

Lessons learned from one of New Zealand's most challenging civil engineering projects: rebuilding the earthquake damaged pipes, roads, bridges and retaining walls in the city of Christchurch 2011 - 2016.

SCIRT Draughting Manual

Story: AutoCAD and 12d Design Tools

Theme: Design

A manual which assists SCIRT draughters to perform quality draughting.

This document has been provided as an example of a tool that might be useful for other organisations undertaking complex disaster recovery or infrastructure rebuild programmes.

For more information about this document, visit www.scirtlearninglegacy.org.nz



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SCIRT Draughting Manual

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Revision History

Revision	Date	Name	Brief Description of Change
A	25/11/11	N. Locke	Initial submission
B	08/12/11	N. Locke	Title for 8.2, Procedures for Plotting and Signatures, removal of Document Numbering Procedures.
C	10/01/12	N. Locke	Revision of 8.8.1, Guidelines for Plans and Longitudinal Sections.
D	01/03/12	N. Locke	Revision of 8.8.1, Guidelines for Plans and Longitudinal Sections. Addition of 8.19, Reference Files Amendment to 9, Plotting Procedures on creating pdf's. Drawing samples of Roading, Stormwater and Wastewater Plans and Longitudinal Sections.
E	25/07/12	N. Locke	Document branding updated Title Block information updated Revision of 8.1.7 on notation of scales in title block Revision of 8.7 on use of Modelspace and Paperspace Revision of 8.8.1 on layout of Stormwater drawings Revision of 8.10 Section & Detail marker & title updated Revision of 10.3.2 'Green' removed from table

			Appendix A – Layers updated Appendix B – Services and Utilities Colour Table Appendix C – Drawing Samples revised
F	9/10/12	N. Locke	Revision of 8.3 Addition of Architectural, Landscaping and Mechanical discipline types Revision of 8.8.1 on notation of scales in title block and arrangement of Roading and Stormwater drawings Revision to Appendix C. Updates to Drawing Samples Addition of Appendix D – Drawing Legends
G	7/02/2013	N. Locke	Revision of 8.17 Drawing scales are to be noted on the drawings as though they are to be printed on an A1 sheet.
H		N. Locke	Revision of 8.2.2. Update of title block attribute updating. Revision of 8.3. Update to Water discipline code to match the Document Naming manual Revision of 8.17. Update to Drawing Scales Revision of 11.2, note 3. Update to the Handover phase of the revision process. Revision of 11.6 Update to the Revision signature process. Appendix C – Roads and Wastewater Patch & Repair drawing samples updated
J	27/01/2015	N. Locke	Addition of Part 12 - As-built drawings

1. Introduction

The purpose of this manual is to assist staff within the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) perform quality draughting as part of our service to the contractors responsible for the restoration of existing roads and services. There needs to be a rigid set of procedures to bring together the four groups which comprise the SCIRT design team.

The information contained in this manual is expected to be followed unless client or project constraints require draughting to be done otherwise. In this case there must be documentation on the project file which clearly establishes what alternative practice applies on the project.

2. SCIRT Draughting Manual Structure

The SCIRT Draughting Manual describes work practices and standards that are common across the various design teams. This document is arranged into separate parts which group information into logical work breakdowns.

The parts are structured as follows:

Part 1 Introduction

Provides an introduction to the draughting systems and CAD communities within SCIRT.

Part 2 SCIRT Draughting Manual Structure

Establishes the structure of the draughting manual and the standards this document is based upon.

Part 3 Organisation and Roles

Outlines the organisation and responsibilities for draughting within SCIRT.

Part 4 CAD Support

Outlines the organisation and methods for CAD support within SCIRT.

Part 5 CAD Software and Hardware

Establishes the CAD related software and hardware and how it is accessed.

Part 6 Drawing Management

Instructions on how to store and manage CAD data.

Part 7 Data Location

Instructions on where to store and manage CAD data.

Part 8 General Drawing Requirements

Illustrates the requirements of how drawings are shown.

Part 9 Plotting Procedures

Procedures for plotting drawings.

Part 10 Drawing Checking Procedure

Procedures for checking drawings.

Part 11 Drawing Revisions

Procedures for managing drawing revisions.

Part 12 As-built Drawings

Procedures for the creation and issuing of as-built drawings for the Handover phase of a project.

The SCIRT Draughting Manual is also supported by controlled CAD documents in the form of Procedures, Work Instructions, Guidelines, Schedules and Lists, Forms and Check Lists, and Drawings.

2.1. Reference Standards

The SCIRT Draughting Manual has been written with reference to the following standards:

Australia and New Zealand

AS1100.101	Technical Drawing – General Principals
AS1100.401	Technical Drawing – Engineering Survey
AS1100.501	Technical Drawing – Structural Engineering Drawing
June 2010	Christchurch City Council – Infrastructure Design Standard (IDS)

United Kingdom

BS 1192:2007	Part 1 – Construction Drawing Practice; recommendations for general principles
BS 1192:2007	Part 2 – Construction Drawing Practice; recommendations for architectural and engineering drawings
BS 1192:2007	Part 2 – Construction Drawing Practice; guide for structuring computer graphic information

United States

NCS V5: 2011	AIA CAD Layer Guidelines: U.S. National CAD Standard Version 5
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3. Organisation and Roles

3.1. SCIRT CAD Manager

The CAD Manager is an appointment made by the SCIRT Design Manager. The CAD Manager is responsible for setting the standards for all draughting work, and setting procedures for work undertaken within the alliance. This is accomplished by consulting the Lead Design Organisation (LDO) Lead Draughters and the SCIRT Survey Manager.

The CAD Manager shall be responsible for:

- Providing leadership.
- Providing technical and moral support.
- Maintaining a high standard of draughting work.
- Coordination of Lead Draughters.
- Coordinating CAD systems and processes.
- Staff discipline, training and welfare.
- Monitoring workload and staff utilisation.
- Preparing estimates and budgets with Project Managers.
- Ensure the technical ability of staff to accomplish projects.
- Maintaining an effective storage facility of documents.
- Liaison with Document managers of the SCIRT Contracting teams.
- Development of practices to maximise efficiency.

3.2. LDO Lead Draughter

The Lead Draughter is an appointment made by the LDO Team Leaders. The Lead Draughter is largely focused on project delivery.

The LDO Lead Draughter shall be responsible for:

- Implementing alliance policy at a LDO level.
- Induction of new staff into their respective LDO team.
- Maintaining a high standard of all draughting work performed.
- Liaison with SCIRT CAD Manager and LDO Engineers.
- Providing technical and moral support.
- Monitoring workload and staff utilisation.
- Preparing estimates and budgets with Project Managers.
- Allocation of personnel to project teams and specific tasks within the project.
- Ensure the technical ability of staff to accomplish projects.
- Maintaining an effective storage facility for documents.
- The preparation and maintenance of drawing lists.
- Project document control including compliance with Client specific requirements.
- The production of drawings.

- Checking of drawings.
- Interfacing with various disciplines.
- Arranging signatures for drawings
- Filing, storage, archiving of project drawings.

3.3. Designer/Modeller

The Designer/Modeller is responsible for the creation of the 3D model and outputs required for the drawing documentation.

The Designer/Modeller shall be responsible for:

- Creation of the 3D model.
- Maintenance of associated databases and libraries.
- Coordination with other discipline models.
- Clash detection.
- Managing change of models from external sources.
- Drawing outputs.

3.4. Draughtsperson

The Draughtsperson shall be responsible for:

- The production of drawings.
- Issuing of deliverables.
- Filing, storage and archiving of project drawings.

3.5. Checker

Major projects, such as the Christchurch Infrastructure Rebuild would benefit by the employ of dedicated checkers. An experienced and Senior Draughter with previous checking experience usually fits this role. During this phase of the Rebuild this responsibility will be taken on by the LDO Lead Draughter or designate. The Checker shall be responsible for:

- Checking drawings in accordance with project requirements or as directed by the SCIRT CAD Manager.
- Informing the Draughtsperson and/or the Designer/Modeller of any corrections required to the drawings and suggestions of solutions to recurring errors.

3.6. Document Controller

Due to the size and complexity of the Stronger Christchurch Infrastructure Rebuild, a dedicated Document Controller is required. The Document Controller shall be responsible for:

- The maintenance of all document control.
- Recording of incoming/outgoing documents.
- Filing and retrieving of documents.

3.7. New Starter/CAD Inductions

All new draughters are required to undertake a CAD induction prior to starting project work. The LDO CAD Lead will assist with this process. The induction is a combination of direct instructions and a self-guided check list.

4. CAD Support

4.1. CAD Infrastructure and Operational Support

The day to day operational support and maintenance of the CAD environment is supported by Piers Lehmann, the SCIRT IT Manager, who provides first level support for operational CAD problems such as the availability of the licence servers and problems associated with the installation of software.

4.2. CAD Application Support

The various points of contact for support are as follows:

- Ask for assistance from local nearby users in your group. Most times they can help or possibly have the same problem.
- Ask for assistance from your local senior user. They will either assist you directly or escalate the issue.
- F1. As AutoCAD advances, their list of help features expands as well. Please learn to use the help system as you will not only help yourself, but learn how to help others.
- Online CAD forums. If you have had a CAD issue, someone somewhere has likely had it as well.

5. CAD Software and Hardware

5.1. Software Installation

All software must be installed by the SCIRT IT support team. No software may be installed directly by the individual without SCIRT IT approval.

5.2. Access to CAD Software and Files by Non-Draughting Staff

On occasion it may be beneficial for non-draughting staff to have access to CAD files and software. The level of access shall be determined by the SCIRT CAD Manager based on the needs of the individual.

5.3. CAD File Viewers

Non-draughting staff who has a need to view CAD files may request to have viewers installed. These include TrueView for AutoCAD, Autodesk Design Review, ARC Reader for ESRI output and Navisworks Freedom for Navisworks published files (mainly used for 3D models).

Approval from SCIRT IT is required for these installations; there is no cost for these products.

5.4. Dual Monitors

All CAD and 12d workstations are to be supplied with dual monitors. The second monitor allows for a justifiable productivity gain over single monitor workstations. Suggested uses for this include:

- Multiple windows enhance the display of the model
- Toolbars, palettes and menus take up the available screen area
- Applications are run in parallel and can be displayed on separate monitors.

CAD software must natively provide dual screen capability.

6. Drawing Management

The LDO Lead Draughter must ensure that the following systems are in place prior to project commencement:

6.1. Drawing Lists

A drawing list must be maintained by the Lead Draughter and approved by the Project Manager. The initial drawing list should be created as part of the concept, if not as soon as the project commences.

The effort in establishing and maintaining the drawing list should be proportional to the size of the project and the agreed level of reporting required by the Project Manager.

As we are using (to be verified) as the drawing management system of choice, initial drawing lists (in XLS format) can be imported, to facilitate the allocation of drawing and file numbers in advance. Please consult with the LDO Lead Draughter on the format required to make this action successful.

6.2. Incoming Drawings

All incoming drawings must be verified against any incoming transmittal document, registered and approved by the Project Manager, or his delegate, prior to being used on the project.

The management of incoming drawings will be undertaken by the Document Control Manager. The management of these drawings will refer to the following instructions.

6.2.1. Incoming Hard Copy Drawings

All hard copy drawings must be marked with a RECEIVED stamp which records the actions required. The hard copy must be signed by the Project Manager (or delegate) to record the drawing is approved for use.

The hard copy drawing must be stored in a labelled A4 folder with the accompanying documentation. A scan of the drawing will also be made and be stored in the "Communications/Incoming" folder.

6.2.2. Incoming Electronic Format Drawings

Incoming drawings provided in the electronic formats (email/CD/DVD/FTP) must be saved to ProjectCentre.

A copy of the source email must be saved along with the drawings.

Hard copies shall be printed and then processed as Incoming Hard Copy Drawings.

6.2.3. Register Incoming Drawings

The incoming drawings must be recorded in a drawing register prior to distribution. It is essential that the revision number is noted together with the drawing number. For this project, ProjectCentre is being utilised.

6.2.4. File copy/Working copy

To maintain a full record of work we complete, it is essential that the system provide a File copy and Working copy of every drawing.

The original signed drawing (file copy) is the master deliverable which is to be stored for the duration of the project and archived at project completion. The signed drawing in most cases will be a wet signed paper original. A digitally signed PDF file is to be adopted for this project.

The current version is kept in numerical order. Superseded drawings must be stamped "SUPERSEDED" and kept at the rear of the drawing set, separated by a divider, or stored in a separate folder.

Do not discard superseded drawings as they are required as record of the drawing history.

Copies of every drawing issue must also be kept in PDF format. In the case of a hand signed original, this should be a colour scan showing the hand written signature.

The working copy is a copy of the current issued drawing and is used to record comments and mark ups for the preparation of the next revision. All working copies are to be clearly stamped or marked "WORKING COPY". There must only ever be one working copy of each drawing in existence. The working copy becomes a part of the Quality Assurance Documentation for issue of the next revision, and shall be filed appropriately.

6.2.5. A3 Folders

Typically most printed drawings will be produced as A3 size for ease of handling. Folders, labelled with the job name, a SCIRT Project number and description, should be created at the discretion of the LDO Lead Draughter. Due to the varying size of projects, more than one project may be stored in a folder.

7. Data Location

The default location for the storage of working project data is on the J:\ drive. This will provide the most efficient access to CAD files and permit a secure method of data.

7.1. Project Folder Structure

The CAD directory structure for SCIRT is simple. The purpose of this simplicity is to encourage the search for files to be by document name attribute and not by folder location. Refer to the SCIRT Document Numbering Manual, Section 3.1 for an example of the Drawings subdirectory folder structure. Please consult with the SCIRT CAD Draughting Manager if there is a requirement for additional folders to this structure.

8. General Drawing Requirements

8.1. Introduction

The principles outlined in this section are to apply to all draughting deliverables regardless of the software utilised. The examples and terminology which follows is based on AutoCAD functionality. Refer to the Appendix for sample drawings.

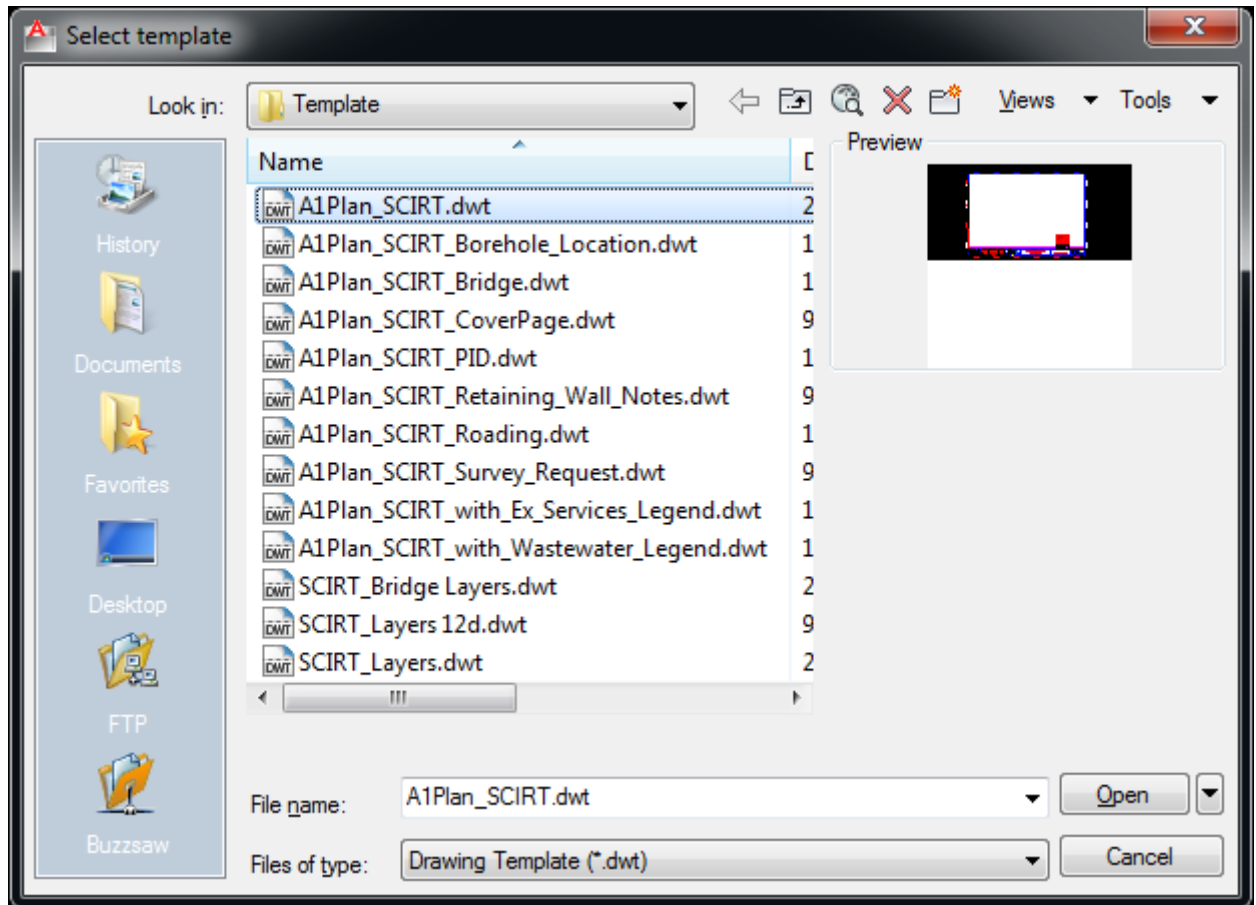
8.2. Drawing Sheets

To summarise the setup of SCIRT drawings, the following general guidelines are to be followed:

- All objects in model space are to be created at a scale of 1:1
- All objects are to be created with colour and linetype properties set to bylayer.
- All drawings are plotted from paperspace with a plot scale of 1:1 for A1 drawings and 1:2 for A3.
- The document management system is restricted to a single title block attribute per drawing file; therefore multiple layouts are not permitted. Multiple layouts maybe used during the initial development phase of the drawing. Once the layouts are satisfactorily arranged, the drawings are to be split into individual files and renumbered accordingly.

8.2.1. Drawing Templates

Drawing templates have been established for use when creating new drawings or sketches. These files contain base information such as the SCIRT title block and title block attributes, plotter settings, general layer settings, text styles, dimension styles, multi-leader styles, an issue stamp and annotative scale settings. A1Plan_SCIRT.dwt is the template file which will be used for most of the drawings created. The dialogue box below appears when a new drawing is created in AutoCAD.



SCIRT Drawing Templates

The purpose of each template showing is as follows:

A1Plan_SCIRT.dwt	General Purpose template for most drawings and sketches.
A1Plan_SCIRT_CoverPage.dwt	Drawing package cover sheet template.
A1Plan_SCIRT_with_Wastewater_Legend.dwt	A template which includes a Wastewater Legend and Notes.
SCIRT_Layers.dwt	A template which includes most of the layers to be used within various SCIRT projects.

The other templates listed are those which have been requested by disciplines which require a more specific template setup. More discipline based templates may appear as the projects develop. If additional changes are required to these templates, consult with the SCIRT CAD Manager.

8.2.2. Title Blocks

The title block is **attached** as an xref into each drawing at 0,0 in paperspace. The file containing the title block attributes has been **inserted** into that same drawing at 0,0 in paperspace.

The following minimum information should be completed at the commencement of a drawing:

- Title
- Drawing number
- Drawn by
- Project number

Title block attributes are to be populated using the Drawing Register spreadsheet and update tools within the SCIRT CAD menu.

Even though it is very tempting, **DO NOT** modify the format of either the SCIRT Title Block sheet frame or the title block attributes. Please consult with the SCIRT CAD Manager if it is necessary to modify either of these.

DESIGNED		C. Fairbairn	SIGNED	DATE	APPROVED		CONSULTANT		PROJE
DES. REVIEW		A. Ingles	SIGNED	DATE	FOR RECOMMENDATION		SCIRT		
DRAWN		B. Gainsford	SIGNED	27.07.12	DATE		Rebuilding Infrastructure		
DRW. CHECK		N. Locke	SIGNED		G. Tiltman				
FILE LOCATION		J:\Well Incoming\Drawings			FOR CONSTRUCTION				
10790-DE-VS-DG-1032.dwg					DATE		CONSULTANT FILE REF.		
PRINTED ON		BY locken			SIGNED		10790-DE-WS-DG-1032		

PROJECT TITLE		DRAWING TITLE		FOR APPROVAL NOT FOR CONSTRUCTION	
INFRASTRUCTURE REBUILD WAINONI ROAD		WATER RETICULATION PLAN			

SCIRT PROJECT REF	10790	DISCIPLINE	A1	SCALE	1:500
PG CAD DRAWING FILE REF	-	PG PROJECT FILE NUMBER	WS1032		

Title block attribute requirements:

- Information supplied by SCIRT
- Information supplied by CCC

Note: Areas shown highlighted in grey are automatically populated when the file is saved.

8.2.3. Referencing to Other Drawings

Referring to associated drawings shall be done using the following rules:

Section or Detail bubbles: Discipline and Series number

All other notes: Full drawing number

Since there will be drawings in various projects which will use the same Discipline and Series numbers it is important to note a full drawing number.

8.3. Drawing Numbers

To assist in the identification, the CAD file name shall be noted below the SCIRT logo. For all drawings which do not have a title block, the filename shall be noted on the lower left corner of the hardcopy.

Sequential drawing numbers are to be noted in the bottom right corner of the SCIRT tile block. These numbers are preceded by a code letter to indicate what the discipline drawing represents. These codes are as follows:

AR	Architectural
EL	Electrical
GE	General (common)
GT	Geotechnical
LD	Landscaping
ME	Mechanical
RD	Roads
RW	Retaining Walls (structural)
ST	Structural
SW	Stormwater
WS	Water
WW	Wastewater (foul water)

As an example, the first roads drawing in a series may be numbered:

RD1001

If you have multiple roads in a project, the numbers may be allocated as follows:

RD1101 to 1129	<i>Road 1</i>
RD1201 to 1229	<i>Road 2</i>
RD1301 to 1329	<i>Road 3</i>

The LDO Lead Draughter should be consulted at the beginning of the project to help ensure that the numbering system used accommodates the number and type of drawings created.

8.4. Sketches

Sketches are controlled documents which do not form part of the final drawing deliverables. Typical applications are to:

- Document options which are considered during the design process.
- Convey information to Clients or Sub-Consultants.

The sketch will typically be prepared in CAD and presented on a standard drawing sheet. While not common, another format is a hand drawn sketch. In this case the sketch number is

written in Red ink at the bottom right corner followed by a revision letter. This sheet is scanned in colour as a pdf and named to the allocated file number.

The LDO Lead Draughter or document controller shall maintain a sketch register recording the sketch number and titles.

If the information on the sketch plan is to be incorporated into the final drawing package then the sketch must be given a new drawing number to fit in with the project drawing list.

Sketches will typically represent a snap shot of the design at a particular moment in time. To ensure the historical integrity of the sketch, all design xrefs must be bound into the CAD file.

8.5. CAD File Identification

The CAD file name and location must be shown on each drawing in a format which will update automatically. This is particularly relevant for the case of identifying the CAD file location within the SCIRT working projects directories.

8.6. Drawing Presentation

Drawings should be presented in a legible, orderly and coherent manner showing only the amount of detail necessary for the purpose, i.e. for design checking, construction, fabrication and installation procedures.

All drawings on a given project should be drawn with the same orientation, where practicable.

Sections and elevations should be chosen to show the most appropriate amount of detail.

All views must be clearly and uniquely identified.

Information shown on a drawing should not be duplicated as this can lead to ambiguities should a change occur. In other words, don't over dimension.

The standard convention for drawings within SCIRT is to create the drawing at full size (A1) with all notations and line work legible when plotting at half size (A3). Typically line widths will be 0.25mm, 0.35mm, 0.50mm and 0.70mm at full size.

8.7. Paperspace and Modelspace

8.7.1. Modelspace

All reference files are to be attached to the drawing file within modelspace excluding the title block (as noted in section 9.2.1.), longitudinal sections and cross sections exported from 12d. All items directly related to the referenced file (text, dimensions, multi-leaders, north symbols, section and detail markings) are to be placed in this space. Important to note is SCIRT drawings are using annotative scaling so it is important to know the scale being used before annotation is placed within the drawing.

8.7.2. Paperspace

Items such as the legend, general notes, issue stamps, check print stamps, all items related to the title block, longitudinal sections and cross sections exported from 12d are to be placed in paperspace. These are items which are to be inserted into the drawing at 1:1 scaling.

8.8. Drawing Sheet Layout

Ensure a balanced distribution of detail throughout the drawing. All views, dimensions, lines and letters, together with associated figures, shall be well spaced. Avoid crowding.

Third angle projection should be used in the preparation of all drawings unless specified otherwise by need for special presentation. The principal plan shall be in the same direction as the key plan.

The standard North Point shall be used on all plan drawings, positioned on the top left hand corner of the drawing sheet. The preference is to have north pointing to the top of the page or to the left side of the page.

In the case of layout plans along pipelines and roads the plan shall be orientated with the top of the sheet parallel to the alignment. Chainages should increase from left to right. North will therefore vary to suit each plan.

If a plan is only part of a drawing, then it is acceptable to place the north symbol adjacent to left of the plan.

8.8.1. Guidelines for Plans and Longitudinal Sections

It is important to have a consistent arrangement when setting up plans and longitudinal sections in a package of drawings. To maintain this consistency, use the following rules:

Roading Drawings

Plans over Longitudinal sections on same 1:200 A1 drawing. Plans are to be arranged with north to the top or left whenever possible unless Chainage dictates otherwise. Included on the plan is both Roothing and Stormwater information. Stormwater information is to be referred to on the associated Stormwater Longitudinal section drawing. Roothing longitudinal sections are to be placed on the same drawing as the plan and aligned with the first point of reference on the left side of the drawing (eg. CH 0.00 (plan) and CH 0.00 (longitudinal section)). The scale of these drawings are to be labelled 1:200 HORIZ, 1:20 VERT.

Stormwater Drawings

Longitudinal sections on 1:200 A1 drawing. Plans are to be referred to on associated roading drawing. Longitudinal sections are arranged to include only those lines indicated within the associated roading plan and to have the low point be similar as shown on the Roothing plan. The scale of these drawings are to be labelled 1:200 HORIZ, 1:20 VERT.

Wastewater Drawings

Plans and Longitudinal sections on same 1:500 A1 drawings. Plans are to be arranged with north to the top or left whenever possible, unless the low point of the longitudinal section dictates otherwise. Longitudinal sections are to be placed below the plan and aligned with the first point of reference on the left side of the drawing (eg. MH.1 (plan) to MH.1 (longitudinal section)). Longitudinal sections are preferred to be arranged to have the low point of the pipeline begin to the left of the sheet and increase in invert level to the right. If the network is divided in the middle at two high points, the preferred arrangement is to have plans read north to top or right and the longitudinal sections to follow. The scale of these drawings are to be labelled 1:500 HORIZ, 1:50 VERT.

Refer to the Appendix B for examples of these drawings. For exceptions to these rules, consult with the SCIRT CAD Manager.

8.9. Layer Structure

The standard layer structure for SCIRT drawings is to follow the Christchurch City Council standard which is based upon the AIA CAD Layer Guidelines, U.S. National CAD Standard version 5. For a comprehensive list of layers, refer to Appendix A of this document. This layer list is very extensive (800+ layers). If for some reason another layer is required, please consult with the SCIRT CAD Manager first.

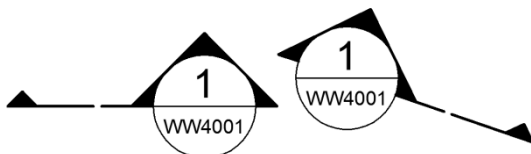
8.10. Sections and Details

8.10.1. Sections and Elevations

The following requirements apply to sections and elevations:

- Numbers shall be used for section notation.
- Section markers are annotative and shall be placed in modelspace through the required viewport.
- Sections shall be taken as if viewed from the bottom or right side of the sheet where possible.
- Section positions shall be shown on plan drawings, unless clarity warrants otherwise.
- Section numbers shall not be repeated on the same drawing.
- Where the section marker and section drawing do not appear on the same sheet, they shall be cross referenced by inserting the relevant drawing number in the lower half of the section symbol. If on the same sheet, use a hyphen.

The section marker shown below is a dynamic block which allows the draughter to rotate the block 360°, flip in 4 directions, and stretch the small arrow marker away from the callout bubble. During all of these actions the callout bubble remains horizontal. Do not use the AutoCAD rotate command to rotate the symbols.

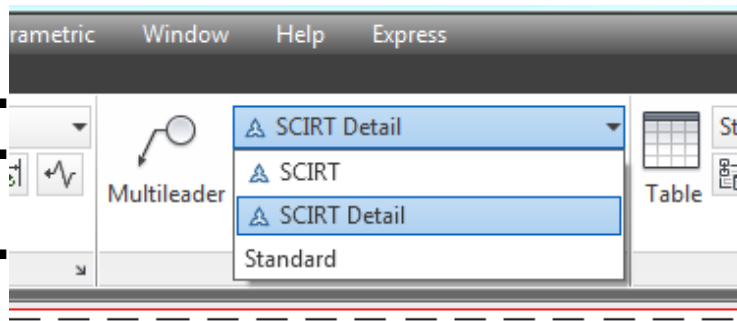


Section Marker

8.10.2. Details

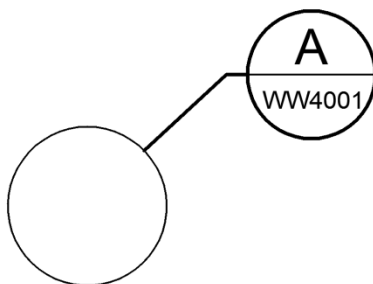
The following requirements apply to details:

- Letters shall be used for detail notation.
- An enlarged detail should be a direct enlargement of the same view of the item enclosed by the detail boundary.
- Detail callout bubbles are form of annotative multi-leaders and shall be placed on the drawing in modelspace through the required viewport. The style of multi-leader used is as shown on the next page:



- Where the detail marker and detail drawing do not appear on the same sheet, they shall be cross referenced by inserting the relevant drawing number in the lower half of the detail symbol. If on the same sheet, use a hyphen.
- A detail which is similar to another detail but with minor may not need to be drawn out, provided that the difference can be clearly shown. (Rule of thumb: If there is more than one difference, another new detail should be drawn).
- Details which are the same, but of the opposite hand, should be covered by a note to that effect.

Detail letters shall not be repeated on the same drawing per project.



Detail Marker



Section, Detail and Elevation Title

This is a dynamic block which performs the following functions:

- This block uses annotative scaling. If the scale is set on the viewport correctly, it will size itself in modelspace correctly.
- “1” and “WW4001” are editable attributes.
- The area where the word “SECTION” appears has one of 12 visibility states. 6 visibility states are to scale and 6 are not to scale. These include, “TYPICAL SECTION”, “TYPICAL DETAIL”, “DETAIL”, “ELEVATION”, and “Variable”. The “Variable” state allows you to type in a title at your discretion. In the “Variable” state, the line beneath the title is extendable to suit the length of the title.

8.11. Legend

If a legend is required, it is to be preferably located at the top right corner of the drawing.

8.12. Notes

General notes are to be located together, preferably at the right side of the drawing. If there is a legend present on the right side, it is to be located below the legend.

8.13. Text

8.13.1. Font

True Type font: Arial shall be used for all text within a drawing other than the content of the title block. No modification shall be made to the widening of the font style. The weight of the font is based upon the pen thickness used and not by utilising the bold version of the font.

8.13.2. Justification

Text is to be justified in relation to the item being described. Titles and sub-titles, road names, water courses and pipe descriptions on the pipe shall be bottom-centre justified. All other pieces of text are to be justified based upon a quadrant system adjacent to the object described. (Top left, Top right, Bottom left, Bottom right).

8.14. Heights

Standard text heights are based upon the CCC standards.

Text Styles File

	Font	Case	Height	Layer	Colour	ACAD Colour
Titles and Drawing Numbers	Arial	Upper	5mm	G-ANNO-TEXT-5.0	Blue	5
Subtitles and Headings	Arial	Upper	3.5mm	G-ANNO-TEXT-3.5	Yellow	2
Section and Details	Arial	Upper	3.5mm	G-ANNO-TEXT-3.5	Green/Yellow	2/3
Notes and Materials Lists	Arial	Upper	2.5mm	G-ANNO-TEXT-2.5	White	7
Dimensions and Leaders	Arial	Upper	2.5mm	G-ANNO-DIMS	Yellow	2
Road Name - Main	Arial	Upper	7mm	G-ANNO-TEXT-7.0	Cyan	4
Road Name - Side	Arial	Upper	5mm	G-ANNO-TEXT-5.0	Green	3
Existing Features	Arial	Upper and Lower	2.5mm	G-ANNO-EXIST	GREY	9
Existing Property Levels	Arial	n/a	1.8mm	G-ANNO-EXIST	GREY	9
Existing Buildings Text	Arial	Upper and Lower	3.5mm	G-ANNO-EXIST	GREY	9

Text Description Table

8.15. Leaders

The preferred type of leaders is Multi-leaders. Dimension leader lines shall terminate in arrowheads when pointing to a specific line or object. Leaders shall be associated with text in the following arrangement:

- Leaders presented from right of an object (preferred); text left justified and leader attached to middle left of top line.
- Leaders presented from left of an object (second preference); text left justified attached to middle right of top line.

Leaders shall not cross other leaders or text. When leaders cross dimensions (only when necessary) the dimension takes priority and the leader is broken using the AutoCAD Break Dimension Line command.

8.16. Dimensions

Dimensions and notes should only appear once on a drawing and closing dimensions should not occur. Indicated dimensions take legal precedence over scaled dimensions, therefore it is important that they be accurate and easily read.

Dimensions lines should always be drawn with sufficient separation from each other and the subject to avoid confusion. As a guideline, dimensions lines should be placed 3 times the scale of the viewport away from the object and the value of the scale of the viewport away from each other when stacked.

Dimension text is NOT to be overwritten. The text must indicate the actual length of an object or actual angle between two items. If the text is overwritten and the object is altered, the dimension is not able to adjust accordingly.

8.17. Drawing Scales

All objects displaying in modelspace of drawing, other than annotation and dimensions, are to be drawn at a scale of 1:1.

All scalable items within the viewports of the drawing are to be set using annotative scaling. These are linetypes, text, dimensions and leaders.

The recommended scales for use on the project drawings are:

- 1:1 and any multiple of 10 thereof (eg 1:10)
- 1:2 and any multiple of 10 thereof (eg 1:20)
- 1:2.5 and any multiple of 10 thereof (eg 1:25)
- 1:5 and any multiple of 10 thereof (eg 1:50)

Drawing scales for standard CCC drawings are as follows:

Roading Plans and Longitudinal Sections	1:200 Horizontal, 1:20 Vertical
Roading Cross Sections	1:100 Horizontal, 1:20 Vertical
Stormwater Plans and Longitudinal Sections	1:200 Horizontal, 1:20 Vertical
Wastewater Plans and Longitudinal Sections	1:500 Horizontal, 1:50 Vertical
Wastewater Patch, Lining & Repair Plans	1:1000 (outside of City Centre)
Watermain drawings	1:500
Sections & Details	Varies as required (1:10, 1:20, 1:50, etc.)

All drawings containing information drawn to scale shall have the scale noted in the title block as though the drawing were printed to A1 size. (eg A 1:250 drawing would be indicated to have a scale of 1:250.

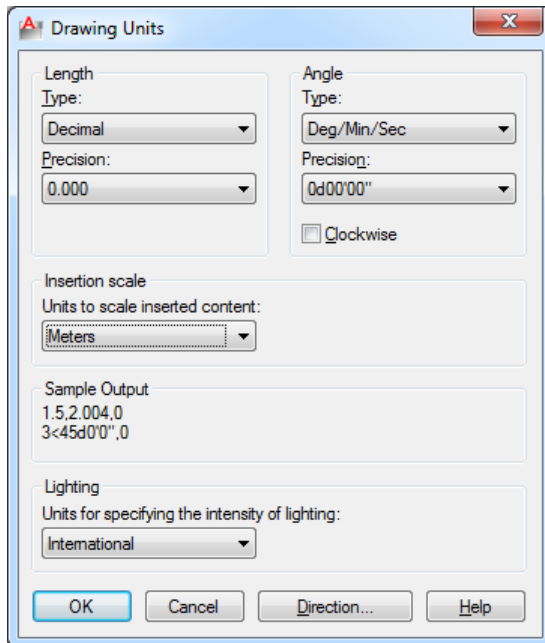
Where only one scale is used in a drawing, it shall be indicated in the title block. (eg 1:100).

Where more than one scale is used in a drawing the notation AS SHOWN shall be indicated.

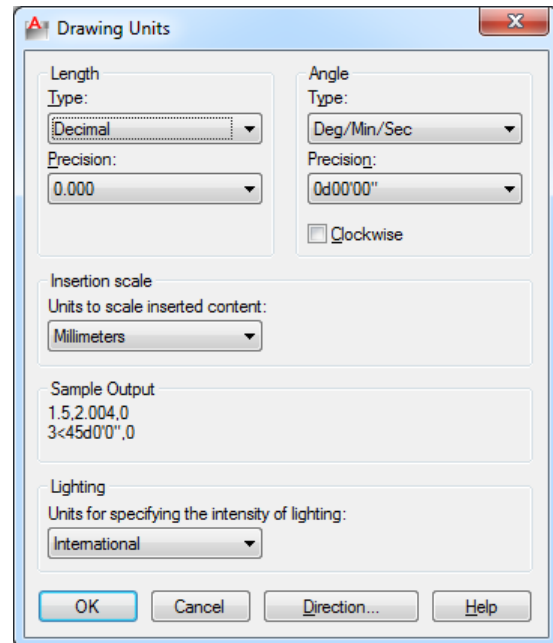
Where a drawing is not shown drawn to scale, the words NOT TO SCALE must be entered in the title block.

8.18. Units

Units shall be based on the metric system and shall be consistent for the entire drawing. (i.e. no mixing of metres and millimetres).



Settings for GIS base maps, design plans, outputs from 12d



Settings for paperspace, title blocks, sections and details, Structural drawings

8.19. Reference Files

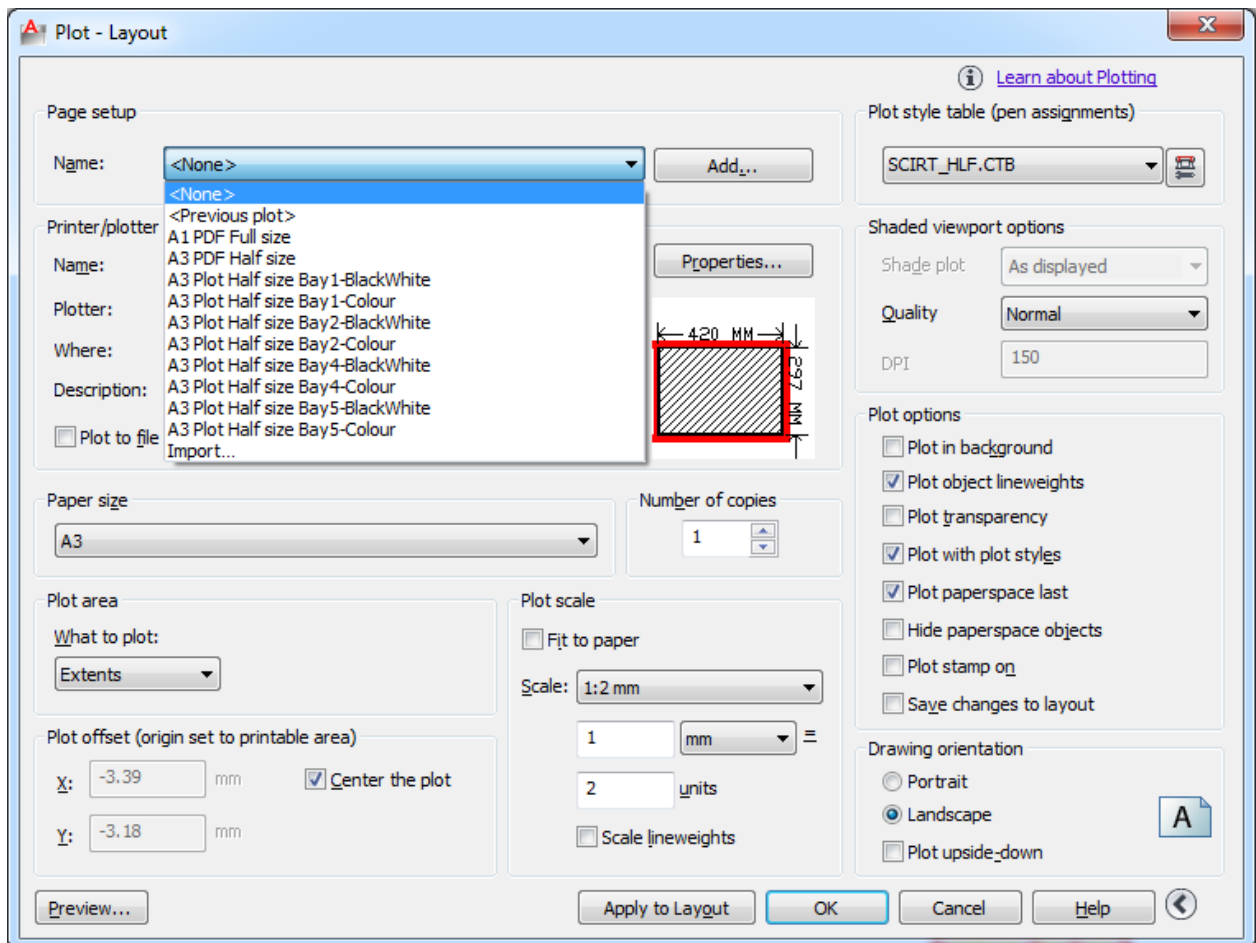
Reference Files (xref's) are developed design dwg files external to the drawing file. These files are inserted into the drawing file while still maintaining a link to its source file. To maintain consistency with civil based plans all reference files excluding sections, longitudinal sections, and details shall be inserted into a drawing file at 0,0 at a scale of 1:1 in metres.

Most design reference files, existing service plans, longitudinal sections, and cross sections originate in 12d. If changes are required to the design reference file and the source of the line work originates in 12d, the change to this file should take place within 12d and be exported again to dwg format. This will allow the drawings to reflect the designs and the information which will be in turn exported to the SCIRT GIS.

Refer to the SCIRT Document Naming Manual for the explanation where to save these files (3.2. Contents of Folders) and for the naming of reference files (4.9.2. Reference Files).

9. Plotting Procedures

Within the SCIRT CAD templates, pre-set plot settings are established for the various plotters with the SCIRT office. In addition there are also pre-sets for plotting pdf's.



Using these pre-sets allows the drafter to select a plotter of choice, a plot size and if the drawing needs to be plotted in monochrome or colour. No further settings are required for standard size plots. Previewing your plots before being sent printer is still an important step and should be included in the printing process.

When creating pdf's, there is an opportunity to create A1 full size plots or A3 half size plots. The standard for creating pdf drawings for submission is to create A3 size plots. This is to permit ease of reproduction when printing to an A3 printer, as has become the accepted industry standard. These files are to be created within the same "Drawings" folder the where the drawing file resides. Refer to the SCIRT Document Numbering Manual for the filename format.

To make this process more efficient, use the printing tools located within the SCIRT Tools pull down menu in AutoCAD.

Plot to PDF A3	A3PDF
Multi-Plot to PDF A3	A3MPDF

These tools not only use the correct plot settings for A3 outputs, but also assist with the correct naming of the files to be delivered to ProjectCentre.

10. Drawing Checking Procedure

10.1. Drawing Review

All drawings for review must be stamped. Within each LDO there will be nominated a person who will review each drawing and their initials shall be placed on the stamp.

Each person listed shall review the drawing and mark on any comments, sign and date the print and then pass it on to the next reviewer. The project manager shall review all comments and decide what action is to be taken.

10.2. Checking 2D Drawings

The checker should check the drawing against the appropriate standards and the CCC requirements. Consideration of each item of information on the drawing should be taken and ask the question “Will a change add value?” If a change will add value, a correction shall be shown. The checker should raise design queries with the engineer responsible, but should resist the temptation to redesign or modify information based on personal preference.

Major changes must be verified by the Project Manager prior to proceeding.

10.3. Check Pack

When the draughter considers the drawing ready of checking, the LDO Lead Draughter should be informed. The lead draughter should do a preliminary review before passing it on to the Project Manager.

The Draughter should prepare a check pack containing:

- A print of the drawing stamped CHECK PRINT
- Copies of all reference drawings, mark-ups, vendor data
- Engineers notes
- Check list
- Any other information required to check the drawing

The checker should reject the check pack if insufficient support data is submitted.

10.3.1. Check Prints

All check prints must be individually stamped and signed as evidence demonstrating that the check has occurred. Following back draughting, the check print must be signed off as back checked by the original checker.

10.3.2. Colour Code

The following colour code convention detailed in the table below shall be adopted for all check prints.

Colour	Pen Type	By Whom	Description
UNMARKED			Item is not checked
RED	Pencil, pen	Checker	A change or correction is required. The change is to be followed exactly by the draughter
BLUE	Pencil, pen	Checker	Explanatory comment or instruction to the draughter. Eg. "Move plan view to left" or "Freeze layer"
GREY	Pencil	Checker	Working notes or calculations
YELLOW	Highlighter	Draughter	The draughter strikes through red corrections to identify that draughting has been completed
BLUE	Highlighter	Checker	Strikes through yellow highlighted red corrections to verify that it is correct

Check Print Colour Codes

10.3.3. Check List

The checker should obtain a check list from the Project Draughter and tick each item as it is completed.

As a guideline the drawing check should include the following:

- Scales – check that the drawing is actually drawn to the scale nominated.
- Referencing – review all referenced to drawing numbers, section numbers and details.
- Title blocks – check all drawing titles and drawing numbers. Cross reference to the drawing schedule.
- Presentation standards – ensure the drawing is produced to a high standard of draughting presentation. Review the overall layout of the drawing for neatness and clarity.
- Annotations – check that annotations are not duplicated or incorrectly spelt.
- Dimensions – check all dimensions arithmetically where they are derived. Scaled dimensions should be nominated on the check print as being scaled.
- Issue status – check that the issue status is clearly indicated and the revision box is filled out.
- Hold and revision clouds – check that hold and revision descriptions are clear and specific. Ensure that hold and revision clouds enclose the affected areas only. Check revisions are nominated with triangles containing revision number adjacent to the cloud.

If an item on the check list is not appropriate to a drawing, it should have a line drawn through it or marked N/A.

10.3.4. Back-draughting

The originating draughter should complete the corrections and mark the **check prints** in accordance with the checking colour coding.

Perceived checking errors should be referred to the checker. If no agreement is reached the LDO Lead Drafter or the SCIRT CAD Manager should give a ruling.

Once the drawing revision is complete the drawing must be re-plotted and the back drafter must undertake a **self-review** of the drawing to ensure all revisions have been completed correctly.

It is the Draughter's responsibility to ensure all revisions are completed correctly.

The clean plot and the original check prints are then returned to the checker for the back checking. The original check print must be signed off to record that the back check has occurred.

10.3.5. Retention of Review Prints and Check Prints

All signed review prints and check prints must be kept as evidence that the check has occurred. These prints must be archived at project close.

11. Drawing Revision

11.1. Drawing Revision Process

All drawings revisions shall be subject to the review process. The revision shall be clearly identified as follows:

- All issued drawings shall have a revision status identifier in the title block.
- The revised areas shall be clouded and identified with a triangular symbol placed immediately adjacent to the cloud. Each cloud and revision triangle shall be placed on a layer based upon the revision. (Layer name: Revision A, Revision B, Revision 2, etc.)
- Previous clouds and triangles shall be retained and the layers they reside on turned off.
- The revision shall be clearly and concisely described in the revision box. Boxes are added as revisions are required.
- All revision clouds and triangles must be removed from the final AS BUILT.

The first issue of a drawing is defined as the first Revision of that drawing. When further copies of a drawing are issued and the drawing remains unchanged, the revision number also remains unchanged. Only when the status changes from “Approval Issue” to “Construction Issue” (for example), does the revision number change on an otherwise unchanged drawing.

11.2. Drawing Revision Identifier

The system for identifying the drawing revision status is summarised below:

Prior to construction issue

1. Issues of drawings prior to construction issue shall be identified by a letter beginning with A, B, etc. This is the level of issue used for ISSUED FOR INFORMATION, ISSUED FOR APPROVAL, and ISSUED FOR PRICING.

Construction issue

Pre-construction revisions are removed from notations list in title block at this point.

2. ISSUED FOR CONSTRUCTION shall be revision one (1) and subsequent issues will be by sequential numbers.

Handover issue

3. The AS BUILT or Handover issue shall have all construction revision triangles and clouds removed, and the drawing is to be saved to new Handover phase filename. The only change to this filename is the Design phase code is replaced by the Handover phase code. Any holds existing will have been resolved by this time.

11.3. Hold

A hold is to be placed on a portion of the drawing which cannot be completed or released through lack of information.

11.4. Stamps

Stamps are only to be included on the drawings prior to “ISSUED FOR CONSTRUCTION”. These stamps may include “PRELIMINARY”, “INFORMATION ONLY” and “ISSUED FOR APPROVAL”. The other stamp which will need to be used throughout the drawing process are the “CHECK PRINT” stamp.

There is no requirement for drawings submitted after “ISSUED FOR CONSTRUCTION” to have stamps included on them as it is indicated within the title block.

11.5. Drawing Signatures

Signatures on the formal drawing constitute evidence that the drawing has been properly reviewed in accordance with the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) quality procedures.

All signatures shall be applied in red ink to clearly identify the original drawing from paper copies. Signatures shall be added to the CAD file as a record for the future revision issues. The original signed drawing shall be maintained as a legal record.

The drawing signatories are summarised as noted below:

DESIGNED	Name of the Engineer responsible for the elements detailed on the drawing. In the case where there are multiple Designers, this should be the Engineer who is taking responsibility for the design.
DESIGN REVIEW	Name of the Engineer responsible for checking the design as detailed on the drawing. In the case where there are multiple elements on the same drawing with individual checkers, this should be the Engineer who is taking responsibility for the design checking.
DRAWN	Name of the Draughter responsible for the drawing.
DRAWING CHECK	Name of the designated Draughting Checker who has checked the drawing for presentation, dimensional set out and referencing.
FOR CONSTRUCTION	Name of the SCIRT LDO Team Leader.

Within the Amendments box on the right side of the drawings, a signature is required for each revision submitted externally.

SIGNED Name of the Engineer responsible for the elements detailed on the drawing during the indicated phase of revision. In the case where there are multiple Designers, this should be the Engineer who is taking responsibility for the design.

11.6. When and Where to Sign?

Step 1 – Preliminary

No wet signatures for hardcopy or pdf. Hardcopy is filed for record.

		NAME		SIGNED	DATE	APPROVED	
DESIGNED		C. Fairborn				FOR RECOMMENDATION	
D.S. REVIEW						DATE	SIGNED
DRAWN		B. Gainingford					
DRW. CHECK						FOR CONSTRUCTION	
FILE LOCATION		J:\10001 N. Project Specific Transfer Drawings\					
		10790-DE-WA-DG-1032.dwg					
PRINTED ON		BY locken					

Designer and
Draughter
name here

CHECK PRINT / REVIEW		
DRG: 10790-DE-WS-DG-1032.dwg		
DATE: ----		
DISTRIBUTION	INITIAL	DATE
DESIGNER		
DRAFTING CHECK		
DESIGN REVIEW		

No signatures required

PRELIMINARY
NOT FOR CONSTRUCTION

		A Preliminary					
		ISSUE		AMENDMENTS		SIGNED DATE	
10 TITLE		SCRIPT PROJECT REF. 10790		ORIGINAL SHEET SIZE		SCALE S	
WATER RETICULATION PLAN		CPG CAD DRAWING FILE REF. .DWG		A1		1:1000	
		CPG PROJECT FILE NUMBER		---		DRAWING No.	
						WS1032	


Step 2 – Approval

Wet signatures on Check Print stamp of hardcopy only and pdf created for record purposes.
Hardcopy is filed for record.

	NAME	SIGNED	DATE	APPROVED
DESIGNED	C. Farbarn	-		FOR RECOMMENDATION
DES. REVIEW	A. Ingles	-	DATE	SIGNED
DRAWN	B. Gunnabird	-		
DRW. CHECK	N. Locke	-		
FILE LOCATION	211001 Non Project Specific Transfer Drawings			FOR CONSTRUCTION
10790-DE-WA-DG-102.dwg				DATE SIGNED
PRINTED ON	BY locken			

LDO Lead signature
and date here

Designer, Design
Reviewer, Draughter
and Draughting
Checker names here



CHECK PRINT / REVIEW

DRG: 10790-DE-WS-DG-1032.dwg
 DATE: 11/11/2011

DISTRIBUTION	INITIAL	DATE
DESIGNER		
DRAFTING CHECK		
DESIGN REVIEW		

Signatures
and dates
here

FOR APPROVAL
NOT FOR CONSTRUCTION

Project Lead
initial and
date here

A		ISSUED FOR APPROVAL		A1	25.07.2013
ISSUE		AMENDMENTS		SIGNED	DATE
NO TITLE		SCRT PROJECT REF. 10790		ORIGINAL SHEET SIZE A1	SCALE S 1:10C
WATER RETICULATION PLAN		CPG CAD DRAWING FILE REF. ...DWG			
		CPG PROJECT FILE NUMBER --		DRAWING No. WS1032	

Step 3 – Construction

Typed initials on pdf only. Once drawing is signed for approval, signed drawing is passed to draughter, initials are typed in the drawing and pdf created for submission. Hardcopy is filed for record.

				APPROVED	
	NAME	SIGNED	DATE		
DESIGNED	C. Fairbank	CF	26.07.2012	FOR RECOMMENDATION	
DES. REVIEW	A. Ingles	AI	26.07.2012	DATE	SIGNED
DRAWN	B. Gainsford	BG	26.07.2012	25.07.2012	GT
DRW. CHECK	N. Locke	NL	26.07.2012	FOR CONSTRUCTION	
FILE LOCATION \J10001\New Project Specific Transfers\Drawings\				DATE	SIGNED
10799-DE-WA-DG-1032.dwg				26.07.2012	GT
PRINTED ON	RV lockbox				

Designer, Design Reviewer,
Draughter and Draughting
Checker initials and dates here

LDO Lead initials
and date here

FOR CONSTRUCTION

Project Lead initials
and date here

		1 ISSUED FOR CONSTRUCTION		25.97.2013
G TITLE		ISSUE	AMENDMENTS	SIGNED DATE
<h1>WATER RETICULATION PLAN</h1>		SCRT PROJECT REF.		ORIGINAL SHEET SIZE
		10790		A1
		CPQ CAD DRAWING FILE REF.		1:1000
		_DWG		
		CPQ PROJECT FILE NUMBER		DRAWING No.
		--		WS1032

Step 4 – Revision to Construction Drawing

Wet signatures on Check Print stamp of hardcopy only. Check Print is then frozen in dwg file and pdf created for record purposes. Typed initials on pdf only. Hardcopy is filed for record.

Keep initials from
Revision 1 issue

	NAME	SIGNED	DATE	APPROVED	
DESIGNED	C. Fairman	CF	26.07.2012	FOR RECOMMENDATION	
DES. REVIEW	A. Ingles	AI	26.07.2012	DATE	SIGNED
DRAWN	B. Gainsford	BG	26.07.2012	25.07.2012	GT
DRW. CHECK	N. Locke	NL	26.07.2012	FOR CONSTRUCTION	
FILE LOCATION	J:\10001 Non Project Specific Transfer Drawings\			DATE	SIGNED
10790-DE-WA-DG-1032.dwg			26.07.2012	GT	
PRINTED ON	---			BY	locken

Signatures
and dates
here

Project Lead
initial and
date here

CHECK PRINT / REVIEW

DRG: 10790-DE-WA-DG-1032.dwg
DATE: ----

DISTRIBUTION	INITIAL	DATE
DESIGNER		
DRAFTING CHECK		
DESIGN REVIEW		

FOR CONSTRUCTION

2	ALIGNMENT REVISED	AI	25.08.2013
1	ISSUED FOR CONSTRUCTION	AI	25.07.2013
ISSUE	AMENDMENTS	SIGNED	DATE

SCIRT PROJECT REF.		ORIGINAL SHEET SIZE	SCALES
10790		A1	1:1000
CPG C4D DRAWING FILE REF. .DWG			
CPG PROJECT FILE NUMBER		DRAWING No.	
---		WS1032	

WATER RETICULATION PLAN

12. As-Built Drawings

The purpose of As-Built drawings is to demonstrate what assets have been constructed during the Construction phase of the project. Responsibility of what is shown on the drawing is different from the Design phase as the Delivery Team takes responsibility for the drawings and the Design team is utilised as a drafting service. Instructions/communications between the Delivery and Design Teams for this phase are done using SCIRT's As-Built Tracking Form (ABT) on ProjectCentre. This form is initiated by the SCIRT Handover Coordinator. For information on how to use this tool, contact the As-Built Coordinator.

12.1. Archiving Construction Drawings

The As-built drawings are generally different from the Construction drawings mostly because the level of detail is usually reduced and change of responsibility between the two teams as noted above. For this reason, *.dwg files used for the Construction phase are kept separate from the As-Built drawings. This is done by making a copy of the construction drawings and changing the document naming codes as shown below:

Construction files

12345-DE-WW-DG-1001.dwg

x12345-DESIGN-WW-PLAN-Alignment.dwg

x12345-ExServices-All.dwg

As-Built files

12345-HD-WW-DG-1001.dwg

x12345-HANDOVER-WW-PLAN-Alignment.dwg (generated from 12d)

x12345-HANDOVER-ExServices-WW.dwg

The purpose for doing this is to maintain a *.dwg version of the Construction drawings.

12.2. Output from the SCIRT As-Built Template (SAT)

The Delivery Teams utilise a template to submit accurate and consistent data collected from the field. This information is sent to the IST to be used by the GIS Team and to the 12d Team to process outputs for the As-Built drawings.

12.3. Marked Up Drawings

These are hardcopy Construction drawings which have been marked up by the Delivery Team during the Construction phase of the project. The purpose of these drawings is to indicate to the drafter(s) what changes are to be made to the drawing set for the Handover phase. If there are no changes required to a drawing, the following is required:

No change

Delivery team project manager signature

Date

For each project a scanned pdf of the hardcopy set is found on ProjectCentre within the Handover folder of the project. The name of this file follows the format:

12345-HD-WW-SK-0001 "Marked Up Drawings"

If for some reason there is a discrepancy between the Marked Up Drawings and the SAT, the data on the SAT takes precedence. This discrepancy when found should be noted to the As-Built Coordinator so the Delivery Team may be informed.

12.4. Title block

The title block used on the As-Built drawings is different to the Construction drawings due to the transfer of responsibility from the Design Team to the Delivery Team. The updated title block is as follows:

										AS-BUILT DISTRIBUTION INITIAL DATE NAME SIGNATURE DATE AS BUILT		
						INFRASTRUCTURE REBUILD PS54 CATCHMENT		STORMWATER KEY PLAN		10002 A1 1:2000 SW1001		

This title block has fewer attributes to complete so a separate drawing register is required to differentiate between Design and Handover. The As-Built drawing register is named as follows:

12345 Handover Drawing Register.xlsx

12.5. Discipline based drawings

When drawings are noted for Construction, the instruction for the Delivery Team is usually for an item to be constructed/removed/relocated. During Handover phase these notes are then modified to indicate that the item now exists. When an item has been removed from the site, it and its associated note from the Construction drawing is deleted from the As-Built drawing. This process includes the modification of the general notes which sometimes appear on the right side of the drawing to bring them to the current tense.

During the Design phase all services were included on the drawings for safety and clarity reasons. All services are removed during the Handover phase aside from the service the drawing is describing.

Example 1:

Wastewater drawings show the service the new installation connects to, any relative abandoned services and all replaced services have the linework removed from the x12345-HANDOVER-ExServices-WW.dwg file.

Example 2:

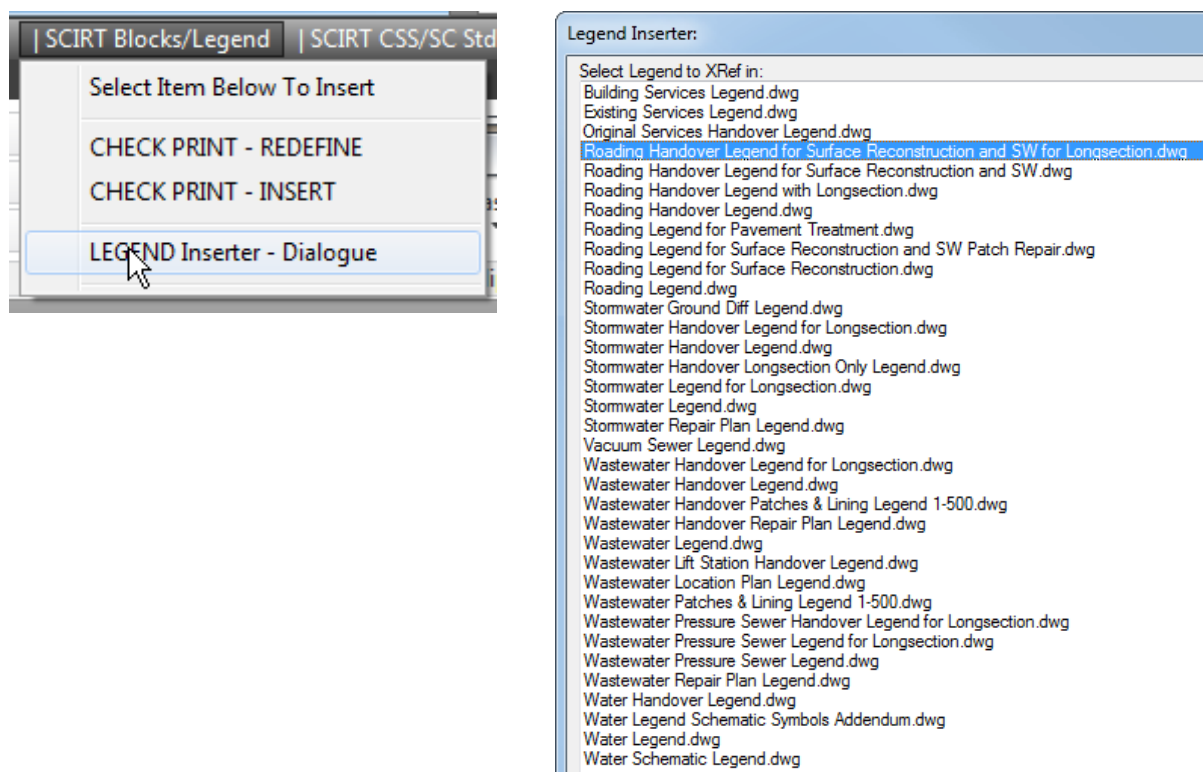
Roads drawings show new centreline and kerb alignments, any changes to the berm and footpath, updated linemarkings and any stormwater services.

Linework of original kerbs which have been removed during construction are removed on the drawings to where the new kerb ties in. This linework is removed from the newly created x12345-HANDOVER-ExSurvey.dwg file. This file is a copy of the original site survey.

Linework of stormwater services which have replaced/removed are removed from x12345-HANDOVER-ExServices-SW.dwg file.

12.6. Handover Legends

A series of Handover specific legends have been created and are available within the SCIRT CAD tools. The Legend Inserter is the same tool used to insert legends used during the Design phase. The legends are specific and it is important that the most appropriate one is selected for purpose.



These legends are inserted in the top right corner of the drawing and relocated as needed.

12.7. Delivery Team Drawing Check and Approval

Once the drawings have been completed, checked, plotted and the As-Built check print stamp is signed by the Drafting Lead, they are sent as hardcopies to the Delivery Team for review. If minor changes are required beyond this point, the drawings are plotted as pdf files and sent back to the Delivery Team for further review/approval. If major changes are required (such as a significant change to the SAT) a new set of hardcopies are required and re-signed by the Drafting Lead.

When the Delivery Team is satisfied with the drawings and they are approved, a notification is sent to the As-Built coordinator with the following information:

Full name of who approved the drawings

Date of approval

This information is forwarded to the Drafting Lead and is input to the Handover Drawing Register. The As-Built drawings then have the title block attributes updated with this information then plotted to pdf using the SCIRT Title block and Plot to pdf tools.

The pdf's are then moved to the "PDF" folder in the Drawings folder and a copy is sent to a dated Handover folder under the "Issued" folder. Once all pdf's are in this folder they are combined to one file using a program such as Bluebeam. The name format of this file is as follows:

12345-HD-GE-DG-1000[1]Final As-Built Drawings.pdf

The address of this file is copied into the ABT form for the associated project and sent to the Professional Services and Design Administrator (or designate) to be uploaded to ProjectCentre.

Appendix A – Layering Structure



























































General Layers

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
0	white	Continuous	Default	Color_7		
CHECK PRINT	white	Continuous	0.18 mm	Color_10		Check Print Stamp
DEFPOINTS	white	Continuous	0.18 mm	Color_7		Non-plotting layer
G-ANNO-BRNG	white	Continuous	0.25 mm	Color_7		Bearing & Distance Labels
G-ANNO-DIM	red	Continuous	0.18 mm	Color_1		Dimensions
G-ANNO-HOUS-NUMS	white	Continuous	0.25 mm	Color_7		House Numbers
G-ANNO-IDEN	white	Continuous	0.25 mm	Color_7		Identification Tags
G-ANNO-JOIN	white	Continuous	0.25 mm	Color_7		Join Lines
G-ANNO-KEYN	white	Continuous	0.25 mm	Color_7		Keynotes
G-ANNO-LABL	white	Continuous	0.25 mm	Color_7		Labels
G-ANNO-LEGN	white	Continuous	0.25 mm	Color_7		Legend & Symbol Keys
G-ANNO-MARK	white	Continuous	0.25 mm	Color_7		Markers & Break Lines
G-ANNO-NORTH	white	Continuous	0.25 mm	Color_7		North Point
G-ANNO-NOTE	white	Continuous	0.25 mm	Color_7		Notes
G-ANNO-NPLT	230	Continuous	0.18 mm	Color_230		Non-Plotting Information
G-ANNO-PATT	253	Continuous	0.18 mm	Color_253		Patterning
G-ANNO-RDME	white	Continuous	0.25 mm	Color_7		Readme Notes (Non-Plotted)
G-ANNO-REDL	white	Continuous	0.25 mm	Color_7		Redlines
G-ANNO-REV1	green	Continuous	0.50 mm	Color_3		Revision 1 Cloud & Symbol
G-ANNO-REV2	green	Continuous	0.50 mm	Color_3		Revision 2 Cloud & Symbol
G-ANNO-REVA	green	Continuous	0.50 mm	Color_3		Revision A Cloud & Symbol
G-ANNO-SCHD	white	Continuous	0.25 mm	Color_7		Schedules
G-ANNO-STAMP	white	Continuous	0.18 mm	Color_7		Issue Stamp
G-ANNO-SYMB	yellow	Continuous	0.18 mm	Color_2		Reference Symbols
G-ANNO-TABL	white	Continuous	0.25 mm	Color_7		Data Tables
G-ANNO-TEXT	yellow	Continuous	0.18 mm	Color_2		Text
G-ANNO-TEXT-2.5	white	Continuous	Default	Color_7		2.5mm TEXT
G-ANNO-TEXT-3.5	yellow	Continuous	0.18 mm	Color_2		3.5mm TEXT
G-ANNO-TEXT-5.0	green	Continuous	Default	Color_3		5.0mm TEXT
G-ANNO-TEXT-7.0	cyan	Continuous	Default	Color_4		7.0mm TEXT
G-ANNO-TITL	red	Continuous	0.18 mm	Color_1		Title Details
G-ANNO-TTLB	blue	Continuous	1.00 mm	Color_5		Plan Border
G-ANNO-TTLB-LOGO	blue	Continuous	0.18 mm	Color_5		Title Block Logos
G-ANNO-TTLB-NPLT	230	Continuous	0.18 mm	Color_230		Plan Border Non-Plotting
G-ANNO-TTLB-REVS	red	Continuous	0.18 mm	Color_1		Titleblock Revisions
G-ANNO-TTLB-SBAR	blue	Continuous	0.18 mm	Color_5		Plan Border Scale Bar
G-ANNO-VPORT	magenta	Continuous	0.18 mm	Color_6		Viewport
G-IMGR-RAST	white	Continuous	0.25 mm	Color_7		Raster Images
G-ROAD-STAT-HWAY-E	red	Continuous	0.70 mm	Color_1		Existing State Highway
G-ROAD-STAT-HWAY-N	red	Continuous	0.70 mm	Color_1		New State Highway
G-TSCD-ANNO-BLDG	yellow	Continuous	0.35 mm	Color_2		Traffic Signal Diagrams Buildings Text
G-TSCD-ANNO-CABL	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Cables Text
G-TSCD-ANNO-CABT	yellow	Continuous	0.35 mm	Color_2		Traffic Signal Diagrams Control Cabinets Signs Text
G-TSCD-ANNO-DIMS	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Dimensions
G-TSCD-ANNO-DUCT	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Ducts Text
G-TSCD-ANNO-FENC	yellow	Continuous	0.35 mm	Color_2		Traffic Signal Diagrams Fences Text
G-TSCD-ANNO-ISLD	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Islands Text
G-TSCD-ANNO-KERB	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Kerb Lines Text
G-TSCD-ANNO-LOOP	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Loop Detectors Text
G-TSCD-ANNO-PATH	30	Continuous	0.18 mm	Color_30		Traffic Signal Diagrams Paths Text
G-TSCD-ANNO-POLE	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Power & Street Light Poles Text
G-TSCD-ANNO-ROAD	30	Continuous	0.18 mm	Color_30		Traffic Signal Diagrams Road Names Text
G-TSCD-ANNO-SIGN	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Signs Text
G-TSCD-ANNO-TOBY	yellow	Continuous	0.35 mm	Color_2		Traffic Signal Diagrams Toby Boxes Text
G-TSCD-ANNO-TPOL	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams TL Poles Text
G-TSCD-DIGI-BLDG	red	Continuous	0.35 mm	Color_1		Traffic Signal Diagrams Buildings by Digitising
G-TSCD-DIGI-CABL	red	DGN Style 2	0.25 mm	Color_1		Traffic Signal Diagrams Cables by Digitising
G-TSCD-DIGI-CABT	yellow	Continuous	0.35 mm	Color_2		Traffic Signal Diagrams Control Cabinets Signs by Digitising
G-TSCD-DIGI-DUCT	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Ducts by Digitising

General Layers (cont'd)

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
G-TSCD-DIGI-FENC	yellow	FenceL	0.35 mm	Color_2		Traffic Signal Diagrams Fences by Digitising
G-TSCD-DIGI-ISLD	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Islands by Digitising
G-TSCD-DIGI-KERB	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Kerb Lines by Digitising
G-TSCD-DIGI-LOOP	magenta	DGN Style 2	0.25 mm	Color_6		Traffic Signal Diagrams Loop Detectors by Digitising
G-TSCD-DIGI-PATH	30	Continuous	0.18 mm	Color_30		Traffic Signal Diagrams Paths by Digitising
G-TSCD-DIGI-POLE	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Power & Street Light Poles by Digitising
G-TSCD-DIGI-SIGN	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Signs by Digitising
G-TSCD-DIGI-TOBY	yellow	Continuous	0.35 mm	Color_2		Traffic Signal Diagrams Toby Boxes by Digitising
G-TSCD-DIGI-TPOL	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams TL Poles by Digitising
G-TSCD-SURV-BLDG	green	Continuous	0.35 mm	Color_3		Traffic Signal Diagrams Buildings by Survey
G-TSCD-SURV-CABL	red	DGN Style 2	0.25 mm	Color_1		Traffic Signal Diagrams Cables by Survey
G-TSCD-SURV-CABT	yellow	Continuous	0.35 mm	Color_2		Traffic Signal Diagrams Control Cabinets Signs by Survey
G-TSCD-SURV-DUCT	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Ducts by Survey
G-TSCD-SURV-FENC	yellow	FenceL	0.35 mm	Color_2		Traffic Signal Diagrams Fences by Survey
G-TSCD-SURV-ISLD	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Islands by Survey
G-TSCD-SURV-KERB	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Kerb Lines by Survey
G-TSCD-SURV-LOOP	green	DGN Style 2	0.25 mm	Color_3		Traffic Signal Diagrams Loop Detectors by Survey
G-TSCD-SURV-PATH	30	Continuous	0.18 mm	Color_30		Traffic Signal Diagrams Paths by Survey
G-TSCD-SURV-POLE	red	Continuous	0.18 mm	Color_1		Traffic Signal Diagrams Power & Street Light Poles by Survey
G-TSCD-SURV-SIGN	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams Signs by Survey
G-TSCD-SURV-TOBY	yellow	Continuous	0.35 mm	Color_2		Traffic Signal Diagrams Toby Boxes by Survey
G-TSCD-SURV-TPOL	white	Continuous	0.25 mm	Color_7		Traffic Signal Diagrams TL Poles by Survey



























































Civil Layers

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
C-ANNO-PATT	253	Continuous	0.18 mm	Color_253		Civil Patterning
C-BLDG-OTLN-D	red	Continuous	0.18 mm	Color_1		Building to be Removed Outline
C-BLDG-OTLN-E	yellow	Continuous	0.18 mm	Color_2		Existing Building Outline
C-BLDG-OTLN-N	green	Continuous	0.50 mm	Color_3		New Building Outline
C-CSTN-LIMIT-N	yellow	DGN Style 3	0.50 mm	Color_2		New Limit Of Construction
C-CYCL-HOLD-RAIL-E	white	Continuous	0.25 mm	Color_7		Existing Cycle Hold Rail
C-CYCL-HOLD-RAIL-N	green	Continuous	0.25 mm	Color_3		New Cycle Hold Rail
C-DETL-F016-PATT	242,242...	Continuous	0.18 mm	Color_7		Colour 16 Fill (RGB 242,242,242)
C-DETL-F017-PATT	230,230...	Continuous	0.18 mm	Color_254		Colour 17 Fill (RGB 230,230,230)
C-DETL-F018-PATT	217,217...	Continuous	0.18 mm	Color_254		Colour 18 Fill (RGB 217,217,217)
C-DETL-F019-PATT	204,204...	Continuous	0.18 mm	Color_254		Colour 19 Fill (RGB 204,204,204)
C-DETL-F020-PATT	191,191...	Continuous	0.18 mm	Color_9		Colour 20 Fill (RGB 191,191,191)
C-DETL-F021-PATT	179,179...	Continuous	0.18 mm	Color_253		Colour 21 Fill (RGB 179,179,179)
C-DETL-F022-PATT	166,166...	Continuous	0.18 mm	Color_253		Colour 22 Fill (RGB 166,166,166)
C-DETL-F023-PATT	153,153...	Continuous	0.18 mm	Color_253		Colour 23 Fill (RGB 153,153,153)
C-DETL-F024-PATT	140,140...	Continuous	0.18 mm	Color_252		Colour 24 Fill (RGB 140,140,140)
C-DETL-F025-PATT	8	Continuous	0.18 mm	Color_8		Colour 25 Fill (RGB 128,128,128)
C-DETL-F026-PATT	112,112...	Continuous	0.18 mm	Color_8		Colour 26 Fill (RGB 112,112,112)
C-DETL-F027-PATT	97,97,97	Continuous	0.18 mm	Color_251		Colour 27 Fill (RGB 97,97,97)
C-DETL-F028-PATT	82,82,82	Continuous	0.18 mm	Color_251		Colour 28 Fill (RGB 82,82,82)
C-DETL-F029-PATT	66,66,66	Continuous	0.18 mm	Color_250		Colour 29 Fill (RGB 66,66,66)
C-DETL-F030-PATT	30	Continuous	0.18 mm	Color_30		Colour 30 Fill (RGB 51,51,51)
C-DETL-F031-PATT	36,36,36	Continuous	0.18 mm	Color_250		Colour 31 Fill (RGB 36,36,36)
C-DETL-F244-PATT	255,255...	Continuous	0.25 mm	Color_7		White Fill (RGB 255,255,255)
C-DETL-PATT	white	Continuous	0.25 mm	Color_7		Hatching & Patterns
C-DETL-TRAF-BUS1	yellow	Continuous	0.18 mm	Color_2		AutoTurn Bus Turning Path
C-DETL-TRAF-BUS2	yellow	Continuous	0.18 mm	Color_2		AutoTurn Bus Turning Path
C-DETL-TRAF-CAR1	yellow	Continuous	0.18 mm	Color_2		AutoTurn Car Turning Path
C-DETL-TRAF-CAR2	yellow	Continuous	0.18 mm	Color_2		AutoTurn Car Turning Path
C-DETL-TRAF-DIAG	white	Continuous	0.25 mm	Color_7		Traffic Signals Diagram
C-DETL-TRAF-DUCT	white	Continuous	0.25 mm	Color_7		Traffic Signals Cabling Diagram Duct
C-DETL-TRAF-TRK1	yellow	Continuous	0.18 mm	Color_2		AutoTurn Truck Turning Path
C-DETL-TRAF-TRK2	yellow	Continuous	0.18 mm	Color_2		AutoTurn Truck Turning Path
C-DETL-W018-OTLN	red	Continuous	0.18 mm	Color_1		0.18 Outline
C-DETL-W025-OTLN	white	Continuous	0.25 mm	Color_7		0.25 Outline
C-DETL-W035-OTLN	yellow	Continuous	0.35 mm	Color_2		0.35 Outline
C-DETL-W050-OTLN	green	Continuous	0.50 mm	Color_3		0.50 Outline
C-DETL-W070-OTLN	cyan	Continuous	0.70 mm	Color_4		0.70 Outline
C-DETL-W100-OTLN	blue	Continuous	1.00 mm	Color_5		1.00 Outline
C-DETL-W140-OTLN	magenta	Continuous	1.40 mm	Color_6		1.40 Outline
C-FSWR-MHOL-D	10	Continuous	0.25 mm	Color_10		Foul Sewer Manhole to be Removed
C-FSWR-MHOL-E	10	Continuous	0.18 mm	Color_10		Existing Foul Sewer Manhole
C-FSWR-MHOL-N	10	Continuous	0.50 mm	Color_10		New Foul Sewer Manhole
C-FSWR-FITTINGS-N	10	Continuous	0.35 mm	Color_10		New Foul Sewer Valves, Thrust Blocks, Connections, etc.
C-FSWR-PIPE-FORC-D	10	SewerPM	0.25 mm	Color_10		Foul Sewer Pipe Force Main to be Decommissioned
C-FSWR-PIPE-FORC-E	10	SewerPM	0.18 mm	Color_10		Existing Foul Sewer Pipe Force Main
C-FSWR-PIPE-FORC-N	10	SewerPM	0.50 mm	Color_10		New Foul Sewer Pipe Force Main
C-FSWR-PIPE-LATL-D	10	Sewer	0.25 mm	Color_10		Foul Sewer Pipe Lateral to be Decommissioned
C-FSWR-PIPE-LATL-E	10	Sewer	0.18 mm	Color_10		Existing Foul Sewer Pipe Lateral
C-FSWR-PIPE-LATL-N	10	Sewer	0.50 mm	Color_10		New Foul Sewer Pipe Lateral
C-FSWR-PIPE-MAIN-D	10	Sewer	0.25 mm	Color_10		Foul Sewer Pipe Main to be Decommissioned
C-FSWR-PIPE-MAIN-E	10	Sewer	0.18 mm	Color_10		Existing Foul Sewer Pipe Main
C-FSWR-PIPE-MAIN-N	10	Sewer	0.50 mm	Color_10		New Foul Sewer Pipe Main
C-FSWR-STRC-E	10	Continuous	0.18 mm	Color_10		Existing Foul Sewer Structure
C-FSWR-STRC-N	10	Continuous	0.50 mm	Color_10		New Foul Sewer Structure
C-NGAS-LGAS-PIPE-E	52	Gas	0.18 mm	Color_52		Existing Liquigas Pipe Network
C-NGAS-RGAS-PIPE-E	52	Gas	0.18 mm	Color_52		Existing Rockgas Pipe Network
C-NGAS-RGAS-PIPE-N	52	Gas	0.50 mm	Color_52		New Rockgas Pipe Network
C-NGAS-TELE-PIPE-E	52	Gas	0.18 mm	Color_52		Existing Telecom Gas Pipes




























































Civil Layers (cont'd)

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
C-PATH-PATT-N	254	Continuous	0.25 mm	Color_254		New Path Patterning
C-PLNT-TURF-PATT-N	green	Continuous	0.18 mm	Color_3		New Grass Area Patterning
C-POWR-CABL-AG-E	30	Powerlv	0.18 mm	Color_30		Existing Above Ground Power Cables
C-POWR-CABL-HIGV-D	30	Powerkv	0.18 mm	Color_30		High Voltage Power Cables to be Decommissioned
C-POWR-CABL-HIGV-E	30	Powerkv	0.18 mm	Color_30		Existing High Voltage Power Cables
C-POWR-CABL-HIGV-N	30	Powerkv	0.50 mm	Color_30		New High Voltage Power Cables
C-POWR-CABL-LOWV	30	Powerlv	0.25 mm	Color_30		Low Voltage Power Cables
C-POWR-CABL-LOWV-D	30	Powerlv	0.18 mm	Color_30		Low Voltage Power Cables to be Decommissioned
C-POWR-CABL-LOWV-E	30	Powerlv	0.18 mm	Color_30		Existing Low Voltage Power Cables
C-POWR-CABL-LOWV-N	30	Powerlv	0.50 mm	Color_30		New Low Voltage Power Cables
C-POWR-CABL-UG-E	30	Powerlv	0.18 mm	Color_30		Existing Underground Power Cables
C-POWR-DUCT-N	30	Continuous	0.50 mm	Color_30		New Power Duct
C-POWR-PBOX-D	30	Continuous	0.18 mm	Color_30		Power Boundary Box to be Removed
C-POWR-PBOX-E	30	Continuous	0.18 mm	Color_30		Existing Power Boundary Box
C-POWR-PBOX-M	30	Continuous	0.18 mm	Color_30		Power Boundary Box to be Moved
C-POWR-PBOX-N	30	Continuous	0.50 mm	Color_30		New Power Boundary Box
C-POWR-PLIN-N	30	Continuous	0.50 mm	Color_30		New Power Plinth
C-POWR-POLE	30	Continuous	0.18 mm	Color_30		Power Poles & Boxes
C-POWR-POLE-D	30	Continuous	0.18 mm	Color_30		Power Pole to be Removed
C-POWR-POLE-E	30	Continuous	0.18 mm	Color_30		Existing Power Pole
C-POWR-POLE-M	30	Continuous	0.18 mm	Color_30		Power Pole to be Moved
C-POWR-POLE-N	30	Continuous	0.50 mm	Color_30		New Power Pole
C-PVMT-CONC-PATT-N	30	Continuous	0.25 mm	Color_30		New Concrete Area Patterning
C-RAIL-BARR-E	30	Continuous	0.18 mm	Color_30		Existing Rail Barrier
C-RAIL-CABL-POWR-E	red	Powerlv	0.25 mm	Color_1		Existing Rail Power Cables
C-RAIL-CABL-TELC-E	30	Telecom	0.18 mm	Color_30		Existing Rail Telecommunication Cables
C-RAIL-EQPM-E	30	Continuous	0.18 mm	Color_30		Existing Rail Equipment
C-RAIL-TRAK-E	30	Continuous	0.25 mm	Color_30		Existing Rail Track
C-RAIL-TRAK-N	30	Continuous	0.35 mm	Color_30		New Rail Track
C-ROAD-BARR-N	yellow	Continuous	0.35 mm	Color_2		New Road Barrier
C-ROAD-BERM-N	yellow	Continuous	0.35 mm	Color_2		New Road Berm
C-ROAD-BOLL-N	yellow	Continuous	0.35 mm	Color_2		New Road Bollard
C-ROAD-ELND-N	yellow	Continuous	0.35 mm	Color_2		New Road Landscaping
C-ROAD-HAZD-MARK-D	white	Continuous	0.25 mm	Color_7		Hazard Markers to be Removed
C-ROAD-HAZD-MARK-E	white	Continuous	0.25 mm	Color_7		Existing Hazard Markers
C-ROAD-HAZD-MARK-N	white	Continuous	0.25 mm	Color_7		New Hazard Markers
C-ROAD-HUMP-BASE-E	yellow	Continuous	0.18 mm	Color_2		Existing Threshold & Hump Ramp Base
C-ROAD-HUMP-BASE-N	yellow	Continuous	0.50 mm	Color_2		New Threshold & Hump Ramp Base
C-ROAD-HUMP-TOPS-E	yellow	Continuous	0.18 mm	Color_2		Existing Threshold & Hump Ramp Top
C-ROAD-HUMP-TOPS-N	yellow	Continuous	0.70 mm	Color_2		New Threshold & Hump Ramp Top
C-ROAD-INT-N	yellow	Continuous	0.70 mm	Color_2		New Slope Interface
C-ROAD-KERB-CUTD-D	white	Continuous	0.25 mm	Color_7		Cutdown Kerb to be Removed
C-ROAD-KERB-CUTD-E	white	Continuous	0.25 mm	Color_7		Existing Cutdown Kerb
C-ROAD-KERB-CUTD-N	yellow	Continuous	0.35 mm	Color_2		New Cutdown Kerb
C-ROAD-KERB-DIGI-E	white	Continuous	0.25 mm	Color_7		Existing Digitised Kerb Line
C-ROAD-KERB-DISH-D	white	Continuous	0.25 mm	Color_7		Dish Channel Kerb to be Removed
C-ROAD-KERB-DISH-E	white	Continuous	0.25 mm	Color_7		Existing Dish Channel Kerb
C-ROAD-KERB-DISH-N	yellow	Continuous	0.35 mm	Color_2		New Dish Channel Kerb
C-ROAD-KERB-FEND-D	white	Continuous	0.25 mm	Color_7		Kerb Fender to be Removed
C-ROAD-KERB-FEND-E	white	Continuous	0.25 mm	Color_7		Existing Kerb Fender
C-ROAD-KERB-FEND-N	yellow	Continuous	0.35 mm	Color_2		New Kerb Fender
C-ROAD-KERB-FLAT-D	white	Continuous	0.25 mm	Color_7		Flat Channel Kerb to be Removed
C-ROAD-KERB-FLAT-E	white	Continuous	0.25 mm	Color_7		Existing Flat Channel Kerb
C-ROAD-KERB-FLAT-N	yellow	Continuous	0.50 mm	Color_2		New Flat Channel Kerb
C-ROAD-KERB-HUMP-D	white	Continuous	0.25 mm	Color_7		Humps & Thresholds to be Removed
C-ROAD-KERB-HUMP-E	white	Continuous	0.25 mm	Color_7		Existing Humps & Thresholds
C-ROAD-KERB-HUMP-N	yellow	Continuous	0.70 mm	Color_2		New Humps & Thresholds
C-ROAD-KERB-INV-E	white	Continuous	0.25 mm	Color_7		Existing Kerb Invert
C-ROAD-KERB-INV-N	yellow	Continuous	0.35 mm	Color_2		New Kerb Invert

Civil Layers (cont'd)

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
C-ROAD-KERB-ISLD-D	white	Continuous	0.25 mm	Color_7		Island & Roundabout Kerb to be Removed
C-ROAD-KERB-ISLD-E	white	Continuous	0.25 mm	Color_7		Existing Island & Roundabout Kerb
C-ROAD-KERB-ISLD-N	yellow	Continuous	0.50 mm	Color_2		New Island & Roundabout Kerb
C-ROAD-KERB-MARK-N	yellow	Continuous	0.35 mm	Color_2		New Kerb Mark
C-ROAD-KERB-NIBB-D	white	Continuous	0.25 mm	Color_7		Nib Kerb to be Removed
C-ROAD-KERB-NIBB-E	white	Continuous	0.25 mm	Color_7		Existing Nib Kerb
C-ROAD-KERB-NIBB-N	yellow	Continuous	0.50 mm	Color_2		New Nib Kerb
C-ROAD-KERB-REAR-D	white	Continuous	0.25 mm	Color_7		Kerb Rear to be Removed
C-ROAD-KERB-REAR-E	white	Continuous	0.25 mm	Color_7		Existing Kerb Rear
C-ROAD-KERB-REAR-N	yellow	Continuous	0.18 mm	Color_2		New Kerb Rear Line
C-ROAD-KERB-TOP-N	yellow	Continuous	0.35 mm	Color_2		New Top of Kerb
C-ROAD-LANE-N	yellow	Continuous	0.18 mm	Color_2		New Road Lane
C-ROAD-MRKG-WHIT-D	150	Continuous	0.50 mm	Color_150		White Road Marking to be Removed
C-ROAD-MRKG-WHIT-E	255,255...	Continuous	0.50 mm	Color_7		Existing White Road Marking
C-ROAD-MRKG-WHIT-N	255,255...	Continuous	0.50 mm	Color_7		New White Road Marking
C-ROAD-MRKG-YELO-D	50	Continuous	0.50 mm	Color_50		Yellow Road Marking to be Removed
C-ROAD-MRKG-YELO-E	52	Continuous	0.50 mm	Color_52		Existing Yellow Road Marking
C-ROAD-MRKG-YELO-N	50	Continuous	0.50 mm	Color_50		New Yellow Road Marking
C-ROAD-PATT-D	31	Continuous	0.18 mm	Color_31		Road Patterning to be Removed
C-ROAD-PATT-E	31	Continuous	0.18 mm	Color_31		Existing Road Patterning
C-ROAD-PATT-N	31	Continuous	0.50 mm	Color_31		New Road Patterning
C-ROAD-SCUT-N	yellow	Continuous	0.35 mm	Color_2		New Road Sawcut
C-ROAD-SEAL-EDGE-E	white	DGN Style 2	0.25 mm	Color_7		Existing Edge of Seal
C-ROAD-SEAL-EDGE-N	yellow	DGN Style 2	0.50 mm	Color_2		New Edge of Seal
C-ROAD-SHLD-E	white	Continuous	0.18 mm	Color_7		Existing Road Shoulder
C-ROAD-SHLD-N	yellow	Continuous	0.35 mm	Color_2		New Road Shoulder
C-ROAD-SIGN-D	yellow	Continuous	0.18 mm	Color_2		Road Sign to be Removed
C-ROAD-SIGN-E	white	Continuous	0.18 mm	Color_7		Existing Road Sign
C-ROAD-SIGN-M	yellow	Continuous	0.18 mm	Color_2		Road Sign to be Moved
C-ROAD-SIGN-N	yellow	Continuous	0.50 mm	Color_2		New Road Sign
C-ROAD-TACT-PAVR-D	30	Continuous	0.18 mm	Color_30		Tactile Pavers to be Removed
C-ROAD-TACT-PAVR-E	30	Continuous	0.18 mm	Color_30		Existing Tactile Pavers
C-ROAD-TACT-PAVR-N	30	Continuous	0.50 mm	Color_30		New Tactile Pavers
C-SECT-ANNO-PATT	white	Continuous	0.25 mm	Color_7		Section Patterning
C-SECT-PATH	green	Continuous	0.50 mm	Color_3		Section Path
C-SECT-PATH-BERM	green	Continuous	0.50 mm	Color_3		Section Path Berm
C-SECT-ROAD-CRWN	green	Continuous	0.50 mm	Color_3		Section Road Crown
C-SECT-ROAD-CWAY	yellow	Continuous	0.70 mm	Color_2		Section Road Carriageway
C-SECT-ROAD-FORM	white	Continuous	0.25 mm	Color_7		Section Carriageway Formation
C-SECT-ROAD-KERB	white	Continuous	0.25 mm	Color_7		Section Kerb
C-SITE-BANK-BOT-E	green	Bank	0.18 mm	Color_3		Existing Bottom of Bank
C-SITE-BANK-BOT-N	green	Bank	0.50 mm	Color_3		New Bottom of Bank
C-SITE-BANK-TOP-E	green	Bank	0.18 mm	Color_3		Existing Top of Bank
C-SITE-BANK-TOP-N	green	Bank	0.50 mm	Color_3		New Top of Bank
C-SITE-BOLL-N	yellow	Continuous	0.35 mm	Color_2		New Site Bollard
C-SITE-DRIV-EDGE-E	white	Continuous	0.25 mm	Color_7		Existing Driveway Edge
C-SITE-DRIV-EDGE-N	white	Continuous	0.25 mm	Color_7		New Driveway Edge
C-SITE-ELEC-TRAN-E	white	Continuous	0.25 mm	Color_7		Existing Electrical Kiosk
C-SITE-FENC-D	yellow	FenceL	0.25 mm	Color_2		Fence Line to be Removed
C-SITE-FENC-E	yellow	FenceL	0.18 mm	Color_2		Existing Fence Line
C-SITE-FENC-M	yellow	FenceL	0.25 mm	Color_2		Fence Line to be Moved
C-SITE-FENC-N	yellow	FenceL	0.50 mm	Color_2		New Fence Line
C-SITE-FURN-RBIN-D	white	Continuous	0.25 mm	Color_7		Rubbish Bins to be Removed
C-SITE-FURN-RBIN-E	white	Continuous	0.25 mm	Color_7		Existing Rubbish Bins
C-SITE-FURN-RBIN-M	white	Continuous	0.25 mm	Color_7		Rubbish Bins to be Moved
C-SITE-FURN-RBIN-N	white	Continuous	0.25 mm	Color_7		New Rubbish Bins
C-SITE-PATH-EDGE-E	white	Continuous	0.25 mm	Color_7		Existing Path Edge
C-SITE-PATH-EDGE-N	green	Continuous	0.50 mm	Color_3		New Path Edge
C-SITE-POLE-LITE-D	red	Continuous	0.18 mm	Color_1		Street Light Pole to be Removed

Civil Layers (cont'd)

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
C-SITE-POLE-LITE-E	red	Continuous	0.18 mm	Color_1		Existing Street Light Pole
C-SITE-POLE-LITE-M	red	Continuous	0.18 mm	Color_1		Street Light Pole to be Moved
C-SITE-POLE-LITE-N	red	Continuous	0.50 mm	Color_1		New Street Light Pole
C-SITE-POST-BOX-E	white	Continuous	0.25 mm	Color_7		Existing Postal Box
C-SITE-PRKG-D	red	Continuous	0.18 mm	Color_1		Car Parking to be Removed
C-SITE-PRKG-E	white	Continuous	0.25 mm	Color_7		Existing Car Parking to Remain
C-SITE-PRKG-FIXT-D	white	Continuous	0.25 mm	Color_7		Vehicle Wheel Stops to be Removed
C-SITE-PRKG-FIXT-E	white	Continuous	0.25 mm	Color_7		Existing Vehicle Wheel Stops
C-SITE-PRKG-FIXT-M	white	Continuous	0.25 mm	Color_7		Vehicle Wheel Stops to be Moved
C-SITE-PRKG-METR-D	8	Continuous	0.18 mm	Color_8		Removed Parking Meter
C-SITE-PRKG-METR-E	red	Continuous	0.18 mm	Color_1		Existing Parking Meter
C-SITE-PRKG-METR-M	green	Continuous	0.18 mm	Color_3		Moved Parking Meter
C-SITE-PRKG-METR-N	red	Continuous	0.50 mm	Color_1		New Parking Meter
C-SITE-PRKG-N	yellow	Continuous	0.35 mm	Color_2		New Car Parking
C-SITE-PRKG-PATT-D	white	Continuous	0.25 mm	Color_7		Car Parking to be Removed Patterning
C-SITE-PRKG-PATT-E	254	Continuous	0.18 mm	Color_254		Existing Car Parking to Remain Patterning
C-SITE-PRKG-PATT-N	253	Continuous	0.18 mm	Color_253		New Car Parking Patterning
C-SITE-STRC-D	white	Continuous	0.25 mm	Color_7		Structures, Bridges & Footings to be Removed
C-SITE-STRC-E	white	Continuous	0.25 mm	Color_7		Existing Structures, Bridges & Footings
C-SITE-STRC-N	green	Continuous	0.50 mm	Color_3		New Structures, Bridges & Footings
C-SITE-UPVD-EDGE-E	white	Continuous	0.25 mm	Color_7		Existing Unpaved Surface Edge
C-SITE-UPVD-EDGE-N	green	DGN Style 2	0.50 mm	Color_3		New Unpaved Surface Edge
C-SITE-VHCE-BOLD-D	green	Continuous	0.25 mm	Color_3		Vehicle Bollards to be Removed
C-SITE-VHCE-BOLD-E	green	Continuous	0.25 mm	Color_3		Existing Vehicle Bollards
C-SITE-VHCE-BOLD-M	green	Continuous	0.25 mm	Color_3		Vehicle Bollards to be Moved
C-SITE-VHCE-BOLD-N	green	Continuous	0.50 mm	Color_3		New Vehicle Bollards
C-SITE-WALL-BOT-E	white	Continuous	0.25 mm	Color_7		Existing Bottom of Wall
C-SITE-WALL-BOT-N	green	Continuous	0.50 mm	Color_3		New Bottom of Wall
C-SITE-WALL-TOP-E	white	Continuous	0.25 mm	Color_7		Existing Top of Wall
C-SITE-WALL-TOP-N	green	Continuous	0.50 mm	Color_3		New Top of Wall
C-STRM-CATCH	90	Continuous	0.50 mm	Color_90		Stormwater Catchment Area
C-STRM-CULV-E	90	Continuous	0.25 mm	Color_90		Existing Stream Culvert
C-STRM-CULV-N	90	Continuous	0.50 mm	Color_90		New Stream Culvert
C-STRM-HDWL-E	90	Continuous	0.25 mm	Color_90		Existing Stream Headwalls & Endwalls
C-STRM-HDWL-N	90	Continuous	0.50 mm	Color_90		New Stream Headwalls & Endwalls
C-STRM-MHOL-D	90	Continuous	0.25 mm	Color_90		Stormwater Manhole to be Removed
C-STRM-MHOL-E	90	Continuous	0.25 mm	Color_90		Existing Stormwater Manhole
C-STRM-MHOL-N	90	Continuous	0.50 mm	Color_90		New Stormwater Manhole
C-STRM-PIPE-MAIN-D	90	SW	0.25 mm	Color_90		Stormwater Pipe to be Decommissioned
C-STRM-PIPE-MAIN-E	90	SW	0.25 mm	Color_90		Existing Stormwater Pipe
C-STRM-PIPE-MAIN-N	90	SW	0.50 mm	Color_90		New Stormwater Pipe
C-STRM-RETN-BASN-E	90	DGN Style 2	0.25 mm	Color_90		Existing Stormwater Retention Basin
C-STRM-RETN-BASN-N	90	DGN Style 2	0.50 mm	Color_90		New Stormwater Retention Basin
C-STRM-RETN-BASN-TOPB...	90	DGN Style 2	0.25 mm	Color_90		Existing Stormwater Retention Basin Top of Bank
C-STRM-RETN-BASN-TOPB...	90	DGN Style 2	0.50 mm	Color_90		New Stormwater Retention Basin Top of Bank
C-STRM-SKPT-E	90	DGN Style 2	0.25 mm	Color_90		Existing Stormwater Soak Pit
C-STRM-SKPT-N	90	DGN Style 2	0.50 mm	Color_90		New Stormwater Soak Pit
C-STRM-SKPT-STRC-E	90	Continuous	0.25 mm	Color_90		Existing Stormwater Soak Pit Structure
C-STRM-SKPT-STRC-N	90	Continuous	0.50 mm	Color_90		New Stormwater Soak Pit Structure
C-STRM-SUMP	90	Continuous	0.25 mm	Color_90		Stormwater Sump
C-STRM-SUMP-D	90	Continuous	0.25 mm	Color_90		Stormwater Sump to be Removed
C-STRM-SUMP-E	90	Continuous	0.25 mm	Color_90		Existing Stormwater Sump
C-STRM-SUMP-N	90	Continuous	0.50 mm	Color_90		New Stormwater Sump
C-STRM-SWLE-BOT-E	90	Continuous	0.25 mm	Color_90		Existing Stormwater Swale Bottom of Bank
C-STRM-SWLE-BOT-N	90	Continuous	0.50 mm	Color_90		New Stormwater Swale Bottom of Bank
C-STRM-SWLE-CNTR-E	90	DGN Style 4	0.25 mm	Color_90		Existing Stormwater Swale Centreline
C-STRM-SWLE-CNTR-N	90	DGN Style 4	0.50 mm	Color_90		New Stormwater Swale Centreline
C-STRM-SWLE-TOP-E	90	Continuous	0.25 mm	Color_90		Existing Stormwater Swale Top of Bank
C-STRM-SWLE-TOP-N	90	Continuous	0.50 mm	Color_90		New Stormwater Swale Top of Bank

Civil Layers (cont'd)

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
C-TOPO-CONT-MAJR-N	130	Continuous	0.18 mm	Color_130		New Major Contours
C-TOPO-CONT-MINR-N	40	Continuous	0.18 mm	Color_40		New Minor Contours
C-TOPO-EWAT-N	cyan	Continuous	0.35 mm	Color_4		New Edge of Water Line
C-TOPO-GRID-N	white	Continuous	0.18 mm	Color_7		New Grid Coordinates
C-TRAF-CABL-E	yellow	DGN Style 2	0.18 mm	Color_2		Existing Traffic Light Cabling
C-TRAF-CABL-N	yellow	DGN Style 2	0.35 mm	Color_2		New Traffic Light Cabling
C-TRAF-LITE-CTRL-E	red	Continuous	0.18 mm	Color_1		Existing Traffic Light Controller
C-TRAF-LITE-CTRL-N	red	Continuous	0.50 mm	Color_1		New Traffic Light Controller
C-TRAF-LITE-DUCT-E	red	Continuous	0.25 mm	Color_1		Existing Traffic Light Duct
C-TRAF-LITE-MHOL-E	yellow	Continuous	0.18 mm	Color_2		Existing Traffic Signals Inspection Chamber
C-TRAF-LITE-MHOL-N	yellow	Continuous	0.35 mm	Color_2		New Signals Inspection Chamber
C-TRAF-LITE-POLE-D	red	Continuous	0.18 mm	Color_1		Traffic Light Pole to be Removed
C-TRAF-LITE-POLE-E	red	Continuous	0.18 mm	Color_1		Existing Traffic Light Pole
C-TRAF-LITE-POLE-M	red	Continuous	0.18 mm	Color_1		Traffic Light Pole to be Moved
C-TRAF-LITE-POLE-N	red	Continuous	0.50 mm	Color_1		New Traffic Light Pole
C-TRAF-LITE-SYMB-E	yellow	Continuous	0.18 mm	Color_2		Existing Traffic Lights Symbols
C-TRAF-LITE-SYMB-N	yellow	Continuous	0.35 mm	Color_2		New Traffic Lights Symbols
C-TRAF-LITE-TBOX-E	yellow	Continuous	0.18 mm	Color_2		Existing Traffic Light Toby Box
C-TRAF-LITE-TBOX-N	yellow	Continuous	0.35 mm	Color_2		New Traffic Light Toby Box
C-TRAF-LOOP-E	yellow	DGN Style 2	0.18 mm	Color_2		Existing Traffic Light Loop Detector
C-TRAF-LOOP-N	yellow	DGN Style 2	0.25 mm	Color_2		New Traffic Light Loop Detector
C-TRAF-LOOP-PEDN-E	magenta	DGN Style 2	0.25 mm	Color_6		Existing Pedestrian Loop Detector
C-TRAF-LOOP-PEDN-N	magenta	DGN Style 2	0.50 mm	Color_6		New Pedestrian Loop Detector
C-TREE-ROOT-BARR-N	green	DGN Style 2	0.50 mm	Color_3		New Tree Root Barrier
C-WATR-FIRE-HYDR	150	Continuous	0.25 mm	Color_150		Water Hydrant
C-WATR-FIRE-HYDR-D	150	Continuous	0.25 mm	Color_150		Water Hydrant to be Removed
C-WATR-FIRE-HYDR-E	150	Continuous	0.25 mm	Color_150		Existing Water Hydrant
C-WATR-FIRE-HYDR-N	150	Continuous	0.35 mm	Color_150		New Water Hydrant
C-WATR-INST-D	150	Continuous	0.25 mm	Color_150		Water Valves, Meters etc. to be Removed
C-WATR-INST-E	150	Continuous	0.25 mm	Color_150		Existing Water Valves, Meters etc.
C-WATR-INST-N	150	Continuous	0.35 mm	Color_150		New Water Valves, Meters etc.
C-WATR-IRRG-D	150	Continuous	0.25 mm	Color_150		Water Irrigation to be Decommissioned
C-WATR-IRRG-E	150	Continuous	0.25 mm	Color_150		Existing Water Irrigation
C-WATR-IRRG-N	150	Continuous	0.35 mm	Color_150		New Water Irrigation
C-WATR-PIPE-LATL-D	150	Water	0.25 mm	Color_150		Water Pipe Lateral to be Decommissioned
C-WATR-PIPE-LATL-E	150	Water	0.25 mm	Color_150		Existing Water Pipe Lateral
C-WATR-PIPE-LATL-N	150	Water	0.50 mm	Color_150		New Water Pipe Lateral
C-WATR-PIPE-MAIN-D	150	Water	0.25 mm	Color_150		Water Pipe Main to be Decommissioned
C-WATR-PIPE-MAIN-E	150	Water	0.25 mm	Color_150		Existing Water Pipe Main
C-WATR-PIPE-MAIN-N	150	Water	1.00 mm	Color_150		New Water Pipe Main
C-WATR-TBLK-N	150	Continuous	0.35 mm	Color_150		New Water Pipe Thrust Block
C-WATR-TEE-N	150	Continuous	0.35 mm	Color_150		New Water Pipe Tee
C-WATR-VALV	150	Continuous	0.25 mm	Color_150		Water Valves
C-WATR-VALV-N	150	Continuous	0.35 mm	Color_150		New Water Valve

Structural Layers

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
S-ANNO-BRNG	white	Continuous	0.18 mm	Color_7		Bearing & Distance Labels
S-ANNO-DIMS	red	Continuous	0.18 mm	Color_1		Dimensions
S-ANNO-IDEN	white	Continuous	0.18 mm	Color_7		Identification Tags
S-ANNO-JOIN	white	Continuous	0.18 mm	Color_7		Join Lines
S-ANNO-KEYN	white	Continuous	0.18 mm	Color_7		Keynotes
S-ANNO-LABL	white	Continuous	0.18 mm	Color_7		Labels
S-ANNO-LABL-RBAR	red	Continuous	0.18 mm	Color_1		Rebar Labels
S-ANNO-LEGN	white	Continuous	0.18 mm	Color_7		Legend & Symbol Keys
S-ANNO-MARK	white	Continuous	0.18 mm	Color_7		Markers, Break Lines & Leaders
S-ANNO-NOTE	white	Continuous	0.18 mm	Color_7		Notes
S-ANNO-NPLT	white	Continuous	0.18 mm	Color_7		Non-Plotting Information
S-ANNO-RDME	white	Continuous	0.18 mm	Color_7		Readme Notes (Non-Plotted)
S-ANNO-REDL	white	Continuous	0.18 mm	Color_7		Redlines
S-ANNO-REFR	white	Continuous	0.18 mm	Color_7		Reference & External Files
S-ANNO-REVC	white	Continuous	0.18 mm	Color_7		Revision Clouds
S-ANNO-REVS	white	Continuous	0.18 mm	Color_7		Revisions
S-ANNO-SCHD	white	Continuous	0.18 mm	Color_7		Schedules
S-ANNO-SYMB	white	Continuous	0.18 mm	Color_7		Reference Symbols
S-ANNO-TABL	white	Continuous	0.18 mm	Color_7		Data Tables
S-ANNO-TEXT	white	Continuous	0.18 mm	Color_7		Text
S-ANNO-TEXT-LEVL	white	Continuous	0.18 mm	Color_7		Reduced Levels Text
S-DETL-CNTR-LINE	red	CENTER	0.18 mm	Color_1		Centre Lines
S-DETL-CONC-E	red	Continuous	0.18 mm	Color_1		Existing Concrete To Remain
S-DETL-CONC-N	white	Continuous	0.25 mm	Color_7		New Concrete Details
S-DETL-CONC-PCST-N	white	Continuous	0.25 mm	Color_7		New Precast Concrete Details
S-DETL-F016-PATT	242,242,242	Continuous	0.18 mm	Color_7		Colour 16 Fill (RGB 242,242,242)
S-DETL-F017-PATT	230,230,230	Continuous	0.18 mm	Color_254		Colour 17 Fill (RGB 230,230,230)
S-DETL-F018-PATT	217,217,217	Continuous	0.18 mm	Color_254		Colour 18 Fill (RGB 217,217,217)
S-DETL-F019-PATT	204,204,204	Continuous	0.18 mm	Color_254		Colour 19 Fill (RGB 204,204,204)
S-DETL-F020-PATT	191,191,191	Continuous	0.18 mm	Color_9		Colour 20 Fill (RGB 191,191,191)
S-DETL-F021-PATT	179,179,179	Continuous	0.18 mm	Color_253		Colour 21 Fill (RGB 179,179,179)
S-DETL-F022-PATT	166,166,166	Continuous	0.18 mm	Color_253		Colour 22 Fill (RGB 166,166,166)
S-DETL-F023-PATT	153,153,153	Continuous	0.18 mm	Color_253		Colour 23 Fill (RGB 153,153,153)
S-DETL-F024-PATT	140,140,140	Continuous	0.18 mm	Color_252		Colour 24 Fill (RGB 140,140,140)
S-DETL-F025-PATT	128,128,128	Continuous	0.18 mm	Color_8		Colour 25 Fill (RGB 128,128,128)
S-DETL-F026-PATT	112,112,112	Continuous	0.18 mm	Color_8		Colour 26 Fill (RGB 112,112,112)
S-DETL-F027-PATT	97,97,97	Continuous	0.18 mm	Color_251		Colour 27 Fill (RGB 97,97,97)
S-DETL-F028-PATT	82,82,82	Continuous	0.18 mm	Color_251		Colour 28 Fill (RGB 82,82,82)
S-DETL-F029-PATT	66,66,66	Continuous	0.18 mm	Color_250		Colour 29 Fill (RGB 66,66,66)
S-DETL-F030-PATT	51,51,51	Continuous	0.18 mm	Color_250		Colour 30 Fill (RGB 51,51,51)
S-DETL-F031-PATT	36,36,36	Continuous	0.18 mm	Color_250		Colour 31 Fill (RGB 36,36,36)
S-DETL-F244-PATT	255,255,255	Continuous	0.25 mm	Color_7		White Fill (RGB 255,255,255)
S-DETL-FASR-E	red	Continuous	0.18 mm	Color_1		Existing Fasteners To Remain
S-DETL-FASR-N	red	Continuous	0.18 mm	Color_1		New Fastener Details
S-DETL-GRID-IDEN	yellow	Continuous	0.35 mm	Color_2		Grid Lines Text & Symbols
S-DETL-GRID-LINE	red	DGN Style 4	0.18 mm	Color_1		Grid Lines
S-DETL-MSNW-E	red	Continuous	0.18 mm	Color_1		Existing Masonry Details To Remain
S-DETL-MSNW-N	red	Continuous	0.18 mm	Color_1		New Masonry Details
S-DETL-PATT	red	Continuous	0.18 mm	Color_1		Hatching & Patterns
S-DETL-PATT-GRND	red	Continuous	0.18 mm	Color_1		Ground Pattern
S-DETL-RBAR-BOT1-E	red	Continuous	0.18 mm	Color_1		Existing Reinforcing Bottom 1 To Remain
S-DETL-RBAR-BOT1-N	30	Continuous	0.50 mm	Color_30		New Reinforcing Bottom 1
S-DETL-RBAR-BOT2-E	red	Continuous	0.18 mm	Color_1		Existing Reinforcing Bottom 2 To Remain

Structural Layers (cont'd)

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
S-DETL-RBAR-BOT2-E	red	Continuous	0.18 mm	Color_1		Existing Reinforcing Bottom 2 To Remain
S-DETL-RBAR-BOT2-N	30	Continuous	0.50 mm	Color_30		New Reinforcing Bottom 2
S-DETL-RBAR-E	red	Continuous	0.18 mm	Color_1		Existing Reinforcing To Remain
S-DETL-RBAR-N	30	Continuous	0.50 mm	Color_30		New Reinforcing Details
S-DETL-RBAR-TOP1-E	red	Continuous	0.18 mm	Color_1		Existing Reinforcing Top 1 To Remain
S-DETL-RBAR-TOP1-N	30	Continuous	0.50 mm	Color_30		New Reinforcing Top 1
S-DETL-RBAR-TOP2-E	30	Continuous	0.18 mm	Color_30		Existing Reinforcing Top 2 To Remain
S-DETL-RBAR-TOP2-N	30	Continuous	0.50 mm	Color_30		New Reinforcing Top 2
S-DETL-STEL-E	red	Continuous	0.18 mm	Color_1		Existing Steelwork To Remain
S-DETL-STEL-N	white	Continuous	0.25 mm	Color_7		New Steelwork Details
S-DETL-STWK-E	white	Continuous	0.18 mm	Color_7		Existing Stonework Details To Remain
S-DETL-STWK-N	white	Continuous	0.25 mm	Color_7		New Stonework Details
S-DETL-W018-OTLN	red	Continuous	0.18 mm	Color_1		0.18 Pen Weight
S-DETL-W025-OTLN	white	Continuous	0.25 mm	Color_7		0.25 Pen Weight
S-DETL-W035-OTLN	yellow	Continuous	0.35 mm	Color_2		0.35 Pen Weight
S-DETL-W050-OTLN	green	Continuous	0.50 mm	Color_3		0.50 Pen Weight
S-DETL-W070-OTLN	blue	Continuous	0.70 mm	Color_5		0.70 Pen Weight
S-DETL-W100-OTLN	magenta	Continuous	1.00 mm	Color_6		1.00 Pen Weight
S-DETL-WELD-E	red	Continuous	0.18 mm	Color_1		Existing Weld Details To Remain
S-DETL-WELD-N	red	Continuous	0.18 mm	Color_1		New Weld Details
S-DETL-WOOD-E	red	Continuous	0.18 mm	Color_1		Existing Timber Details To Remain
S-DETL-WOOD-N	30	Continuous	0.18 mm	Color_30		New Timber Details

Survey Layers

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
V-ANNO-BRNG	white	Continuous	0.25 mm	Color_7		Survey Bearing & Distance Labels
V-ANNO-DIMS	red	Continuous	0.18 mm	Color_1		Survey Dimensions
V-ANNO-IDEN	white	Continuous	0.25 mm	Color_7		Survey Identification Tags
V-ANNO-JOIN	white	Continuous	0.25 mm	Color_7		Survey Join Lines
V-ANNO-KEYN	white	Continuous	0.25 mm	Color_7		Survey Keynotes
V-ANNO-LABL	white	Continuous	0.25 mm	Color_7		Survey Labels
V-ANNO-LEGN	white	Continuous	0.25 mm	Color_7		Survey Legend & Symbol Keys
V-ANNO-MARK	white	Continuous	0.25 mm	Color_7		Survey Markers, Break Lines & Leaders
V-ANNO-NOTE	white	Continuous	0.25 mm	Color_7		Survey Notes
V-ANNO-NPLT	230	Continuous	0.18 mm	Color_230		Survey Non-Plotting Information
V-ANNO-RDME	white	Continuous	0.25 mm	Color_7		Survey Readme Notes (Non-Plotted)
V-ANNO-REDL	white	Continuous	0.25 mm	Color_7		Survey Redlines
V-ANNO-REFR	white	Continuous	0.25 mm	Color_7		Survey Reference & External Files
V-ANNO-REVC	green	Continuous	0.18 mm	Color_3		Survey Revision Clouds
V-ANNO-REVS	green	Continuous	0.18 mm	Color_3		Survey Revisions
V-ANNO-SCHD	white	Continuous	0.25 mm	Color_7		Survey Schedules
V-ANNO-SYMB	yellow	Continuous	0.18 mm	Color_2		Survey Reference Symbols
V-ANNO-TABL	white	Continuous	0.25 mm	Color_7		Survey Data Tables
V-ANNO-TEXT	white	Continuous	0.18 mm	Color_7		Text
V-ANNO-TEXT-E	white	Continuous	0.25 mm	Color_7		Existing Survey Text
V-ANNO-TEXT-N	white	Continuous	0.25 mm	Color_7		New Survey Text
V-ANNO-TITL	red	Continuous	0.18 mm	Color_1		Survey Title Details
V-ANNO-TTLB	blue	Continuous	1.00 mm	Color_5		Survey Plan Border
V-ANNO-VINC	white	Continuous	0.25 mm	Color_7		Survey Vincula
V-BLDG-OTLN-E	white	Continuous	0.25 mm	Color_7		Existing Surveyed Building Outline
V-BLDG-OTLN-PATT-E	white	Continuous	0.25 mm	Color_7		Existing Surveyed Building Outline Pattern
V-BNDY-ESMT-E	yellow	Continuous	0.35 mm	Color_2		Easement Boundary
V-BNDY-ESMT-N	yellow	Continuous	0.35 mm	Color_2		New Easement Boundary
V-BNDY-PROP-ABUT-E	white	Abutbdy	0.25 mm	Color_7		Existing Abutting Property Boundary
V-BNDY-PROP-PARL-E	white	Continuous	0.25 mm	Color_7		Existing Property Boundary Affected Parcel
V-BNDY-ROAD-E	white	Continuous	0.25 mm	Color_7		Existing Road Boundary
V-BNDY-ROAD-N	yellow	Continuous	1.00 mm	Color_2		New Road Boundary
V-BNDY-SUBD-N	yellow	Continuous	1.00 mm	Color_2		New Subdivision Boundary
V-CTRL-BMRK-E	white	Continuous	0.25 mm	Color_7		Existing Survey Bench Mark Survey Control Marks
V-CTRL-BMRK-PATT	white	Continuous	0.25 mm	Color_7		Survey Bench Mark Survey Control Marks Fill
V-CTRL-BNDY	white	Continuous	0.18 mm	Color_7		Boundary Pegs
V-CTRL-BNDY-E	white	Continuous	0.25 mm	Color_7		Existing Survey Boundary Pegs
V-CTRL-BNDY-PATT	white	Continuous	0.18 mm	Color_7		Survey Boundary Pegs Fill
V-CTRL-GRID-E	white	Continuous	0.18 mm	Color_7		Existing Survey Coordinate Grid
V-CTRL-SPKE-E	white	Continuous	0.18 mm	Color_7		Existing Survey Iron Spike Survey Control Marks
V-CTRL-SPKE-PATT	white	Continuous	0.18 mm	Color_7		Survey Iron Spike Survey Control Marks Fill
V-CTRL-TRAV-DASH-E	white	Continuous	0.18 mm	Color_7		Existing Survey Dashed Survey Control Traverse
V-CTRL-TRAV-E	yellow	Continuous	0.25 mm	Color_2		Existing Survey Control Traverse
V-CTRL-TRAV-FULL-E	white	Continuous	0.18 mm	Color_7		Existing Survey Solid Survey Control Traverse
V-CTRL-TRAV-TEXT-E	yellow	Continuous	0.18 mm	Color_2		Existing Survey Control Traverse Text
V-CTRL-TUBE-E	white	Continuous	0.18 mm	Color_7		Existing Survey Iron Tube Survey Control Marks
V-CTRL-TUBE-PATT	white	Continuous	0.18 mm	Color_7		Survey Iron Tube Survey Control Marks Fill
V-GRND-E	white	Continuous	0.18 mm	Color_7		Survey Iron Tube Survey Control Marks Fill
V-IRRG-SPHD-E	white	Continuous	0.18 mm	Color_7		Existing Surveyed Irrigation Sprinkler Heads
V-PLNT-TREE-E	green	Continuous	0.18 mm	Color_3		Existing Surveyed Trees
V-PLNT-VEGE-E	green	Continuous	0.18 mm	Color_3		Existing Surveyed Shrubs & Other Vegetation
V-POWR-TRAN-AG	30	Powerkv	0.25 mm	Color_30		Existing Transpower Above Ground Lines
V-ROAD-KERB-DISH-E	white	Continuous	0.25 mm	Color_7		Existing Surveyed Dish Channel Kerb
V-ROAD-KERB-FLAT-E	white	Continuous	0.18 mm	Color_7		Existing Surveyed Flat Channel Kerb
V-ROAD-KERB-LINE-E	white	Continuous	0.25 mm	Color_7		Existing Surveyed Kerb Line
V-ROAD-KERB-NIBB-E	white	Continuous	0.25 mm	Color_7		Existing Surveyed Nib Kerb
V-ROAD-MRKG-WHIT-DAS...	255,255...	Continuous	0.50 mm	Color_7		Existing Surveyed Broken White Road Marking
V-ROAD-MRKG-WHIT-FULL...	255,255...	Continuous	0.50 mm	Color_7		Existing Surveyed White Road Marking
V-ROAD-MRKG-YELO-DAS...	50	TM_NoSt...	0.50 mm	Color_50		Existing Surveyed Broken Yellow Road Marking








Survey Layers (cont'd)

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
V-ROAD-MRKG-YELO-DAS...	50	TM_NoSt...	0.50 mm	Color_50		Existing Surveyed Broken Yellow Road Marking
V-ROAD-MRKG-YELO-FULL-E	50	Continuous	0.50 mm	Color_50		Existing Surveyed Yellow Road Marking
V-ROAD-SEAL-EDGE-E	white	DGN Style 2	0.25 mm	Color_7		Existing Surveyed Edge of Seal
V-SITE-FENC-GATE-E	white	Continuous	0.18 mm	Color_7		Existing Surveyed Fence Gate
V-SITE-FENC-LINE-E	white	Continuous	0.18 mm	Color_7		Existing Surveyed Fence Line
V-SITE-FENC-POST-E	white	Continuous	0.18 mm	Color_7		Existing Surveyed Fence Post
V-SITE-FENC-POST-PATT	white	Continuous	0.18 mm	Color_7		Existing Surveyed Fence Post Fill
V-SITE-FENC-WALL-E	white	Continuous	0.18 mm	Color_7		Existing Surveyed Fence Wall Line
V-SITE-PATH-EDGE-E	white	Continuous	0.25 mm	Color_7		Existing Surveyed Path Edge
V-SITE-POST-BOX-E	white	Continuous	0.25 mm	Color_7		Existing Surveyed Postal Box
V-STRM-CULV-E	90	Continuous	0.25 mm	Color_90		Existing Surveyed Stream Culvert
V-STRM-HDWL-E	90	Continuous	0.25 mm	Color_90		Existing Surveyed Stream Headwalls & Endwalls
V-STRM-RETN-BASN-E	90	DGN Style 2	0.25 mm	Color_90		Existing Stormwater Retention Basin by Survey
V-STRM-RETN-BASN-TOPB...	90	DGN Style 2	0.25 mm	Color_90		Existing Stormwater Retention Basin Top of Bank by Survey
V-STRM-SKPT-E	90	DGN Style 2	0.25 mm	Color_90		Existing Stormwater Soak Pit by Survey
V-STRM-SKPT-STRC-E	90	Continuous	0.25 mm	Color_90		Existing Stormwater Soak Pit Structure by Survey
V-STRM-SWLE-CNTR-E	90	DGN Style 4	0.25 mm	Color_90		Existing Stormwater Swale by Survey
V-STRM-SWLE-TOPB-E	90	Continuous	0.25 mm	Color_90		Existing Stormwater Swale Top of Bank by Survey
V-TOPO-BORE	white	Continuous	0.35 mm	Color_7		Test Bore Holes
V-TOPO-BORE-HOLE-E	white	Continuous	0.35 mm	Color_7		Existing Surveyed Test Bore Holes
V-TOPO-CONT-MAJR-E	yellow	Continuous	0.35 mm	Color_2		Existing Survey Major Contours
V-TOPO-CONT-MINR-E	white	Continuous	0.18 mm	Color_7		Existing Survey Minor Contours
V-TOPO-EWAT-E	cyan	Continuous	0.25 mm	Color_4		Existing Surveyed Edge of Water Line
V-TOPO-GRID-E	white	Continuous	0.18 mm	Color_7		Existing Survey Grid Coordinates
V-TOPO-SPOT	green	Continuous	0.18 mm	Color_3		Spot Heights
V-TOPO-SPOT-E	green	Continuous	0.18 mm	Color_3		Existing Surveyed Spot Heights
V-WATR-VALV-E	150	Continuous	0.18 mm	Color_150		Existing Surveyed Water Valve

Telecommunication Layers

Name	Color	Linetype	Lineweight	Plot Style	Plot	Description
T-COMM-CABL-N	190	Telecom	0.50 mm	Color_190		New Telecommunication Cables
T-COMM-CLER-CABL-E	190	Telecom	0.25 mm	Color_190		Existing Telstra Clear Network Cables
T-COMM-CLER-CABL-N	190	Telecom	0.50 mm	Color_190		New Telstra Clear Network Cables
T-COMM-CLER-MHOL-E	190	Continuous	0.25 mm	Color_190		Existing Telstra Clear Network Manhole
T-COMM-ENAN-CABL-E	190	Fibre_Opt...	0.25 mm	Color_190		Existing Enable Fibre Network Cables
T-COMM-TELE-CABL-D	190	Telecom	0.25 mm	Color_190		Telecom Cables to be Decommissioned
T-COMM-TELE-CABL-E	190	Telecom	0.25 mm	Color_190		Existing Telecom Cables
T-COMM-TELE-CABT-E	190	Continuous	0.25 mm	Color_190		Existing Telecom Network Cabinet
T-COMM-TELE-CABT-N	190	Continuous	0.50 mm	Color_190		New Telecom Network Cabinet
T-COMM-TELE-JBOX	190	Telecom	0.25 mm	Color_190		Telecom Junction Boxes
T-COMM-TELE-JBOX-D	190	Telecom	0.25 mm	Color_190		Telecom Junction Box to be Removed
T-COMM-TELE-JBOX-E	190	Telecom	0.25 mm	Color_190		Existing Telecom Junction Box
T-COMM-TELE-JBOX-M	190	Telecom	0.25 mm	Color_190		Telecom Junction Box to be Moved
T-COMM-TELE-JBOX-N	190	Telecom	0.50 mm	Color_190		New Telecom Junction Box
T-COMM-TELE-MHOL-D	190	Telecom	0.25 mm	Color_190		Telecom Manhole to be Removed
T-COMM-TELE-MHOL-E	190	Telecom	0.25 mm	Color_190		Existing Telecom Manhole
T-COMM-TELE-MHOL-N	190	Continuous	0.50 mm	Color_190		New Telecom Manhole
T-COMM-TELR-CABT-N	190	Continuous	0.50 mm	Color_190		New TelstraClear Network Cabinet
T-COMM-TELR-JBOX-N	190	Continuous	0.50 mm	Color_190		New TelstraClear Junction Box
T-COMM-TELR-MHOL-N	190	Continuous	0.50 mm	Color_190		New TelstraClear Manhole
T-COMM-TRANS-CABL-E	190	Fibre_Opt...	0.25 mm	Color_190		Existing Transpower Fibre Network Cables

Appendix B – Service and Utilities Colour Table

Service	COLOUR	Network Operator
Electrical, Lighting, Traffic Signals Lines, Cables and Ducting	ORANGE 	Orion Traffic Signals
Telecommunications Lines, Cables and Ducting	PURPLE 	Telecom/Chorus (T/COM) Telstra (TCL)
Ultra Fast Broadband	PURPLE 	Enable
Gas	YELLOW 	Contact/Rockgas
Potable Water	BLUE 	CCC
Wastewater	RED 	CCC
Stormwater	GREEN 	CCC

The colours shown above are based upon the following standards:

- Subsurface Utility Engineering Information, Standards Australia IT – 036
- Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, ASCE/CI 38-02
- Standard Mapping of Underground Utility Infrastructure, CSA S250

Appendix C – Drawing Samples

NOT FOR CONSTRUCTION

CHECK PRINT / REVIEW			
DWG: 10750-DE-WA001-1001.dwg			
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DISTRIBUTION	INITIAL	DATE	
DESIGNER			
DRAWING CHECK			
DESIGN REVIEW			
CONTRACTOR REVIEW			

FOR APPROVAL	
ADD YOUR SIGNATURE	

			INFRASTRUCTURE REBUILD STREET NAME	DISCIPLINE DRAWING TYPE STREET NUMBER	10750	A1	1:500
					---	WA1001	

Standard SCIRT Title Block

NOT FOR CONSTRUCTION

LEGEND

SERVICES

- 100mm PVC
- 150mm PVC
- 200mm PVC
- 300mm PVC
- 400mm PVC
- 500mm PVC
- 600mm PVC
- 750mm PVC
- 900mm PVC
- 1000mm PVC
- 1200mm PVC
- 1500mm PVC
- 1800mm PVC
- 2100mm PVC
- 2400mm PVC
- 2700mm PVC
- 3000mm PVC
- 3300mm PVC
- 3600mm PVC
- 3900mm PVC
- 4200mm PVC
- 4500mm PVC
- 4800mm PVC
- 5100mm PVC
- 5400mm PVC
- 5700mm PVC
- 6000mm PVC
- 6300mm PVC
- 6600mm PVC
- 6900mm PVC
- 7200mm PVC
- 7500mm PVC
- 7800mm PVC
- 8100mm PVC
- 8400mm PVC
- 8700mm PVC
- 9000mm PVC
- 9300mm PVC
- 9600mm PVC
- 9900mm PVC
- 10200mm PVC
- 10500mm PVC
- 10800mm PVC
- 11100mm PVC
- 11400mm PVC
- 11700mm PVC
- 12000mm PVC
- 12300mm PVC
- 12600mm PVC
- 12900mm PVC
- 13200mm PVC
- 13500mm PVC
- 13800mm PVC
- 14100mm PVC
- 14400mm PVC
- 14700mm PVC
- 15000mm PVC
- 15300mm PVC
- 15600mm PVC
- 15900mm PVC
- 16200mm PVC
- 16500mm PVC
- 16800mm PVC
- 17100mm PVC
- 17400mm PVC
- 17700mm PVC
- 18000mm PVC
- 18300mm PVC
- 18600mm PVC
- 18900mm PVC
- 19200mm PVC
- 19500mm PVC
- 19800mm PVC
- 20100mm PVC
- 20400mm PVC
- 20700mm PVC
- 21000mm PVC
- 21300mm PVC
- 21600mm PVC
- 21900mm PVC
- 22200mm PVC
- 22500mm PVC
- 22800mm PVC
- 23100mm PVC
- 23400mm PVC
- 23700mm PVC
- 24000mm PVC
- 24300mm PVC
- 24600mm PVC
- 24900mm PVC
- 25200mm PVC
- 25500mm PVC
- 25800mm PVC
- 26100mm PVC
- 26400mm PVC
- 26700mm PVC
- 27000mm PVC
- 27300mm PVC
- 27600mm PVC
- 27900mm PVC
- 28200mm PVC
- 28500mm PVC
- 28800mm PVC
- 29100mm PVC
- 29400mm PVC
- 29700mm PVC
- 30000mm PVC
- 30300mm PVC
- 30600mm PVC
- 30900mm PVC
- 31200mm PVC
- 31500mm PVC
- 31800mm PVC
- 32100mm PVC
- 32400mm PVC
- 32700mm PVC
- 33000mm PVC
- 33300mm PVC
- 33600mm PVC
- 33900mm PVC
- 34200mm PVC
- 34500mm PVC
- 34800mm PVC
- 35100mm PVC
- 35400mm PVC
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- 36000mm PVC
- 36300mm PVC
- 36600mm PVC
- 36900mm PVC
- 37200mm PVC
- 37500mm PVC
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- 38100mm PVC
- 38400mm PVC
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- 45000mm PVC
- 45300mm PVC
- 45600mm PVC
- 45900mm PVC
- 46200mm PVC
- 46500mm PVC
- 46800mm PVC
- 47100mm PVC
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- 47700mm PVC
- 48000mm PVC
- 48300mm PVC
- 48600mm PVC
- 48900mm PVC
- 49200mm PVC
- 49500mm PVC
- 49800mm PVC
- 50100mm PVC
- 50400mm PVC
- 50700mm PVC
- 51000mm PVC
- 51300mm PVC
- 51600mm PVC
- 51900mm PVC
- 52200mm PVC
- 52500mm PVC
- 52800mm PVC
- 53100mm PVC
- 53400mm PVC
- 53700mm PVC
- 54000mm PVC
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- 54600mm PVC
- 54900mm PVC
- 55200mm PVC
- 55500mm PVC
- 55800mm PVC
- 56100mm PVC
- 56400mm PVC
- 56700mm PVC
- 57000mm PVC
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- 68700mm PVC
- 69000mm PVC
- 69300mm PVC
- 69600mm PVC
- 69900mm PVC
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- 70800mm PVC
- 71100mm PVC
- 71400mm PVC
- 71700mm PVC
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- 73200mm PVC
- 73500mm PVC
- 73800mm PVC
- 74100mm PVC
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- 74700mm PVC
- 75000mm PVC
- 75300mm PVC
- 75600mm PVC
- 75900mm PVC
- 76200mm PVC
- 76500mm PVC
- 76800mm PVC
- 77100mm PVC
- 77400mm PVC
- 77700mm PVC
- 78000mm PVC
- 78300mm PVC
- 78600mm PVC
- 78900mm PVC
- 79200mm PVC
- 79500mm PVC
- 79800mm PVC
- 80100mm PVC
- 80400mm PVC
- 80700mm PVC
- 81000mm PVC
- 81300mm PVC
- 81600mm PVC
- 81900mm PVC
- 82200mm PVC
- 82500mm PVC
- 82800mm PVC
- 83100mm PVC
- 83400mm PVC
- 83700mm PVC
- 84000mm PVC
- 84300mm PVC
- 84600mm PVC
- 84900mm PVC
- 85200mm PVC
- 85500mm PVC
- 85800mm PVC
- 86100mm PVC
- 86400mm PVC
- 86700mm PVC
- 87000mm PVC
- 87300mm PVC
- 87600mm PVC
- 87900mm PVC
- 88200mm PVC
- 88500mm PVC
- 88800mm PVC
- 89100mm PVC
- 89400mm PVC
- 89700mm PVC
- 90000mm PVC

Standard SCIRT Title Block with Wastewater Legend and Notes

NOT FOR CONSTRUCTION

1	2	3	4	5	6	7	8	9	10	11	12
A											A
B											B
C											C
D											D
E											E
F											F
G											G
1	2	3	4	5	6	7	8	9	10	11	12

REV	
NO	DESCRIPTION
1	Initial Issue
2	Revised
3	Revised
4	Revised
5	Revised

10790-DE-ME-003-3032

INFRASTRUCTURE REBUILD
STREET NAME

PROCESS AND
INSTRUMENTATION
DRAWING TITLE

10790
-

A1

1:

ME3032

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Date:

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DESIGNER		
DRAWING CHECK		
DESIGN REVIEW		

PRELIMINARY

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Standard SCIRT Title Block for Electrical and P&ID Drawings

INFRASTRUCTURE REBUILD CHRISTCHURCH INNES-KNOWLES CATCHMENT - WASTEWATER RECONSTRUCTION



CONSULTANT FILE REF.

10034-DE-WW-DG-0001
10034-DE-WW-DG-1001
10034-DE-WW-DG-1002
10034-DE-WW-DG-2001
10034-DE-WW-DG-2002
10034-DE-WW-DG-2003
10034-DE-WW-DG-2004
10034-DE-WW-DG-2005
10034-DE-WW-DG-2006
10034-DE-WW-DG-2007
10034-DE-WW-DG-2008
10034-DE-WW-DG-2009
10034-DE-WW-DG-2010
10034-DE-WW-DG-2011
10034-DE-WW-DG-2012
10034-DE-WW-DG-2020
10034-DE-WW-DG-2021
10034-DE-WW-DG-2022
10034-DE-WW-DG-2023
10034-DE-WW-DG-2024
10034-DE-WW-DG-2025
10034-DE-WW-DG-2026
10034-DE-WW-DG-2027

DRAWING TITLE

INNES-KNOWLES CATCHMENTS COVER SHEET
INNES-KNOWLES CATCHMENT WASTEWATER KEY PLAN
INNES-KNOWLES CATCHMENT WASTEWATER GRAVITY SYSTEM WITH 1 PUMP STATION
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION INNES RD SHT 1
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION INNES RD SHT 2
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION INNES RD SHT 3
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION INNES RD SHT 4
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION JAMESON AVE
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION KNOWLES ST (EAST)
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION CRANFORD ST SHT 1
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION CRANFORD ST SHT 2
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION KNOWLES ST (WEST)
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION INNES RD SUBMAIN
INNES-KNOWLES SUB-CATCHMENT 1 WASTEWATER PLAN & LONG SECTION INNES RD SUBMAIN
INNES-KNOWLES SUB-CATCHMENT 2 WASTEWATER PLAN & LONG SECTION NANCY AVE
INNES-KNOWLES SUB-CATCHMENT 2 WASTEWATER PLAN & LONG SECTION INNES RD
INNES-KNOWLES SUB-CATCHMENT 2 WASTEWATER PLAN & LONG SECTION WESTON RD SHT 1
INNES-KNOWLES SUB-CATCHMENT 2 WASTEWATER PLAN & LONG SECTION WESTON RD SHT 2
INNES-KNOWLES SUB-CATCHMENT 2 WASTEWATER PLAN & LONG SECTION JAMESON AVENUE
INNES-KNOWLES SUB-CATCHMENT 2 WASTEWATER PLAN & LONG SECTION KNOWLES ST SHT 1
INNES-KNOWLES SUB-CATCHMENT 2 WASTEWATER PLAN & LONG SECTION KNOWLES ST SHT 2
INNES-KNOWLES SUB-CATCHMENT 2 WASTEWATER PLAN & LONG SECTION PHILPOTTS RD

SHEET

WW1001
WW1002
WW2001
WW2002
WW2003
WW2004
WW2005
WW2006
WW2007
WW2008
WW2009
WW2010
WW2011
WW2012
WW2020
WW2021
WW2022
WW2023
WW2024
WW2025
WW2026
WW2027

CONSULTANT FILE REF.

10034-DE-WW-DG-2028
10034-DE-WW-DG-2031
10034-DE-WW-DG-2032
10034-DE-WW-DG-2033
10034-DE-WW-DG-2034
10034-DE-WW-DG-2040
10034-DE-WW-DG-2041
10034-DE-WW-DG-2042
10034-DE-WW-DG-2043
10034-DE-WW-DG-2044
10034-DE-WW-DG-2050
10034-DE-WW-DG-2051
10034-DE-WW-DG-2052
10034-DE-WW-DG-2053
10034-DE-WW-DG-2054
10034-DE-WW-DG-2055
10034-DE-WW-DG-2060
10034-DE-WW-DG-2061
10034-DE-WW-DG-2062
10034-DE-WW-DG-2063
10034-DE-WW-DG-4001
10034-DE-WW-DG-4002
10034-DE-WW-DG-4003

DRAWING TITLE

INNES-KNOWLES SUB-CATCHMENT 3 WASTEWATER PLAN & LONG SECTION PUBLIC WALKWAY
INNES-KNOWLES SUB-CATCHMENT 3 WASTEWATER PLAN & LONG SECTION KNOWLES ST SHT 1
INNES-KNOWLES SUB-CATCHMENT 3 WASTEWATER PLAN & LONG SECTION KNOWLES ST SHT 2
INNES-KNOWLES SUB-CATCHMENT 3 WASTEWATER PLAN & LONG SECTION WESTON RD SHT 1
INNES-KNOWLES SUB-CATCHMENT 3 WASTEWATER PLAN & LONG SECTION WESTON RD SHT 2
INNES-KNOWLES SUB-CATCHMENT 4 WASTEWATER PLAN & LONG SECTION MOFADENS RD
INNES-KNOWLES SUB-CATCHMENT 4 WASTEWATER PLAN & LONG SECTION CRANFORD ST
INNES-KNOWLES SUB-CATCHMENT 4 WASTEWATER PLAN & LONG SECTION CRANFORDS RD SHT1
INNES-KNOWLES SUB-CATCHMENT 4 WASTEWATER PLAN & LONG SECTION CRANFORDS RD SHT2
INNES-KNOWLES SUB-CATCHMENT 4 WASTEWATER PLAN & LONG SECTION ESPERANCE ST SHT2
INNES-KNOWLES SUB-CATCHMENT 5 WASTEWATER PLAN & LONG SECTION LEXHAM MAFADENS
INNES-KNOWLES SUB-CATCHMENT 5 WASTEWATER PLAN & LONG SECTION HERBYWAY AVE
INNES-KNOWLES SUB-CATCHMENT 5 WASTEWATER PLAN & LONG SECTION MAFADENS REDWOOD
INNES-KNOWLES SUB-CATCHMENT 5 WASTEWATER PLAN & LONG SECTION MAFADENS
INNES-KNOWLES SUB-CATCHMENT 5 WASTEWATER PLAN & LONG SECTION KETTON PL
INNES-KNOWLES SUB-CATCHMENT 5 WASTEWATER PLAN & LONG SECTION MAYB RD
INNES-KNOWLES SUB-CATCHMENT 6 WASTEWATER PLAN & LONG SECTION SOMME ST SHT 1
INNES-KNOWLES SUB-CATCHMENT 6 WASTEWATER PLAN & LONG SECTION SOMME ST SHT 2
INNES-KNOWLES SUB-CATCHMENT 6 WASTEWATER PLAN & LONG SECTION HANNEBURY AVE S1
INNES-KNOWLES SUB-CATCHMENT 6 WASTEWATER PLAN & LONG SECTION HANNEBURY AVE S2
INNES-KNOWLES CATCHMENT WASTEWATER CONNECTION AND WRAP DETAILS
INNES-KNOWLES CATCHMENT WASTEWATER LIFT STATION LAYOUT AND DETAILS SHT 1
INNES-KNOWLES CATCHMENT WASTEWATER LIFT STATION LAYOUT AND DETAILS SHT 2

SHEET

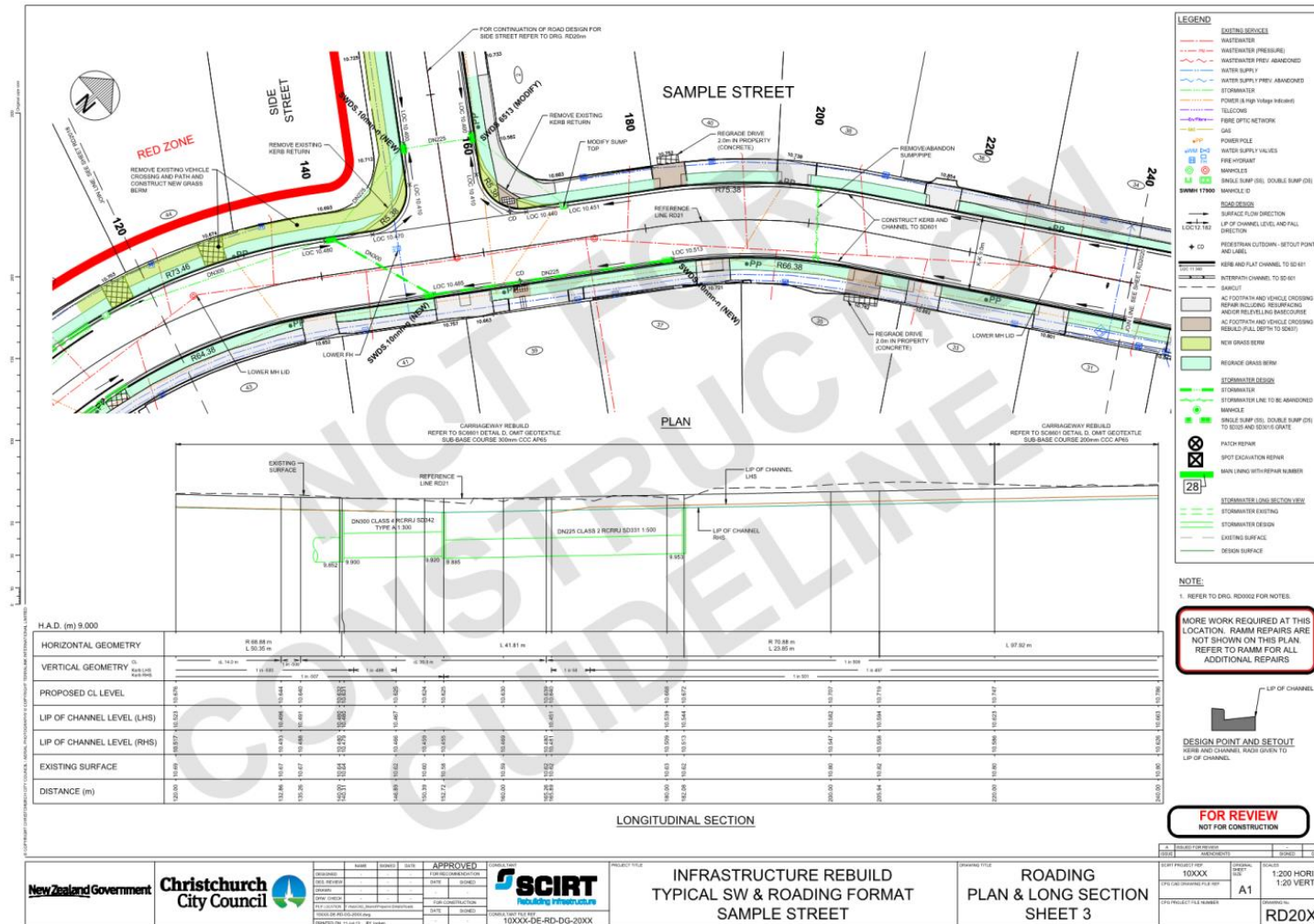
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WW4003

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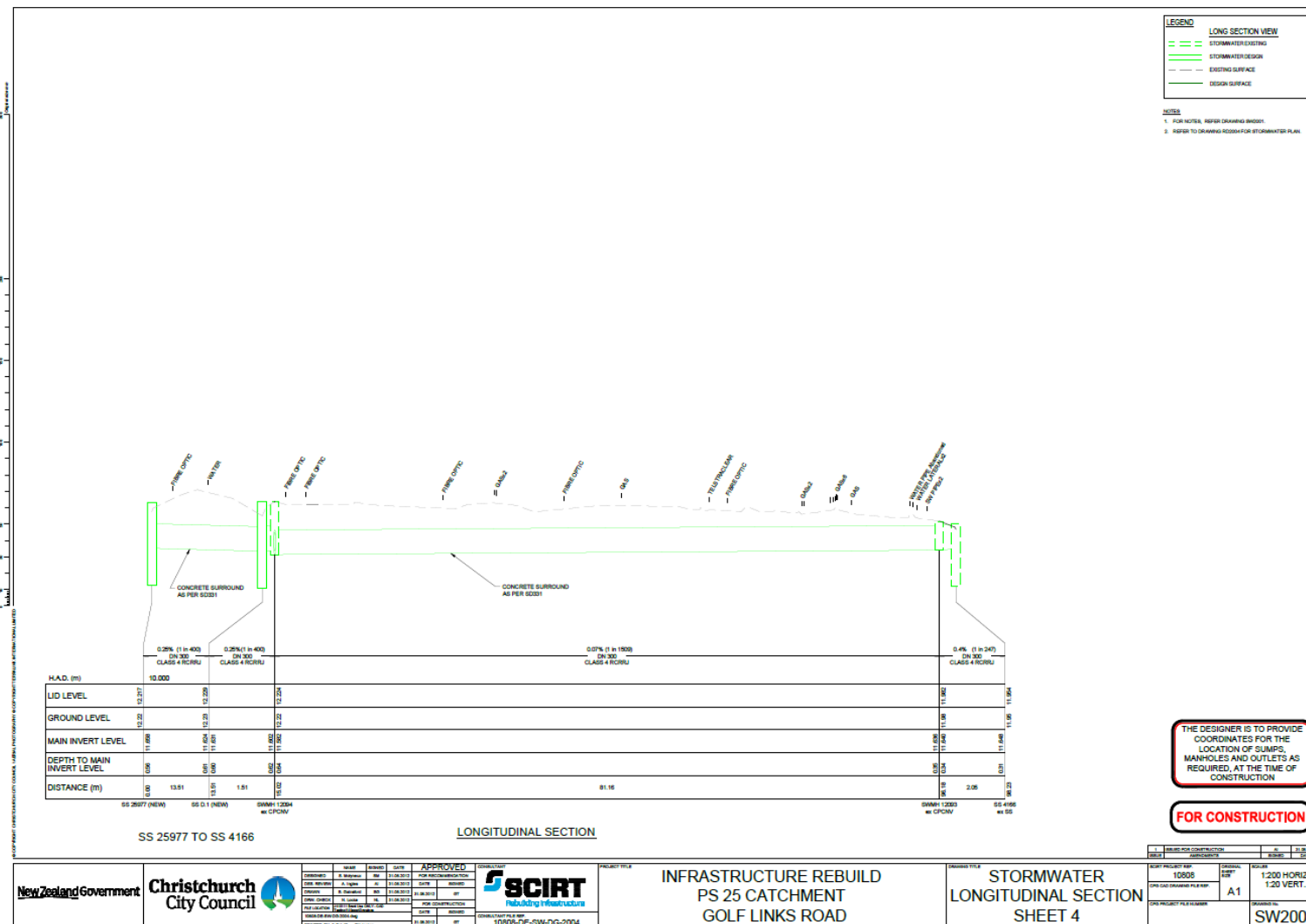
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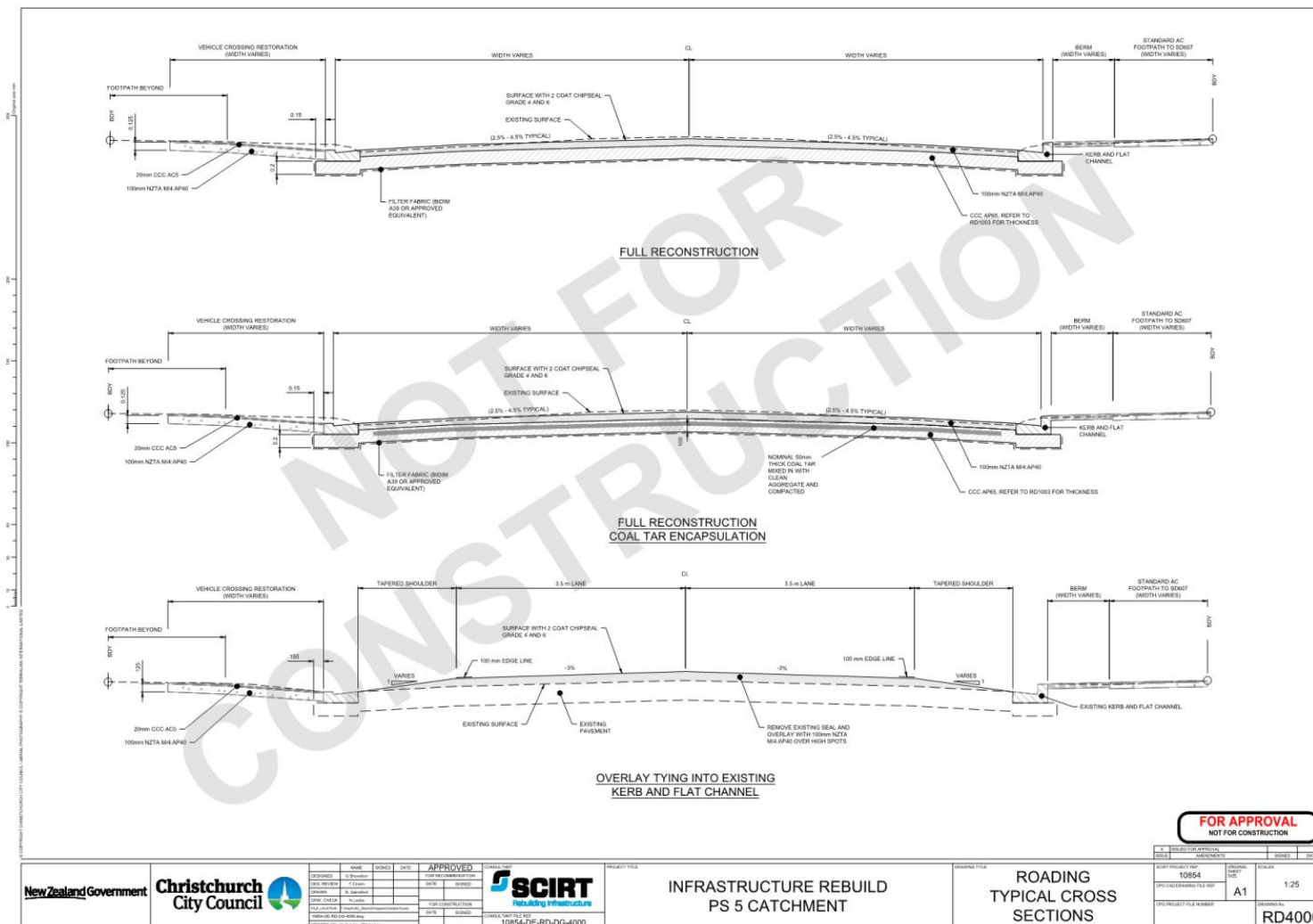
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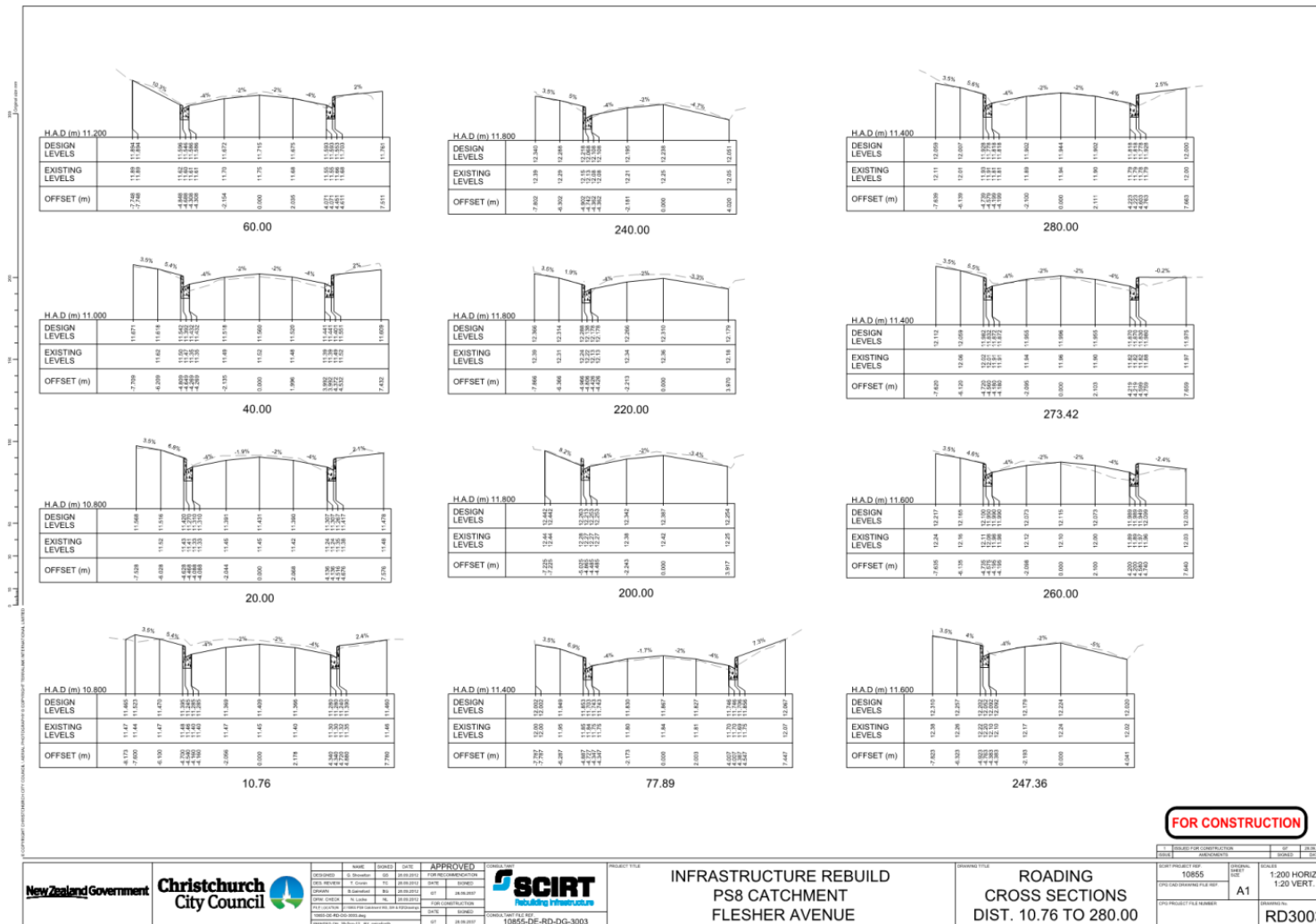
Typical SCIRT Roading Plan and Longitudinal Section Drawing



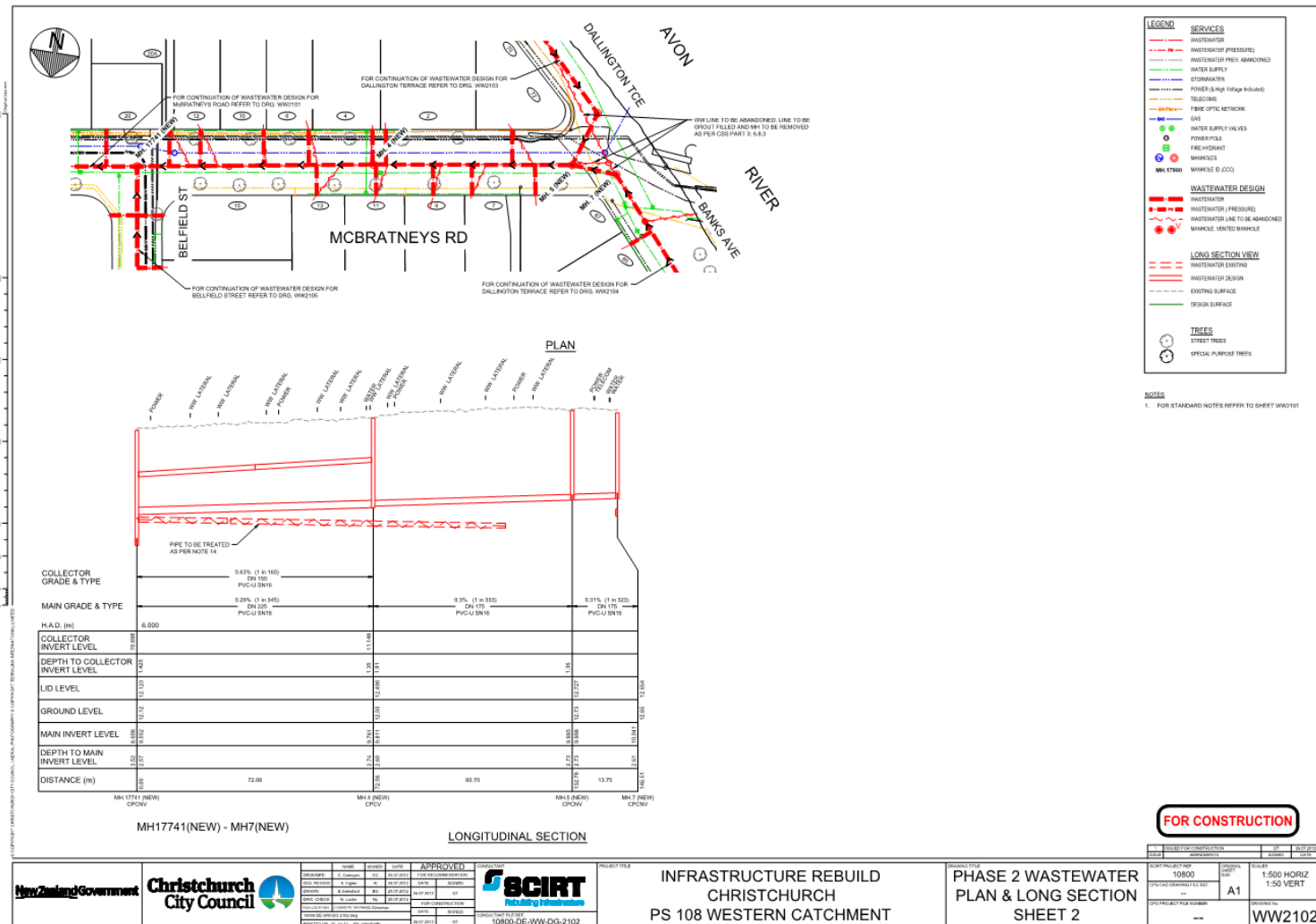
Typical SCIRT Stormwater Longitudinal Section Drawing



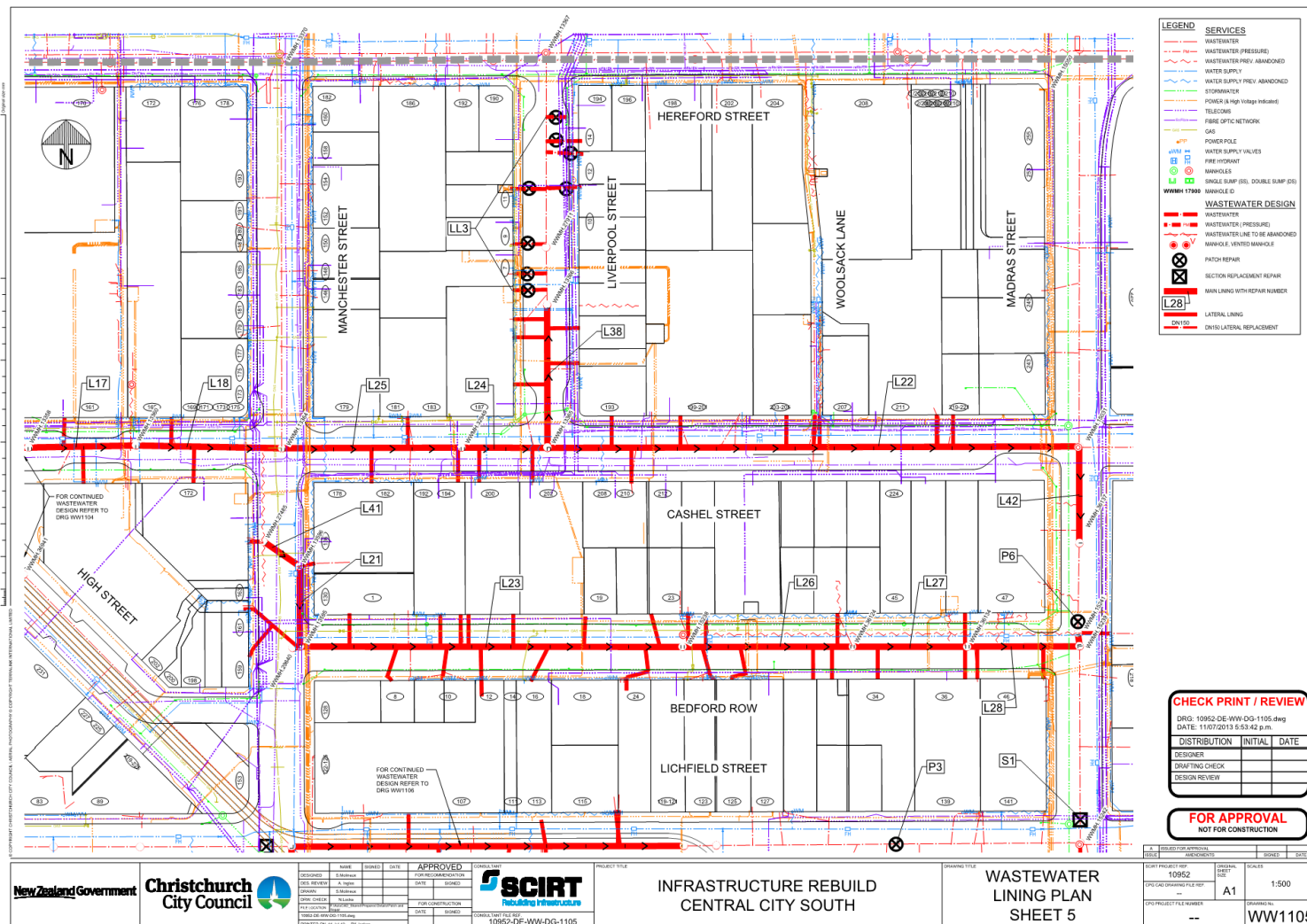
Typical SCIRT Roading Typical Cross Section Drawing



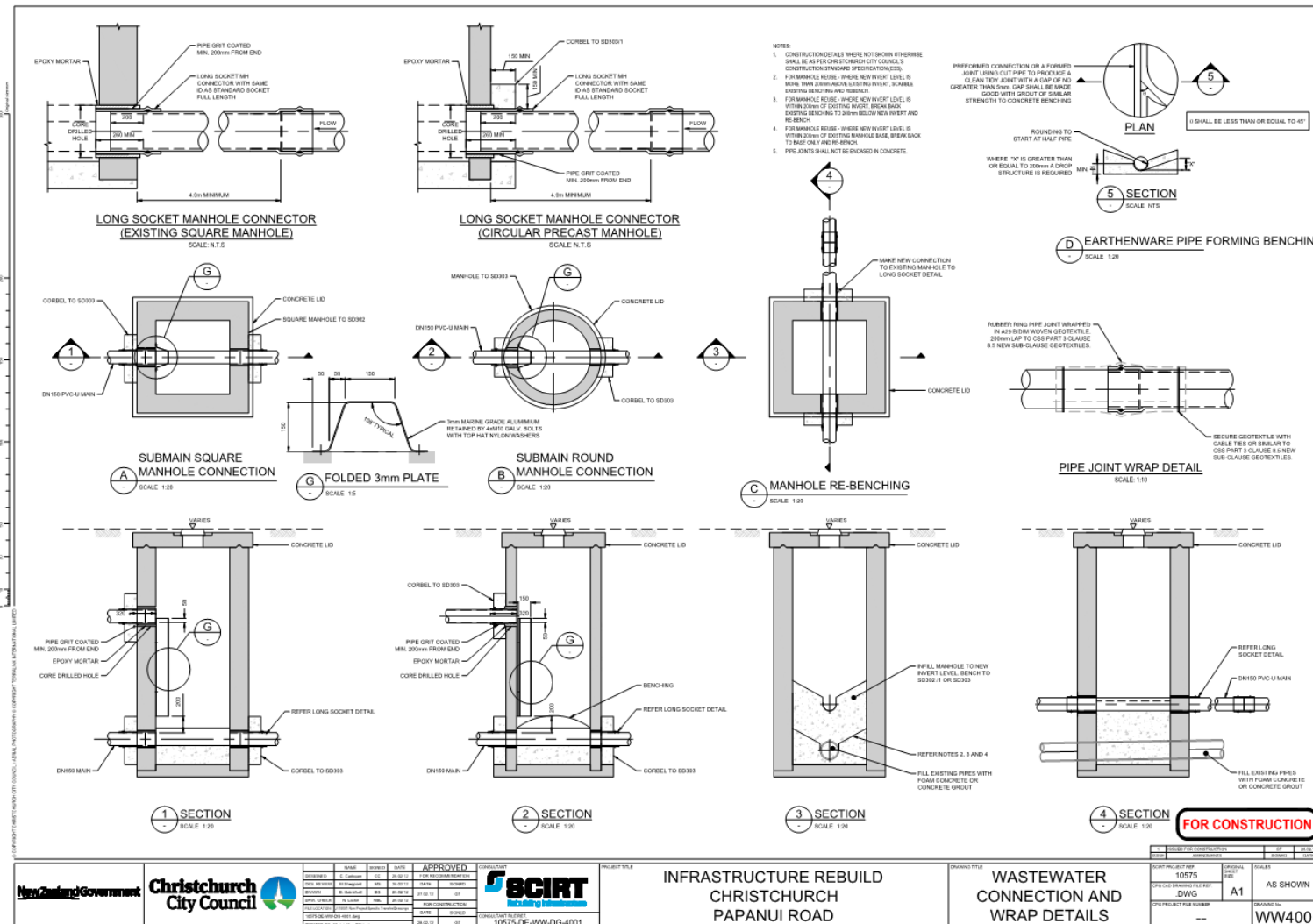
Typical SCIRT Roding Cross Section Drawing



Typical SCIRT Wastewater Plan and Longitudinal Section Drawing



Typical SCIRT Wastewater Patch, Lining & Repair Plan Drawing



Typical SCIRT Wastewater Section and Details Drawing

1. GENERAL NOTES:

- THE STRUCTURAL DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL OTHER PROJECT DRAWINGS. ANY DISCREPANCIES SHALL BE REFERRED TO THE DESIGNER FOR RESOLUTION.
- ALL DIMENSIONS AND DETAILS OF WALLS, UPSTAIRS, RECESSES, PUNTS, PENETRATIONS, INSERTS, SLEEVES, CHASES, REBATES, CAST-IN FASCIA, BRACKETS, HOLES, FLASHINGS, DRAIN PROOFING AND INTERPENETRATIONS SHALL BE SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO OTHER PROJECT DRAWINGS FOR THESE ITEMS.
- THE LOCATION, SIZE AND DETAILS OF ALL PENETRATIONS, RECESSES, SLEEVES, HOLES AND STRUCTURAL MEMBERS SHALL BE APPROVED BY THE DESIGNER PRIOR TO CONSTRUCTION UNLESS SHOWN ON THE STRUCTURAL DRAWINGS. THESE ITEMS SHALL BE CAST-IN FORMED OR SHOP FABRICATED SHALL NOT BE CUT OR CORDED ON SITE, UNLESS NOTED OTHERWISE OR APPROVED BY THE DESIGNER.
- SUBSTITUTION FOR OR AMENDMENT OF SPECIFIED DETAILS OR MATERIALS SHALL NOT BE CARRIED OUT WITHOUT APPROVAL OF THE DESIGNER.
- REQUIREMENTS FOR THE FOLLOWING ARE INCLUDED IN THE SPECIFICATION:
 - SHOP DRAWINGS
 - PROFILING DOCUMENTATION
 - INSPECTION AND TESTING DOCUMENTS
 - MATERIAL SPECIFICATION
 - TOLERANCES
- STANDARDS LISTED REFER TO THEIR LATEST EDITION UNLESS AMENDMENTS THAT ARE CURRENT AT THE TIME OF PREPARING THESE DRAWINGS.

2. DIMENSIONS:

- VERIFY ALL DIMENSIONS WITH SERVICES AND ALL OTHER PROJECT DRAWINGS PRIOR TO CONSTRUCTION COMMENCING. ANY DISCREPANCIES SHALL BE REFERRED TO THE DESIGNER FOR RESOLUTION.
- DO NOT SCALE THE DRAWINGS.
- ALL DIMENSIONS ARE IN MILLIMETERS UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS TO EXISTING WORK SHALL BE VERIFIED BY SITE MEASUREMENTS PRIOR TO FABRICATION.

3. ABBREVIATIONS:

ABB	ALTERNATE BAR REINFORCED	MS	MILD STEEL
ALT	ALTERNATE	NM	NEW
APPROX	APPROXIMATE	NP	NOT APPLICABLE
ADDM	ADDITIONAL	NB	NORMAL BOND
B	BOTTOM	NDT	NON DESTRUCTIVE TESTING
BWB	BACK WALL	NR	NEAR FACE
BEL	BULK ELEVATION LEVEL	NS	NOT TO SCALE
BLG	BLOCKING	OA	OVERALL
BM	BEAM	OVR	OVERHEAD
C	COVER	OD	OUTSIDE DIAMETER
CB	CONCRETE BLOCK	OP	OPPOSITE
CAR	CAR ALL ROUND	PCP	PRECAST CONCRETE
CC	CORNER TO CORNER	PCD	PITCH CIRCLE DIAMETER
CHS	CIRCULAR HOLLOW SECTION	PF	PARALLEL FLANGED CHANNEL
CL	CONSTRUCTION JUNCTION	PL	PIPELINE
COL	COLUMN	PLN	PLAIN BAR GRADE 300E
CONC	CONCRETE	RAD	RADIUS
CONC	CONNECTION	R.A.D.	REFER ARCHITECT'S DRAWINGS
CONT	CONTINUOUS	RC	REINFORCED CONCRETE
COS	COSK ON SITE	REBAR	REINFORCEMENT
CR	CENTRES	REF	REFERENCE
D	DEFORMED BAR GRADE 300E	RENF	REINFORCEMENT
DET	DETAIL	RLN	PLAIN BAR GRADE 300E
DF	DEFORMED BAR GRADE 300E	RHS	RECTANGULAR HOLLOW SECTION
DIA	DIAMETER	RL	REDUCED LEVEL
DIAG	DIAGONAL	RLS	ROLLERS STEEL ANGLE
DOS	DETERMINE ON SITE	RSLC	ROLLED STEEL CHANNEL
DP	DOWN PITCH	RSH	ROLLER HOLLOW SECTION
DPC	DRAIN PROOF COVER	SIM	SIMILAR
DWG	DRAWING	SI	SAFETY CUT
EA	EQUIN ANGLE	SQ	SQUARE
EF	EACH FACE	SS	STAINLESS STEEL
EL ELEV	ELEVATION	STA	STARTER
EW	EWAY WALK	STD	STANDARD
STG	STAGGER	STG	STAGGER
EXTG(E)	EXISTING	STFF	STIFFENER
FON	FOUNDATION	STRUP	STRUTTING
FR	FRAMING	STMT	STAIR
PFL	FINISHED FLOOR LEVEL	T	TOP
FIG	FIGURE	TFR	TRANSVERSE FLANGE BEAM
FL	FLAT	TFC	TRANSVERSE FLANGE CHANNEL
FLG	FLANGE	THK	THICK
FRF	FRS RESISTANCE RATING	TK	TOP OF
TGC	TOP OF CONCRETE	FW	FULLY WELDED
FWAR	WELDED ALL ROUND	TOG	TOP OF GRATING
GA	GALVE	TOIC	TOP OF RIGID CONCRETE
GL	GROUND LEVEL	TOC	TOP OF CONCRETE
GP	GROUND PROOF COVER	TRM	TRIMMER
H.D.GALV	HOT DIPPED GALVANISED	UA	UNEQUAL ANGLE
HORIZ	HORIZONTAL	UB	UNIVERSAL BEAM
UC	UNIVERSAL COLUMN	UC	UNIVERSAL COLUMN
IL	INVERT LEVEL	UN	UNLESS NOTED OTHERWISE
IP	INTERSECTION POINT	US	UNDERSIDE

4. REINFORCED CONCRETE:

4.1 CONCRETE STRENGTH

- CONCRETE STRENGTH IS SPECIFIED 28 DAY COMPRESSIVE STRENGTHS AS DEFINED IN NZS3101.
- REINFORCED CONCRETE IS SPECIFIED ON INDIVIDUAL DRAWINGS. WHERE NOT SPECIFIED CONCRETE STRENGTH SHALL BE 40MPa.

4.2 CONCRETE SURFACE FINISHES

SURFACE FINISHES ARE GENERALLY SPECIFIED ON INDIVIDUAL DRAWINGS. WHERE NOT SPECIFIED, SURFACE FINISHES SHALL BE AS FOLLOWS (REFERENCED TO 1140 FOR DEFINITIONS):

- 1) EXPOSED FORMED SURFACES OF BEAMS, COLUMNS, WALLS, PANELS AND SLAB EDGES - F4
- 2) EXPOSED FORMED SURFACES OF BEAMS, COLUMNS, WALLS AND SLAB EDGES - F5
- 3) EXPOSED FORMED SURFACES - F6
- 4) CONCEALED UNFORMED SURFACES - F7
- 5) TOP OF SLAB OF BRIDGE DECK, SUBWAY FLOORS AND CYCLISTS - F8
- 6) BROKE SIDE BARRIERS - F9
- 7) 2540 PLATES AND CHAMFERS TO BE USED ON CONCRETE JOINTS - F10

4.3 CONCRETE COVERS TO REINFORCEMENT

MINIMUM CONCRETE COVERS ARE GENERALLY SPECIFIED ON INDIVIDUAL DRAWINGS. WHERE NOT SPECIFIED, MINIMUM CONCRETE COVER SHALL BE AS FOLLOWS:

EXPOSED SITUATION	MIN COVER (mm)
CASE AGAINST AND EXPOSED TO WEATHER	≥ 40
CAST AGAINST SPC ON SITE CONCRETE	≥ 30
EXPOSED TO EARTH OR WEATHER	≥ 40
NOT EXPOSED TO EARTH OR WEATHER	≥ 35

4.4 PLACING AND SPACING OF REINFORCEMENT - GENERAL

- GRADE 300 REINFORCEMENT MAY BE MANUFACTURED BY THE MECHANOLLOY PROCESS UNLESS SPECIFICALLY APPROVED OTHERWISE BY THE DESIGNER.
- SPACING OF REINFORCEMENT, WHETHER BY LAPPING, WELDING OR MECHANICAL SPICE, SHALL ONLY BE CARRIED OUT AS SHOWN ON THE DRAWINGS OR AS SPECIFICALLY APPROVED BY THE DESIGNER, EXCEPT AS NOTED BELOW.
- WELDED WIRE MESH SHALL BE SPICED AS REQUIRED, BUT NOT THROUGH SLAB JOINTS. REINFORCEMENT IN SLABS ON GRADE AND IN TOPPING SHALL BE SPICED AS REQUIRED, BUT NOT THROUGH SLAB JOINTS.
- LAYERS OF BARS REINFORCEMENT SHALL BE SEPARATED WITH RIB BARS AT 150mm CENTRES. ALL JOINTS ON STRUTTING SHALL BE PLACED CLOSELY AROUND MAIN BARS AND FIRST STRUTTING SHALL BE PLACED NOT FURTHER THAN THE LESSEST OF HALF THE STRUTTING SPACING OR 600mm FROM SUPPORT FACE.

4.5 LAP SPICES IN REINFORCEMENT

- WELDED WIRE MESH LAP UP OF 300mm WIRE SHALL BE LAP SPICES WITH A MINIMUM 200mm OVERLAP BETWEEN OUTERMOST CROSS WIRES.

NOTE: MINIMUM LAP LENGTH SHALL BE AS FOLLOWS:

BAR GRADE	MIN LAP LENGTH (mm)
300MPa	1.35 x 300 = 405
400MPa	1.35 x 400 = 540
500MPa	1.35 x 500 = 675

4.6 LAP LENGTHS FOR DEFORMED BARS

IF NOT SHOWN ON THE DRAWINGS SHALL BE AS SHOWN IN THE FOLLOWING TABLES WHERE SPACING OF ADJACENT BARS ARE EQUAL TO OR GREATER THAN 2.5 x d.

NOTE: LAP LENGTH IS 1.35 x ALL VERTICAL BARS, COLUMNS, WALLS AND FOR HORIZONTAL BARS WITH LESS THAN 300mm OF FRESH CONCRETE CAST BEHIND BAR (

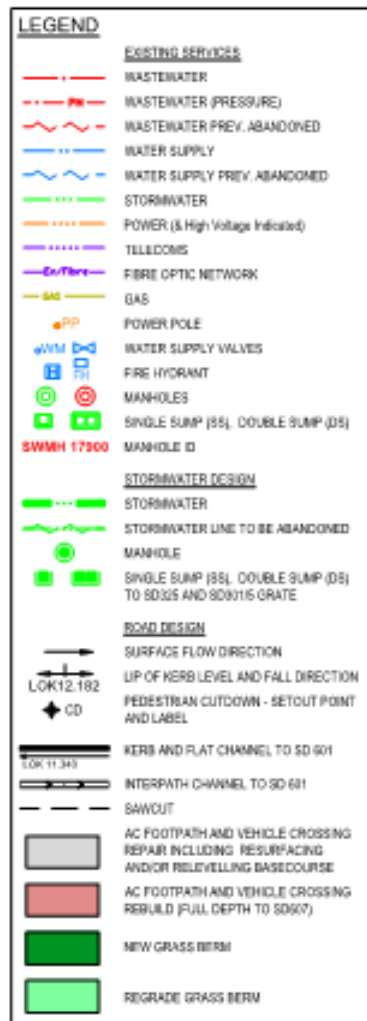
Appendix D – Drawing Legends

Below are samples of the Legends used within the bulk of the SCIRT drawings. These are typically placed as a reference file into the top right corner of the drawing with the insert point being 0,0. If changes are required to any of these legends, please contact the SCIRT CAD Manager.

SCIRT Roads Legends



SCIRT Roads Plan
Legend



SCIRT Roads Plan with
Surface Reconstruction
Legend



SCIRT Roads Plan &
Longitudinal Section
Legend

LEGEND	
SERVICES	
	WASTEWATER
	WASTEWATER (PRESSURE)
	WASTEWATER PREV. ABANDONED
	EXISTING MANHOLES
WWMH17900	MANHOLE ID (CCC)
WASTEWATER DESIGN	
	WASTEWATER
	WASTEWATER (PRESSURE)
	WASTEWATER LINE TO BE ABANDONED
	MANHOLE, VENTED MANHOLE
	PATCH REPAIR
	SECTION REPLACEMENT REPAIR
	MAIN LINING WITH REPAIR NUMBER
	LATERAL LINING
	CATCHMENT BOUNDARY

LEGEND	
SERVICES	
	WASTEWATER
	WASTEWATER (PRESSURE)
	WASTEWATER PREV. ABANDONED
	WATER SUPPLY
	WATER SUPPLY PREV. ABANDONED
	STORMWATER
	POWER (& High Voltage Indicated)
	TELECOMS
	FIBRE OPTIC NETWORK
	GAS
	POWER POLE
	WATER SUPPLY VALVES
	FIRE HYDRANT
	MANHOLES
	SINGLE SUMP (SS), DOUBLE SUMP (DS)
WWMH 17900	MANHOLE ID
WASTEWATER DESIGN	
	WASTEWATER
	WASTEWATER (PRESSURE)
	WASTEWATER LINE TO BE ABANDONED
	MANHOLE, VENTED MANHOLE
	PATCH REPAIR
	SECTION REPLACEMENT REPAIR
	MAIN LINING WITH REPAIR NUMBER
	LATERAL LINING
	DN150 LATERAL REPLACEMENT

LEGEND	
SERVICES	
	WASTEWATER
	WASTEWATER (PRESSURE)
	WASTEWATER PREV. ABANDONED
	WATER SUPPLY
	WATER SUPPLY PREV. ABANDONED
	STORMWATER
	POWER (& High Voltage Indicated)
	TELECOMS
	FIBRE OPTIC NETWORK
	GAS
	POWER POLE
	WATER SUPPLY VALVES
	FIRE HYDRANT
	MANHOLES
	SINGLE SUMP (SS), DOUBLE SUMP (DS)
WWMH 17900	MANHOLE ID
WASTEWATER DESIGN	
	WASTEWATER
	WASTEWATER (PRESSURE)
	WASTEWATER LINING
	WASTEWATER LINE TO BE ABANDONED
	MANHOLE, VENTED MANHOLE
LONG SECTION VIEW	
	WASTEWATER EXISTING
	WASTEWATER DESIGN
	EXISTING SURFACE
	DESIGN SURFACE

SCIRT Wastewater Patch & Repair Legend
1:1000

SCIRT Wastewater Patch & Repair Legend 1:500

SCIRT Wastewater Plan & Longitudinal Section Legend

LEGEND	SERVICES
	WASTEWATER
	WASTEWATER (PRESSURE)
	WASTEWATER PREV. ABANDONED
	WATER SUPPLY
	WATER SUPPLY PREV. ABANDONED
	STORMWATER
	POWER (& High Voltage Indicated)
	TELECOMS
	FIBRE OPTIC NETWORK
	GAS
	POWER POLE
	WATER SUPPLY VALVES
	FIRE HYDRANT
	MANHOLES
	SINGLE SUMP (SS), DOUBLE SUMP (DS)
WWMH 17900	MANHOLE ID
WASTEWATER DESIGN	
	WASTEWATER
	WASTEWATER (PRESSURE)
	PRESSURE SEWER CATCHMENT
	WASTEWATER LINE TO BE ABANDONED
	MANHOLE, VENTED MANHOLE
	REDUCING COUPLER
	ISOLATION VALVE
BK	BOUNDARY KIT NON-TRAFFICABLE
BKT	TRAFFICABLE
FP	FLUSHING POINT
ST	SIMPLEX TANK NON-TRAFFICABLE
STS	SIMPLEX TRAFFICABLE STORE CHAMBER
DT	DUPLEX TANK NON-TRAFFICABLE
DTS	DUPLEX TRAFFICABLE STORE CHAMBER

SCIRT Wastewater Pressure
Sewer Plan Legend

LEGEND	SERVICES
	WASTEWATER
	WASTEWATER (PRESSURE)
	WASTEWATER PREV. ABANDONED
	WATER SUPPLY
	WATER SUPPLY PREV. ABANDONED
	STORMWATER
	POWER (& High Voltage Indicated)
	TELECOMS
	FIBRE OPTIC NETWORK
	GAS
	POWER POLE
	WATER SUPPLY VALVES
	FIRE HYDRANT
	MANHOLES
	SINGLE SUMP (SS), DOUBLE SUMP (DS)
WWMH 17900	MANHOLE ID
WASTEWATER DESIGN	
	WASTEWATER
	WASTEWATER (PRESSURE)
	PRESSURE SEWER CATCHMENT
	WASTEWATER LINE TO BE ABANDONED
	MANHOLE, VENTED MANHOLE
	REDUCING COUPLER
	ISOLATION VALVE
BK	BOUNDARY KIT NON-TRAFFICABLE
BKT	TRAFFICABLE
FP	FLUSHING POINT
ST	SIMPLEX TANK NON-TRAFFICABLE
STS	SIMPLEX TRAFFICABLE STORE CHAMBER
DT	DUPLEX TANK NON-TRAFFICABLE
DTS	DUPLEX TRAFFICABLE STORE CHAMBER
LONG SECTION VIEW	
	WASTEWATER EXISTING
	WASTEWATER DESIGN
	EXISTING SURFACE
	DESIGN SURFACE

SCIRT Wastewater Pressure
Sewer Plan & Longitudinal
Legend

LEGEND	
EXISTING SERVICES	
	WASTEWATER
	WASTEWATER (PRESSURE)
	WATER SUPPLY
	WATER PREVIOUSLY ABANDONED
	STORMWATER
	POWER
	TELECOMS
	FIBRE OPTIC NETWORK
	GAS
	WATERMAIN VALVE
	WATER METER
	FIRE HYDRANT
	MANHOLES
WATERMAIN DESIGN	
	NEW FIRE HYDRANT (FH)
	NEW WATERMAIN
	WATERMAIN TO BE ABANDONED
	NEW TAPPING BAND
	NEW GATE VALVE
	NEW SLUICE VALVE
	NEW THRUST BLOCK
	INLINE THRUST BLOCK

SCIRT Water Legend