacles
- Railings
- Bike racks
- Power outlets

Picnic settings (table with adjacent seats not necessarily attached) must be listed as a single table.

4.8.4.3 Additional Information

Additional information is required for:

Table 11 Additional information required for landscape street and park furniture

Asset Type / Works	Details
All Assets	• One photo for each individual type of asset (in jpeg image or similar, less than 1 Mb in size each)*

* - E.g. If ten seats of the same design are installed, only one photograph is required.

4.8.4.4 Maintenance and Operational Manuals

Maintenance and operational manuals must be provided for barbeques and any other assets that have such manuals.

4.8.4.5 Construction Quality Records

Required certification includes (but is not limited to):

- Certification of electrical safety and compliance with Australian Wiring Standards for any wiring for BBQ, power outlets/bollards and lighting
- Construction quality records for BBQ installation/ construction including the requirement for a licensed electrician or gasfitter to connect power/gas

4.8.5 Landscape Signage

4.8.5.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form LS5.

4.8.5.2 Drawing Elements

The following information must be included on the WAE summary and detail drawings:

- Landscape signage

4.8.5.3 Additional Information

Additional information is required for:

Table 12 Additional information required for landscape signage

Asset Type / Works	Details
All Assets	• One photo for each individual type of asset (in jpeg image or similar, less than 1 Mb in size each)*

4.8.6 Irrigation Assets

4.8.6.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form LS6.

4.8.6.2 Drawing Elements

The following information must be included on the WAE summary and detail drawings:

- Irrigation controllers
- Sprinkler heads
- Irrigation zones
- Pumps
- Water meters
- Pipelines

4.8.6.3 Additional Information

Additional information is required for:

Table 13 Additional information required for irrigation assets

Asset Type / Works	Details
Pump	Where any maintenance has been carried out on the irrigation pumps prior to handover, the full maintenance history must be provided
All assets	An irrigation detail plan must be provided with the submission. Plans must clearly show all infrastructure associated with the irrigation system including pipes, valves, control box(es), sprinkler/dripper heads, taps, meters and pumps. The plan must clearly show irrigation zones and stations and triangulated measurements for irrigation lines.

4.8.6.4 Maintenance and Operational Manuals

Maintenance and operational manuals must be provided for complete irrigations systems and/or individual components comprising part of the irrigation system where assets have such manuals.

4.8.6.5 Construction Quality Records

Required certification includes (but is not limited to):

- Certification of electrical safety and compliance with Australian Wiring Standards
- Plumbing certification

4.8.7 Water Feature Assets

4.8.7.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form LS7.

4.8.7.2 Drawing Elements

The following information must be included on the WAE summary and detail drawings:

- Ponds
- Wetlands
- Fountains
- Drinking fountains
- Water sensitive urban design landscape features

4.8.7.3 Additional Information

No specific additional information is required for water feature assets.

4.8.7.4 Maintenance and Operational Manuals

Maintenance and operations manuals must be provided for pumps and any other assets that have such manuals.

4.8.7.5 Construction Quality Records

Required certification includes (but is not limited to):

- Plumbing certification

4.8.8 Playground and fitness assets

4.8.8.1 Asset Description/Data

Complete data must be provided in detail in Asset Description Form PG1.

4.8.8.2 Drawing Elements

The following information must be included on the WAE summary and detail drawings:

- Softfall areas
- Play equipment items
- Skateparks
- Fitness circuits
- Fitness equipment items
- Outdoor gym equipment

4.8.8.3 Additional Information

Additional information is required for:

Table 14 Additional information required for playground and fitness assets

Asset Type / Works	Details

Asset Type / Works	Details
All assets	For each fitness and skate park asset, a photo of each area taken from the north, south, east and west. The name of each image must clearly identify the area in the image and the aspect from which it is being viewed.
Play Equipment	A photo of each softfall area taken from the north, south, east and west must be provided. The name of each image must clearly identify the play area in the image and the aspect from which it is being viewed. Complete set of detailed drawings of playground structures and components.

4.8.8.4 Maintenance and Operational Manuals

Maintenance and operational manuals and warranty documents must be provided for all playground, fitness equipment and artificial softfall.

A schedule showing the estimated useful life and recommended maintenance program for each asset/asset type must be provided.

All equipment require a 20 year manufacturers' recommended Maintenance and Capital Upgrade Plan detailing the annual maintenance and associated maintenance costs required for the asset. The Plan must also include details of when and how refurbishment of the playground/fitness must be undertaken with estimated refurbishment costing. This information is required to provide expected and programmed maintenance costs over the design life of the equipment. It is expected that this information will be sourced from the suppliers of the equipment.

4.8.8.5 Construction Quality Records

The following construction quality records are required for playground and fitness assets:

- Artificial softfall test compliance results or specific certification of the mulch or softfall in playgrounds
- Certification of playground compliance with Australian Standards
- Certification of electrical safety and compliance with Australian Wiring Standards for any wiring for playground items

4.9 Specific Requirements for Light Rail Projects

4.9.1 Transport Canberra Light Rail Projects

Work as executed drawings related to projects for Transport Canberra Light Rail works must comply with the following TCCS WAE Drawing requirements:

Table 15 WAE standards relating to light rail works

Asset Type / Works	Details
Rail related assets	NSW Government, Transport for NSW, Engineering Drawings and CAD Requirements (T MU MD 00006 ST)
Municipal assets: • Civil assets; • Public lighting; • Hydraulic services;	Ref 8
Traffic control devices	Ref 8 and chapters 1 – 4 of the TCCS Drafting Standard Ref 11 Issue 1 Revision 0. Refer http://www.tccs.act.gov.au/Development_and_Project_Support/standards-codes-and-guidelines/page/TCCS_drafting_standard and http://www.tccs.act.gov.au/__data/assets/pdf_file/0006/397257/TCCS_Reference_Document_11.pdf

Note: It is important that layering conventions used in the drawings are easy interpreted.
Care must be taken to ensure data is placed on the appropriate layers.
Where the consultant's layering conventions are not obvious they must provide documentation with the submission explaining the layering conventions adopted within the drawings.

5.0 Resources

5.1 Definition of terms

Term	Definition
Agent	The entity formally authorised by the developer to act on behalf of the developer legally during the planning, design, construction and handover of civil and landscape public infrastructure works. The agent or the applicant, as nominated by the developer will be responsible for the coordination of documentation prepared and certified by the relevant consultant(s) for civil and landscape works. The agent or the applicant must be responsible for the lodgement of the submission with TCCS and must be the consistent point of contact between Development Review and Coordination (DRC), and the developer throughout the life of the development unless advised otherwise by the developer.

Term	Definition
Applicant	Refers to the developer or the agent of the developer responsible for preparing and lodging the submissions and liaising with TCCS.
As Constructed Drawings or As Constructed Plans	An "As Constructed Drawing" or "As Constructed Plan" or "Work as Executed Drawing" is an engineering drawing detailing exactly how an asset was constructed. If designs are modified during a project, the original design drawings are not a true representation of the final layout of the asset. An As Constructed Drawing takes into account of any in-project changes and is a true representation of what was built.
Asset	The elements of the completed works comprising of all civil and landscape works to be handed over to TCCS (As per asset description forms or as otherwise agreed).
ACT Standard Grid	The ACT Standard Grid is a transverse mercator map projection that uses the longitude of Mt Stromlo Trig Station as its central meridian. It is based on the Australian Geodetic Datum 66 (AGD66), which is modified to take advantage of the ACT's limited east-west dimension and account for scale differences caused by the ACT's height above sea level. The resulting ACT Standard Grid effectively can be treated as a plane (rather than geodetic) system of coordinates using the formulation of plane trigonometry, without the need to apply scale factors, grid convergence, arc-to-chord, or sea level corrections. As a result, for all but the most accurate work in the ACT, terrestrial, grid and plane measurements can be taken as being identical. Further information on this coordinate system can be found on the Environment Planning and Sustainable Development Directorate (EPSDD) website under the following link http://www.planning.act.gov.au/tools_resources/survey-data-maps?a=891676
Development Review and Coordination (DRC)	Development Review and Coordination (DRC) is the section of Schools program, active travel and asset strategy in the Strategy, Innovation and Customer Experience (SICE) division in TCCS. They are responsible for the assessment, endorsement, and acceptance of assets created as part of land development activities in the ACT. Development Review and Coordination is the single point of contact for TCCS on behalf of Roads ACT, ACT NoWaste, City Services and Transport Canberra for land development works in the ACT.
DRC- Project Lead	Officer within DRC assigned by a relevant manager to act as the single point of contact for a particular project.

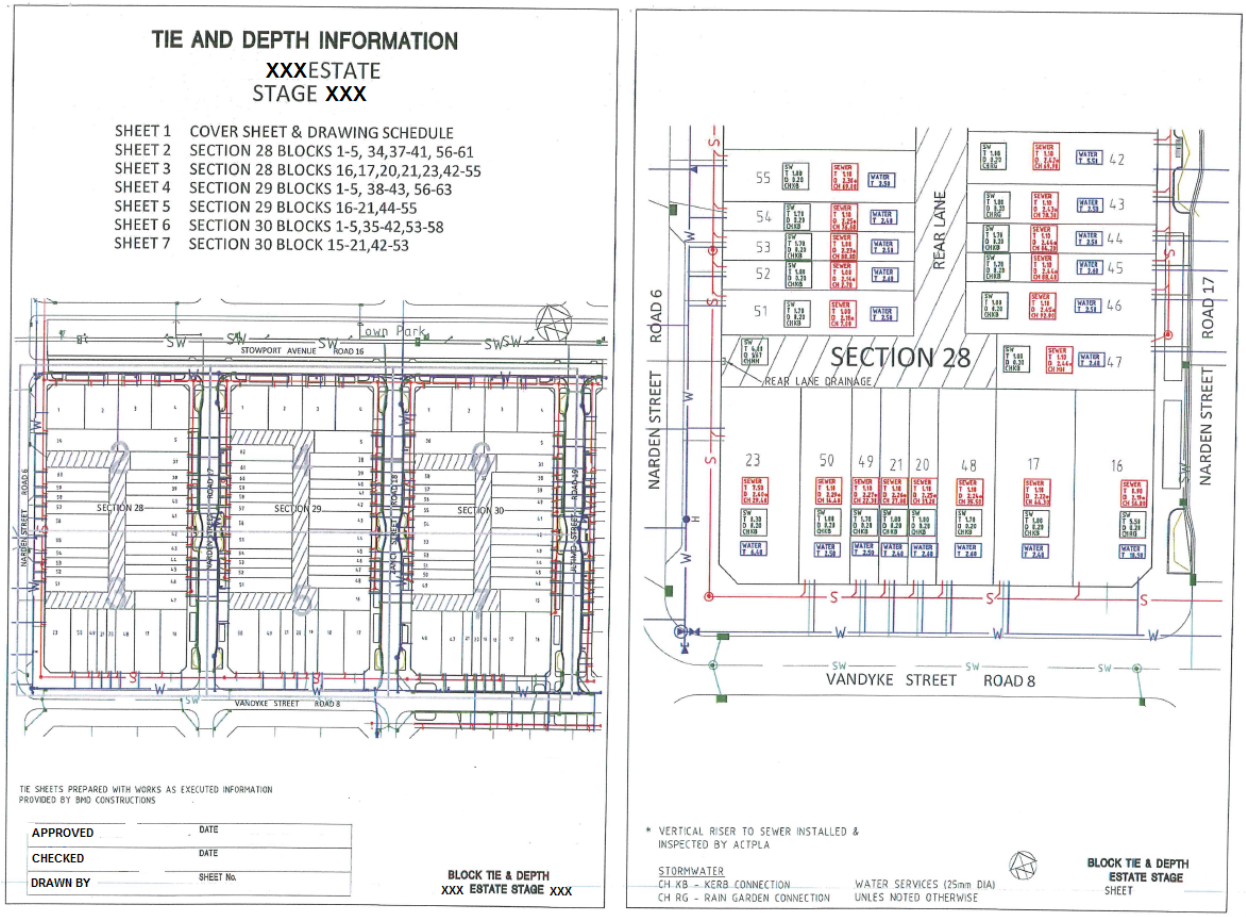
Term	Definition
DRC – Senior Manager	Refers to the chief engineer, the manager residential development or the operations manager within Development Review and Coordination section who reports to the senior manager.
Decommissioned	Whenever an asset is either demolished, deactivated, eradicated etc. and is no longer considered an asset.
Developer	In the private sector, the organisation nominated in the deed of agreement as the 'developer' responsible for development of residential, commercial and industrial development works including public infrastructure works in the ACT. In the public sector, any ACT Government directorate excluding TCCS, responsible for development of residential, commercial and industrial development works including public infrastructure works in the ACT. Developer or the agent is the legal entity that would be held responsible by TCCS for all the quality of the assets handed over to TCCS.
DWG	Electronic drawing files in AutoCAD drawing format.
External references or xreferences	Xrefs are where an entire drawing file is attached to another current drawing as a referenced drawing (xref). With xrefs, changes made in the referenced drawing are reflected in the current drawing. Attached xrefs are linked to, but not actually inserted in, another drawing. Any changes to a referenced drawing are displayed in the current drawing when it is opened or reloaded.
Fees and charges	As per the fees and charges guideline, "Submissions and inspections guideline principles and related fees and charges for TCCS and industry".
GDA2020	During 2017, it is anticipated that the ACT Government will be transitioning from the ACT Standard Grid coordinate system towards GDA2020. Refer to fact sheet, Australia's Datum Modernisation: what you need to know provides simple explanations for a non-technical audience. This link Modernising Australia's Datum website provides information about changes to the system that underlies Australia's location information, which is being updated to align with global satellite positioning systems.
Standards	All Australian and ACT standards, applicable ACT Government requirements, codes and guidelines and all statutory and regulatory

Term	Definition
	requirements governing the design of the works.
Summary drawing	An AutoCAD DWG file used to load WAE asset information into TCCS asset management system. These are submitted as part of a design acceptance / WAE submission to depict all new, amended or removed assets within the submission in a single AutoCAD DWG file. Summary drawings must comply with the relevant parts of Ref 11 that relate to civil and landscape works.
Traffic Control Devices (TCD)	Traffic control devices are pavement markings, signs and signal or other device used to inform, guide and control traffic, including pedestrians, motor vehicle drivers and cyclists. These devices are usually placed adjacent, over or along the highways, roads, traffic facilities and other public areas that require traffic control.
Vectorworks	A cross-platform CAD and BIM software increasingly being used by landscape architects instead of AutoCAD.
Work As Executed (WAE)	A “Work as Executed Drawing” or "As Constructed Drawing" or "As Constructed Plan" is an engineering drawing detailing exactly how an asset was constructed. Designs are sometimes modified during a project, and if this happens, the original design drawings are not a true representation of the final layout of the asset. A Work as Executed drawing takes into account of any in-project changes and is a true representation of what was built.

Appendix A Drawing Samples

A.1 Tie Books

Figure 1 Sample Tie Books



Appendix B Sample Reports

B.1 Sample: Certification

Figure 2 Sample: Certification Letter

Date 30.11.2017

Senior Manager Development Review and Coordination
Transport Canberra and City Services
496 Northbourne Avenue
Dickson ACT

CERTIFICATION OF WORKS

BLOCK 1 SECTION 2 Red Hill

Name of the Certifying Entity

We (name of the certifying) certify that the engineered construction of the civil works associated with the development of Block 1, Section 2 Red Hill as detailed in the Operational Acceptance submission complies with the approved drawings as per the Letter of Design Review or is noted as a variation in the attached submission.

This certification is to be read in conjunction with the attached Operational Report.

Regards,

Signature

Name of the certifying consultant
Qualification
Contact details

B.2 Sample: SMEC Stormwater Inspection and Assessment Report – CCTV Assessment

Figure 3 Sample: SMEC Stormwater Inspection and Assessment Report – CCTV Assessment

SMEC

Stormwater Inspection and Assessment Report - CCTV Assessment

30/08/2015

Project Site:	Nicholls B19 S73	Date CCTV recording was made:	14 August 2015	Date CCTV was provided for assessment	26 August 2015
Name of Assessing Officer:	Ken Bromley				
CCTV was prepared by:	D-Tech				
Consultant's name:	Sellick				
Contractor's Name:					

Picture quality of CCTV information GOOD		Type of defects identified from the DVD	Location of defects	Anomalies and/or incorrect information in the report	Recommended Action	Name of recommending Officer	Time spent on assessment hours	Remarks
PIT No.	PIT No.							
Disk 1 of 1								
MH	Connection	Nil	N/A	Nil	Nil	K Bromley	1	

B.3 Sample: Operational Acceptance Submission Cover Sheet

Figure 4 Sample: Operational Acceptance Submission Cover Sheet

ACT Government

Operational Acceptance Submission Cover Sheet - AA - SCS-07

Requirements for Operational Acceptance Submissions Attachment A

Project Title Red Hill Block 1 Section 2

Description Residential

Developer's/ Client's details

Name of the entity Bob the Builder

Address 33 Wong Way, Oodnadatta

Contact person Bob Himself

Tel. number 0412 345 678 **E-mail** Bob@Builder.com.au

Applicant's details

Company name Civil Engineering pty ltd **Contact person** Jessie Pinkman

Company address 322 16th St SW, Albuquerque, NSW 2583

Tel. number 02 654 321 12 **E-mail** Jessie@civilengineering.com.au

These documents are submitted for audit and comments or endorsement.

All Documents are in accordance with the design brief and have been prepared in accordance with the Requirements detailed in Reference Document AA-REF-07 Requirements for Submission Requesting Operational Acceptance (Ref-07) and Reference Document AA-REF-08 and Reference Document AA-REF-11 Requirements for Works as Executed Quality Records (Ref-08 and Ref-11).

Note:

The Submission must be complete and include all the elements for the Works. TAMS will not accept incomplete Submissions or Submissions from individual consultants for separate elements of the Works. Where TAMS considers the Submission to be incomplete, the Applicant will be advised within five working days to this effect and will be requested to collect the Submission from TAMS offices. Assessment will not commence until a complete Submission has been received.

Prepared by Jessie Pinkman **Date** 12.24.2018

All documents to be submitted in hard and soft copy

	Yes	No	Office use
A formal request for Certificate of Operational Acceptance (Ref 07 clause 5.2.1)	◉	○	○
Relevant certification (Ref 07 clause 5.2.1 & 5.2.2)	◉	○	○
A copy of Design Acceptance certificate (Ref 07 clause 5.2.3)	◉	○	○
Completed Audit Forms (Ref 07 clause 5.2.10)	◉	○	○
Site inspection report (Ref 07 clause 5.2.4)	◉	○	○

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Issue 1: Revision 5

Date of issue:10.06.2016
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	Yes	No	N/A	Office use
Products (clause 6.2.7)	○	○	◉	○
Exception clauses (clause 6.2.8)	○	○	◉	○
Details of previous consultations (clause 6.2.6)	○	○	◉	○
Plan Index and or Key Plan (clause 6.1.3)	○	○	◉	○
Landscape Management Protection Plan (clause 6.1.3)	◉	○	○	○
Project site plans (clause 6.1.3)	◉	○	○	○
General arrangements plan (road and pedestrian layouts) (clause 6.1.3)	◉	○	○	○
Location plan (clause 6.1.3)	◉	○	○	○
Survey and setting out details (clause 6.1.3)	◉	○	○	○
Typical cross section and construction details (clause 6.1.3)	◉	○	○	○
Staging plan (clause 6.1.3)	○	○	◉	○
Use of Recycled Materials (clause 6.1.3)	○	○	◉	○
Details of work resulting from Sub-surface Investigations (clause 6.1.3)	○	○	◉	○
Cover letter from LDA coordinator (for LDA projects only)	○	○	◉	○

Elements of works and submission status

	1 submission	2nd submission	3rd on following submissions
Civil	○	○	○
Landscape	○	○	○
TCD	○	○	○
Public lighting	○	○	○

As per "Fees and charges Guideline to the Industry", fees apply for the assessment of the 3rd and the following submissions.

Office use only

Compliance with documentation requirements of Reference Document 06

	Compliant	Not compliant
Submission	○	○

Checked by Date

Document No. AA-SCS-06
Issue 1: Revision 5

Date of issue:10.06.2016
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Appendix C TCCS Online submission Process

C.1 Online submissions through the TCCS ProjectWise Portal

All WAE submissions are to be lodged online through the TCCS ProjectWise Portal using the TCCS ProjectWise document submission process.

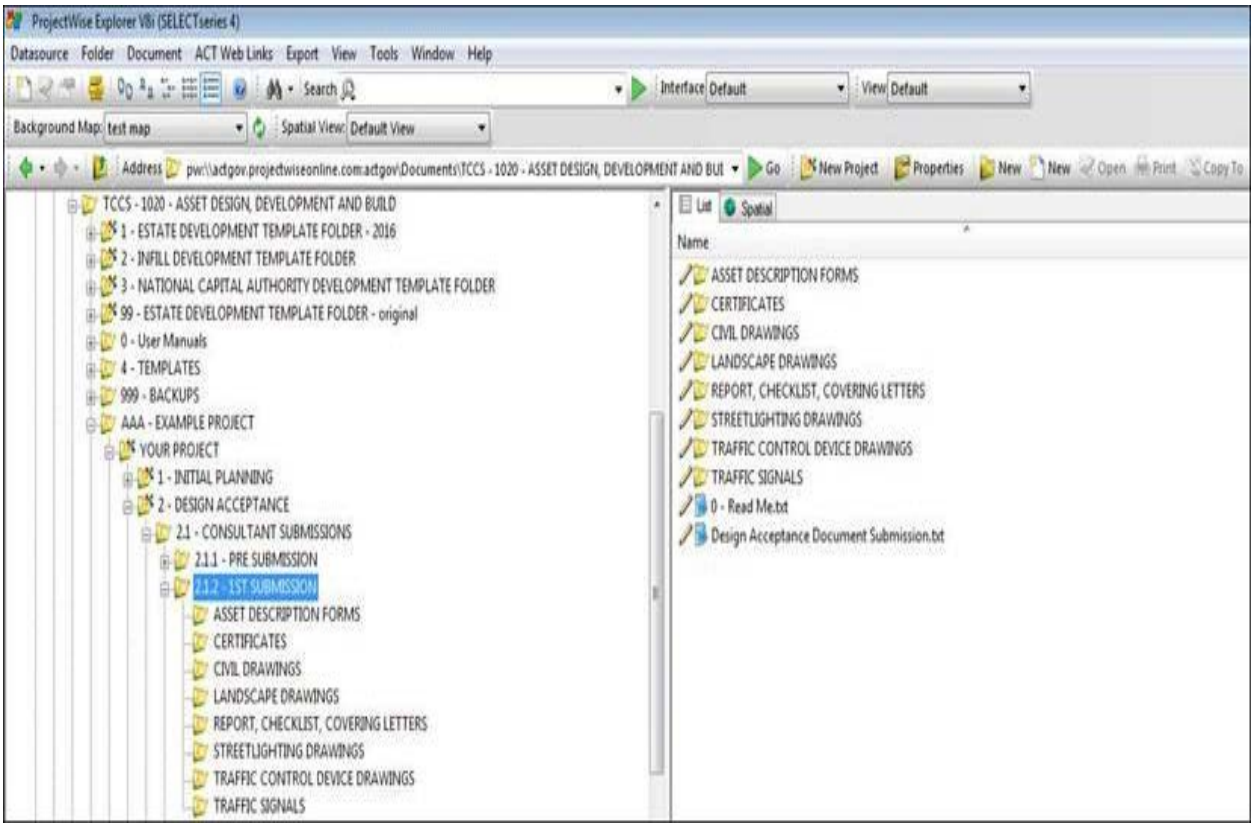
To obtain a ProjectWise licence to use the portal, please contact TCCS Innovation and Technology Branch on (02) 6205 2106

To request a ProjectWise link for a new project or for other enquiries regarding the access please contact Development Review and Coordination (DRC) team'

- (T): 6207 0019
- (E)TCCS.DRC@act.gov.au

Step 1. Once you receive the link you can open ProjectWise on your PC, then click on the link.

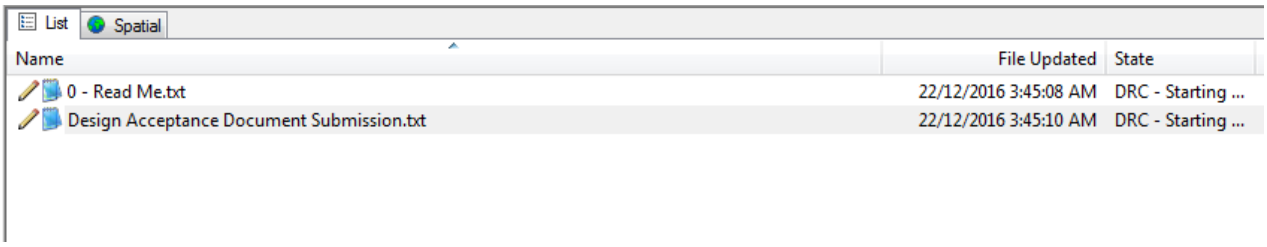
Step 2. Transfer the files from where you have them stored on your PC to ProjectWise. This is done by selecting, dragging and dropping them into the appropriate folders in the structure.



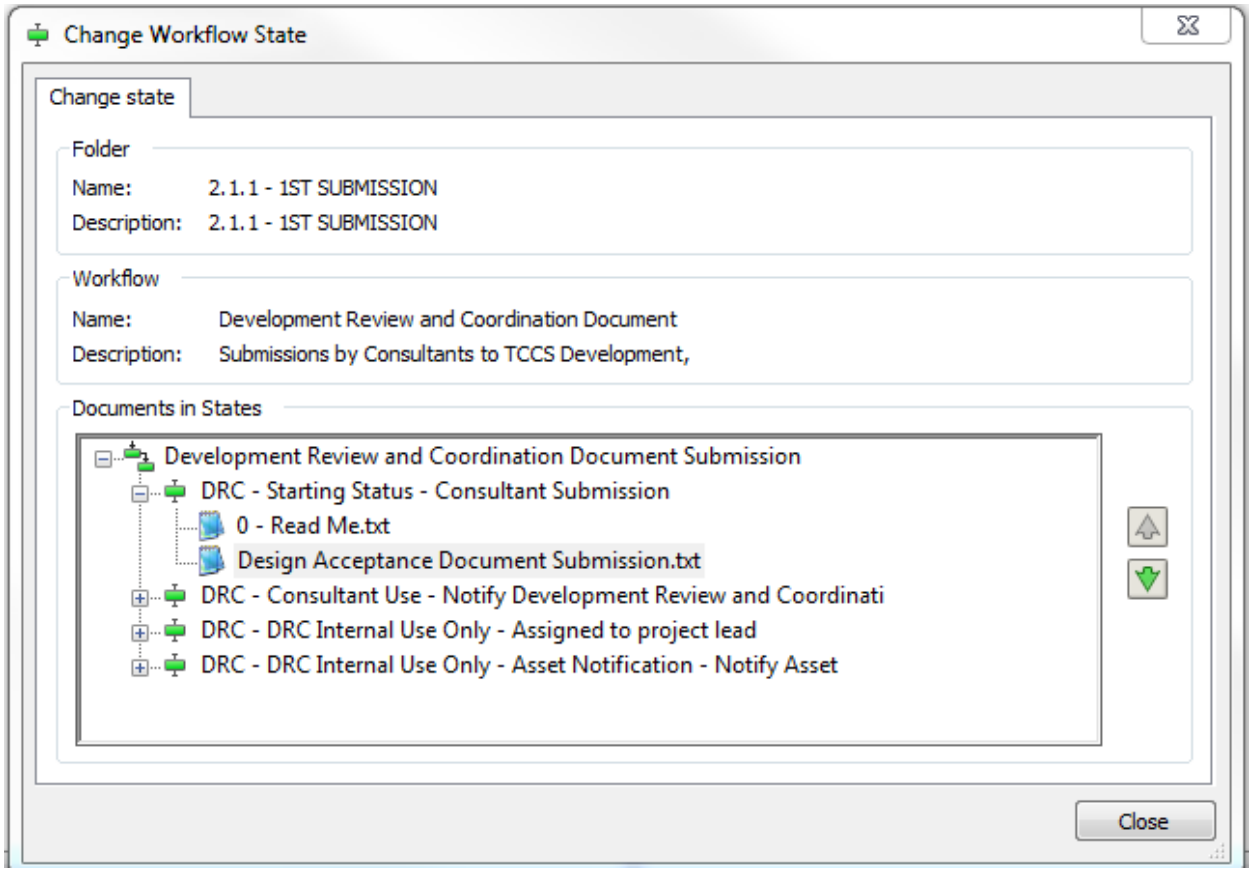
Step 3. Right Click on the 'Design Acceptance Document Submission.txt' file (this will be named appropriately for the different phases of the entire project, such as Operational Acceptance, Final Acceptance etc)

Step 4. Select 'Change State'

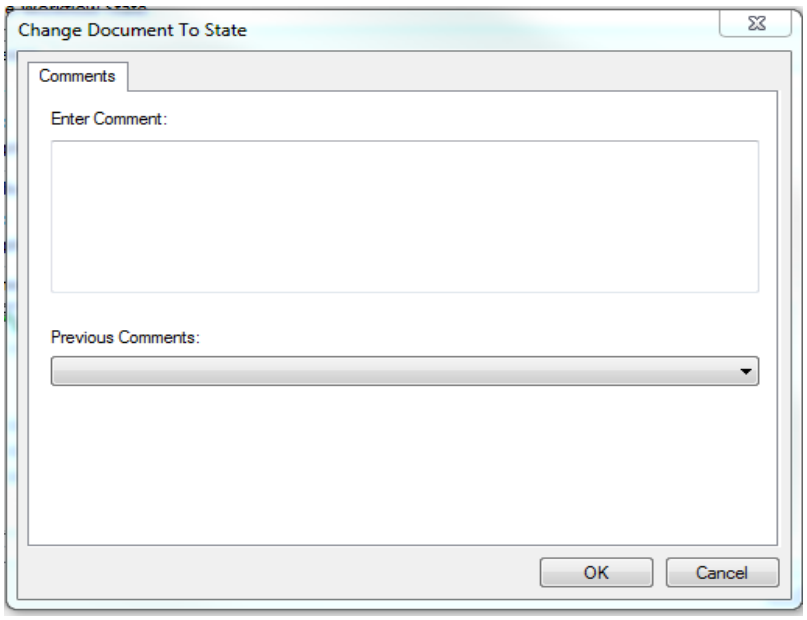
Step 5. Select 'Change'



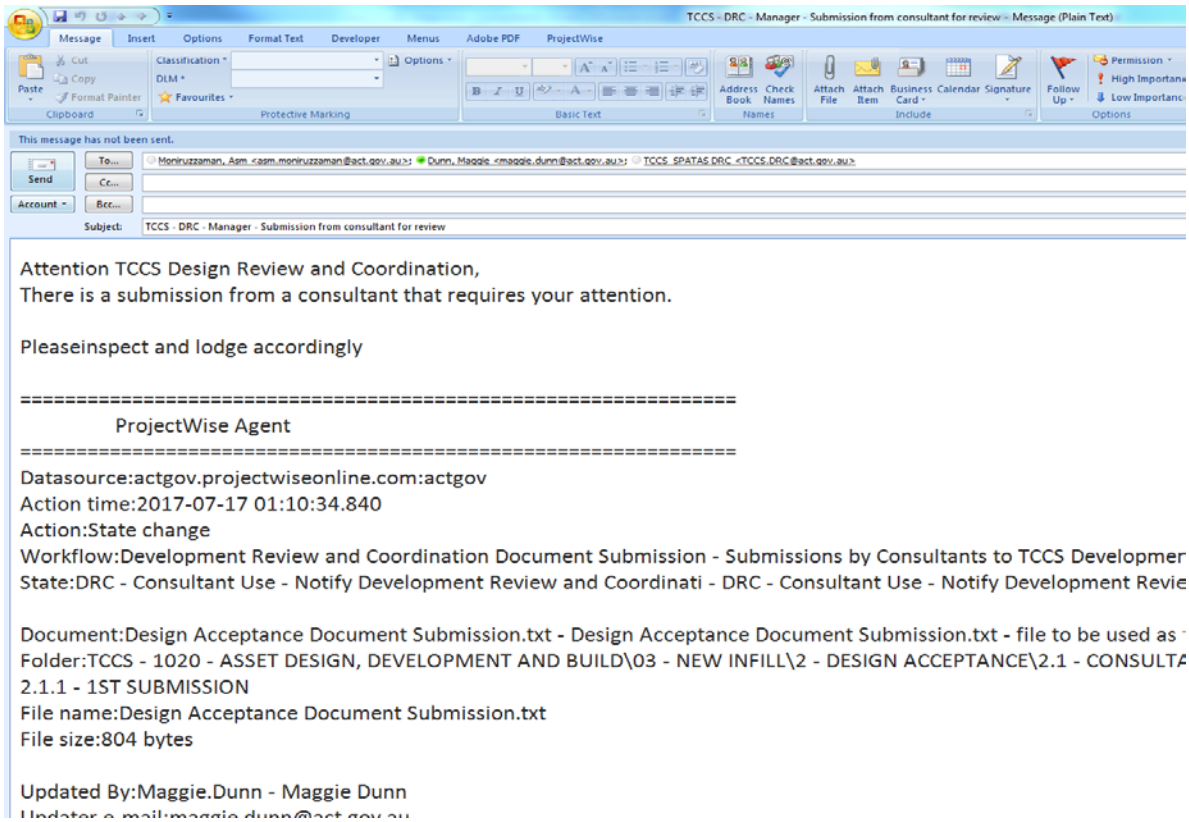
Step 6. Click, Drag and Drop the 'Design Acceptance Document Submission.txt' file FROM the DRC – Starting Status – consultant submission" TO the " DRC–Consultant Use - Notify Development Review and Coordination"



Step 7. Click on the 'OK' button



Step 8. Add you own email address to receive a lodgement confirmation and Click on the 'Send' button



Step 9. DRC team will provide the acknowledgment of receipt within 2 working days from receiving of the email.