Reflect Case Studies - 2016

Let's take a look at some of the innovative adaptions of the Reflect software by some of our clients over the past 12 months - thanks to those that have contributed their work.....

UGC 2016

Session 11

Reflect Case Studies

- *State Growth (TAS) - LIST integration project - Incidents*
- *Dubbo (NSW) - Waste Bin Distribution - Electronic Forms*
- *Gladstone (QLD) - Footpath Implementation – Defect Model*
- *Eurobodalla Shire (NSW) - Contract Toilet Cleaning - Planned Works*
- *Port Stephens (NSW) – Building Inspection and Maintenance*
- *TMR South West Councils (QLD) – Culvert Inventory – Electronic Forms*
- *Swan Hill (VIC) - Request Management - Reflect Web*

Incident KML – State Growth (Tasmania)

Tasmania
Explore the possibilities

Background:

While **Roads and Maritime Services** (NSW) are the largest user of the **Reflect** Incident module in Australia, **State Growth** (TAS) are utilising the spatial data capture aspect in **Reflect** to its full potential. This incident data is then shared with Tasmania's Web based mapping system, known as the "Common Operating Platform" (COP). The intent of the integration was to allow other emergency agencies to see where the current road incidents are.

The COP can grab information from numerous sources including Emergency agencies such as Police, Fire Brigade, Ambulance as well as information from industries such as Mining, Farming and Aquaculture and then display the selection of information as a layer.

Incident KML – State Growth (Tasmania)

Tasmania
Explore the possibilities

The system has several layers of security and depending on users security profile they can access the current location of emergency vehicles or in the case of **Reflect** a layer showing the details of current incidents or historical incidents.

State Growth is also unique in that a response time is built into the Road/Location/Chainage so that when raising an incident in the field it will determine conformance with the Maintenance Service Level agreements.

The transfer of **Reflect** Incident data to COP is provided via Keyhole Markup Language more widely known as KML.

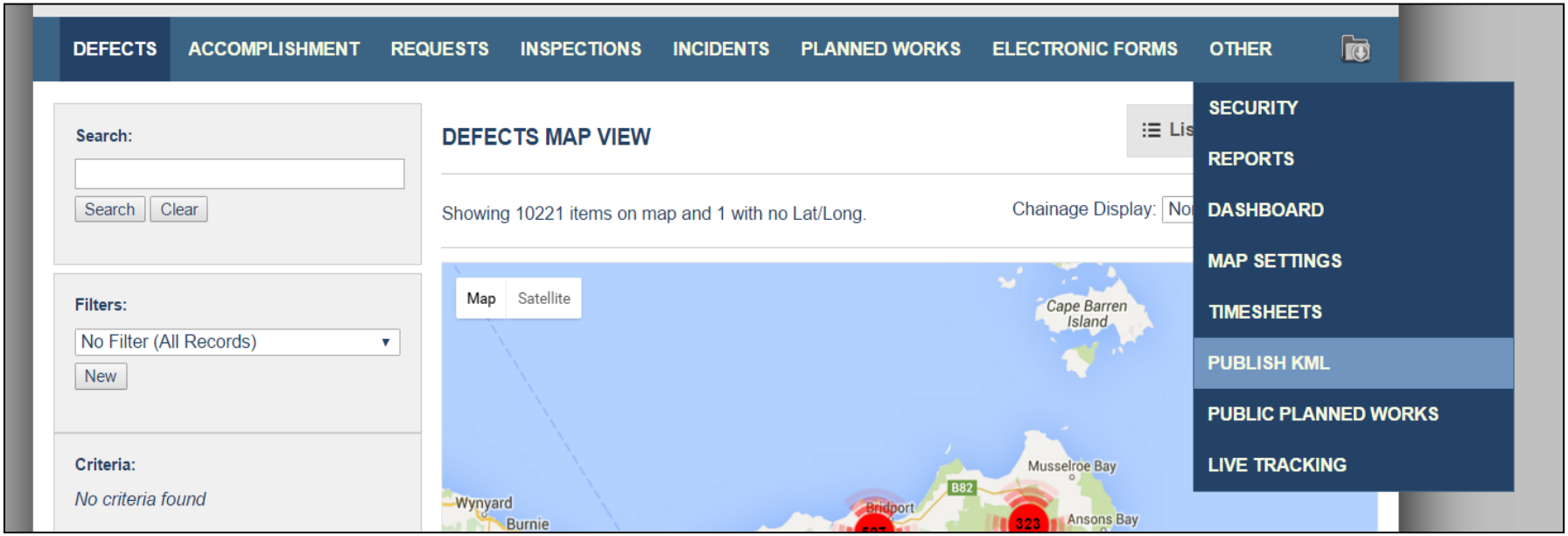
Incident KML – State Growth (Tasmania)

Tasmania
Explore the possibilities

Two KMLs were created for each region:

- All Current Incidents (incidents having no completion date)
- All Incidents

This process was completed by logging into **Reflect** Web and navigating to Other → Publish KML

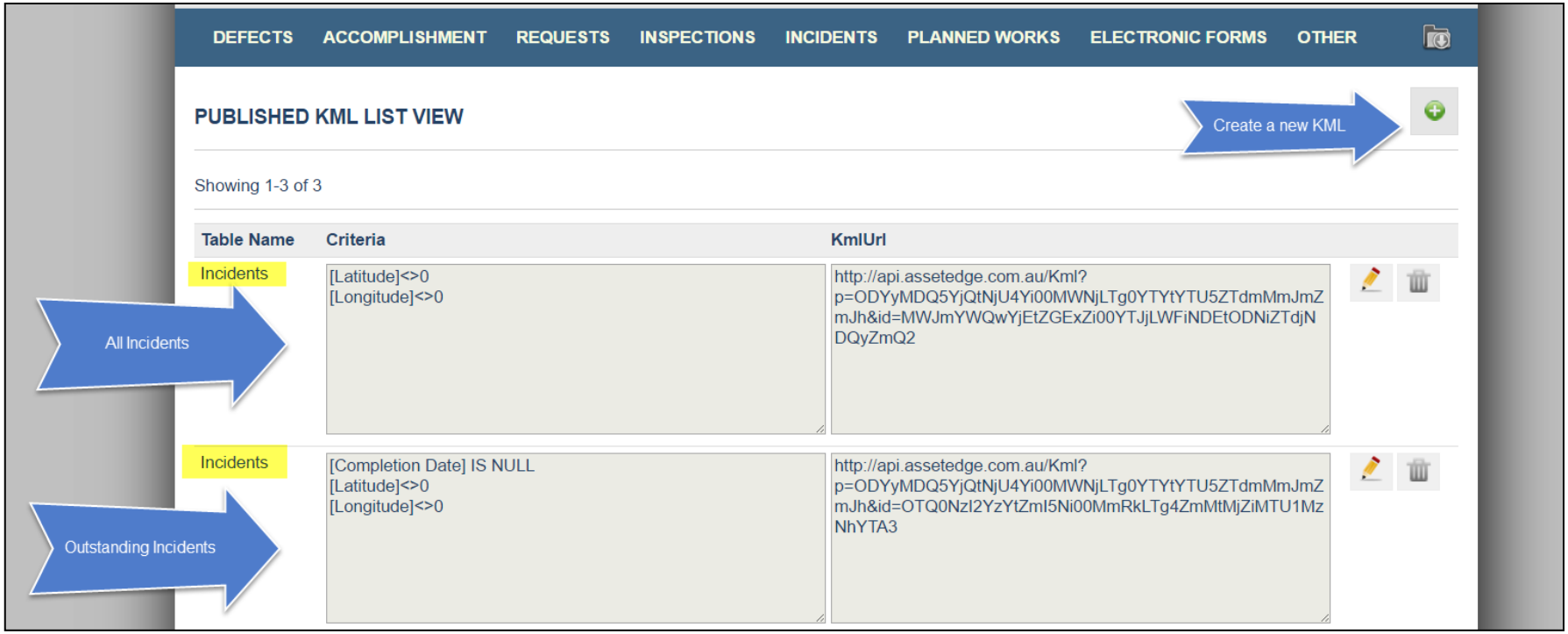


Incident KML – State Growth (Tasmania)

Tasmania
Explore the possibilities

A criteria for Latitude/Longitude was included to ensure that only those incident records with GPS coordinates would link to the COP.

The publishing of a KML generates a unique KMLUrl address to that criteria and database.



Incident KML – State Growth (Tasmania)

The COP displays a graphic of Tasmania and then the user can select layers from the various sources to overlay. These layers are automatically refreshed every few minutes so if the data from the source changes it automatically updates via the KML to the COP.

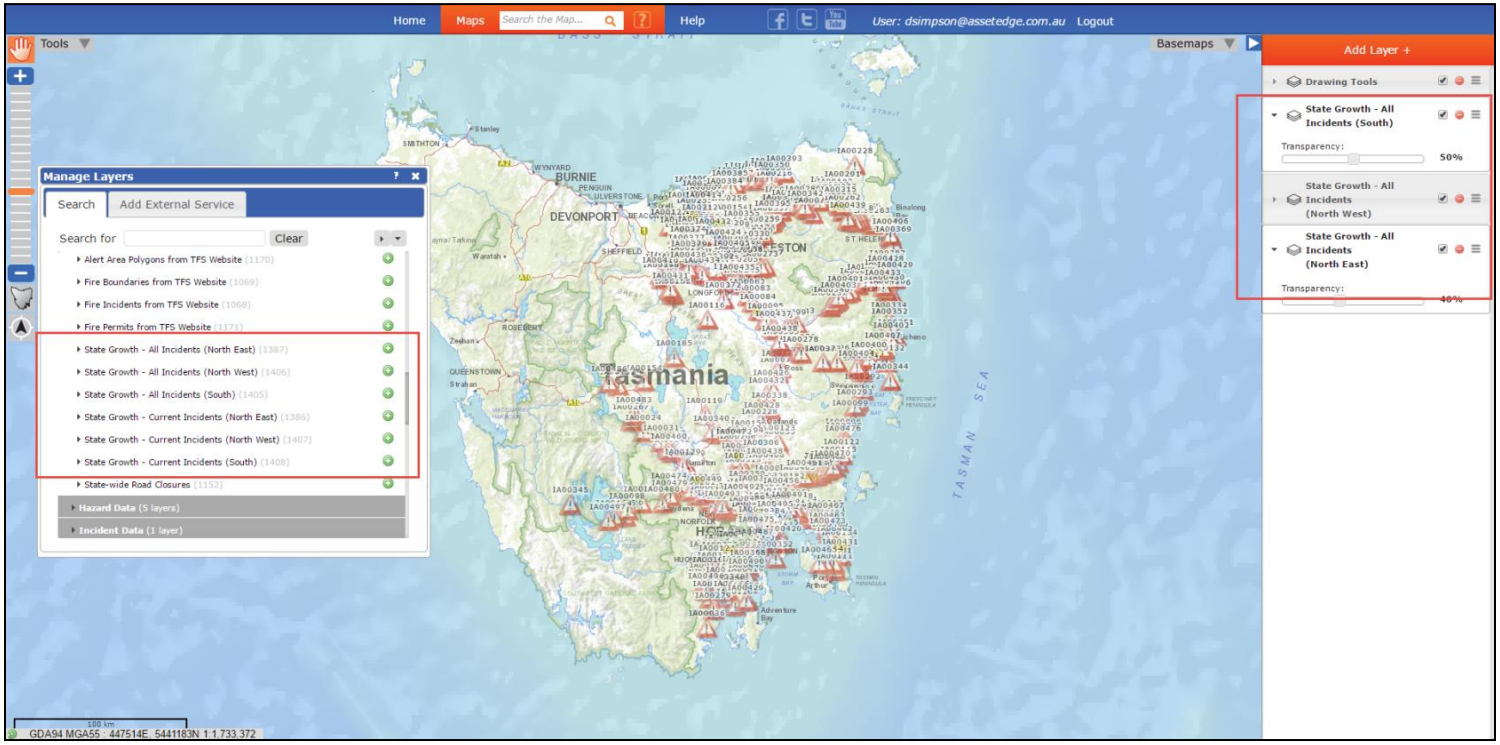


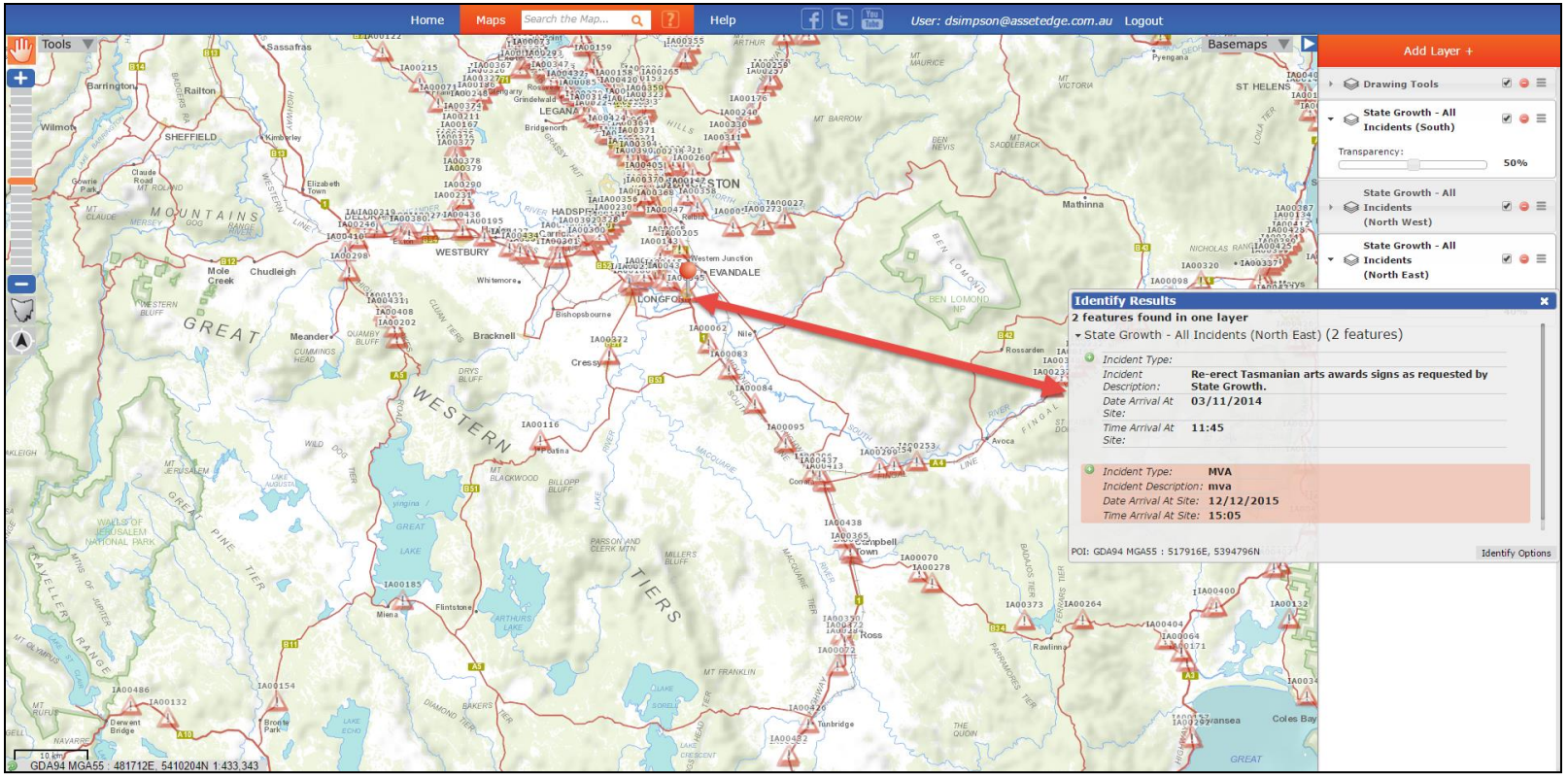
Image above shows all incidents that have occurred in Tasmania since 01/07/2014 in North East and South Regions - captured using **Reflect** software. At the time of publishing this case study there were no 'current incidents', so the image is showing 'all historical incidents'.

Incident KML – State Growth (Tasmania)

Tasmania
Explore the possibilities

Similar to using KML's in Google Earth the user can click on the mapped symbols to display all details of the 'Feature'.

Below - the selected incidents pop up window displays the Identity Results information relating to two callouts/incidents, at the same location, on two different dates.



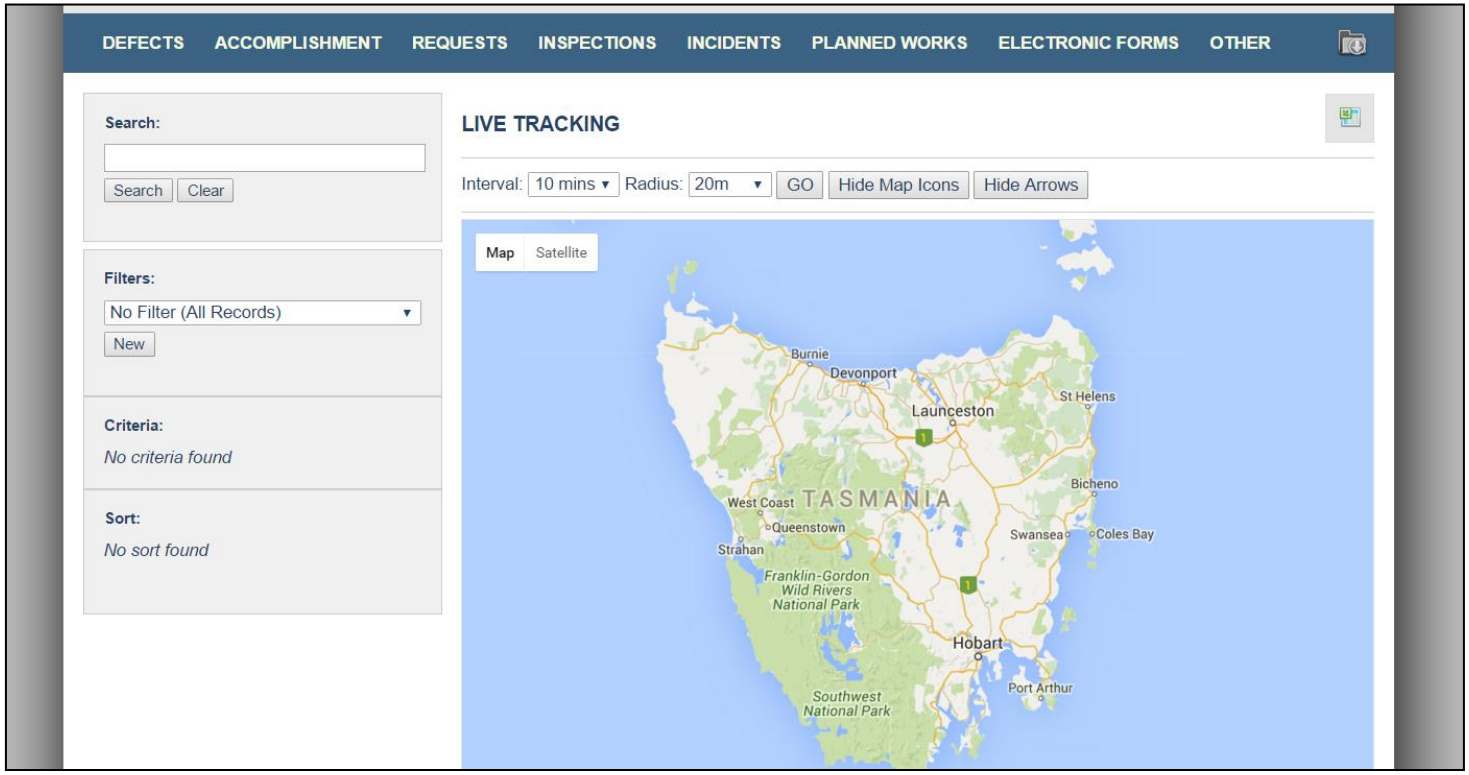
Incident KML – State Growth (Tasmania)

Tasmania
Explore the possibilities

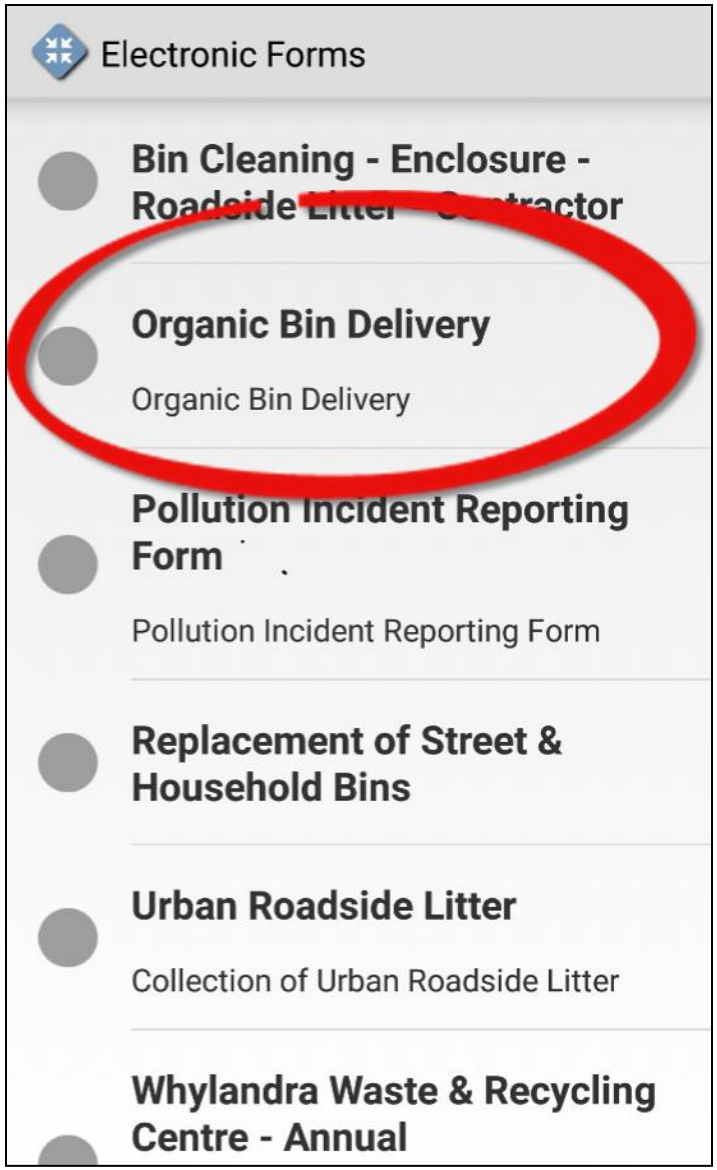
Future Enhancement

The next stage of the Incident project will be to utilise the Live Tracking functionality in **Reflect** to plot device GPS position via a KML into COP.

This will enable other emergency agencies to locate State Growth and Service Provider Response Teams during live incidents.



BINS - Dubbo City Council



Background:

Dubbo City Council is the most prolific user of Electronic Forms of all **Reflect** sites.

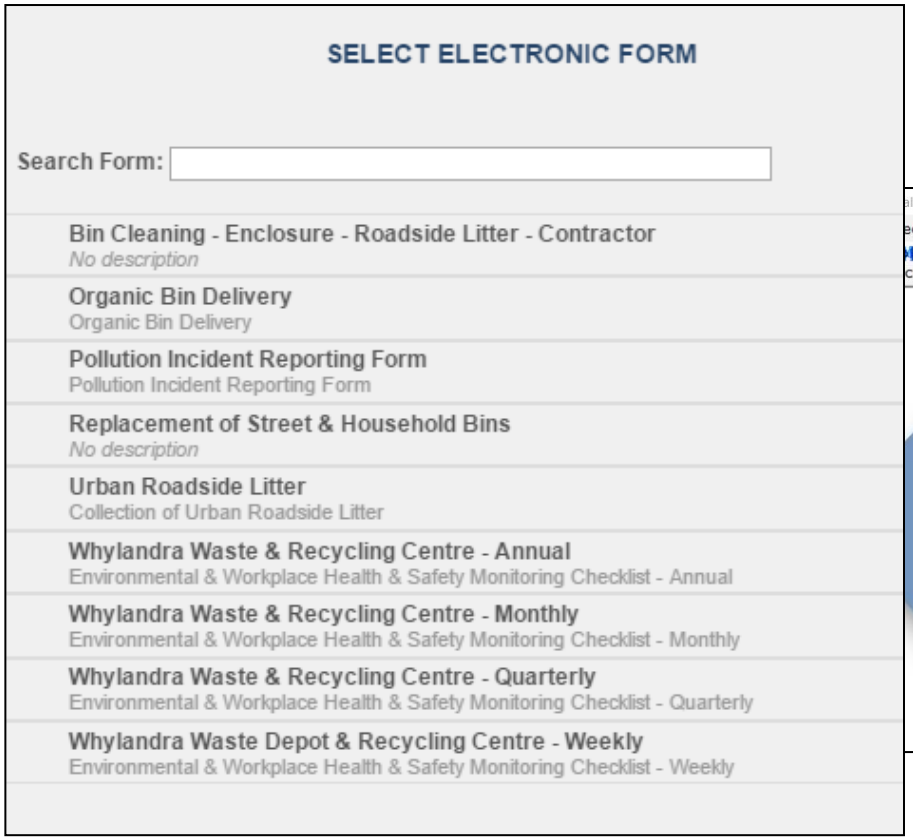
Creation and use of a simple form used when supplying Organic Bins to Dubbo residences allows the user to electronically record the delivery address details and also an image of the bin on an Android device.

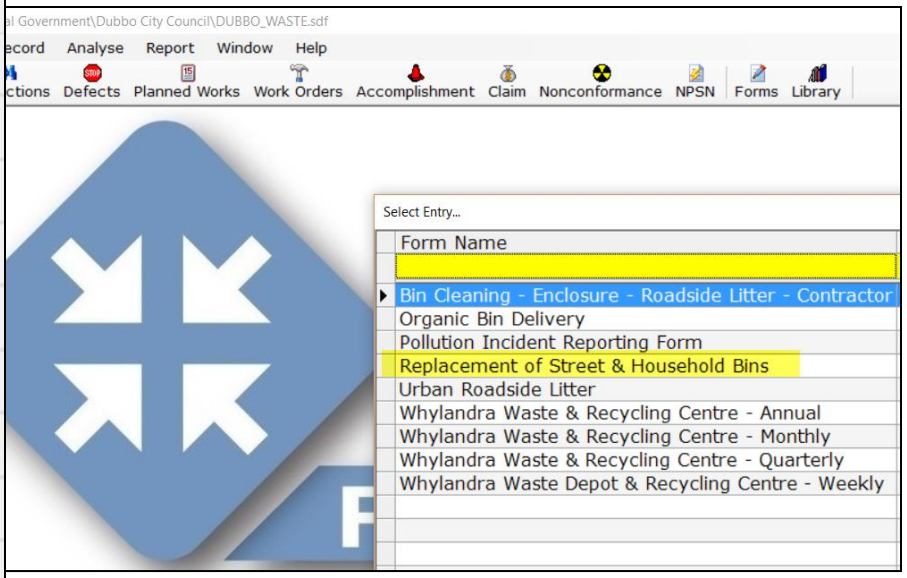
Reporting is very simple from either Web or Windows.

BINS - Dubbo City Council

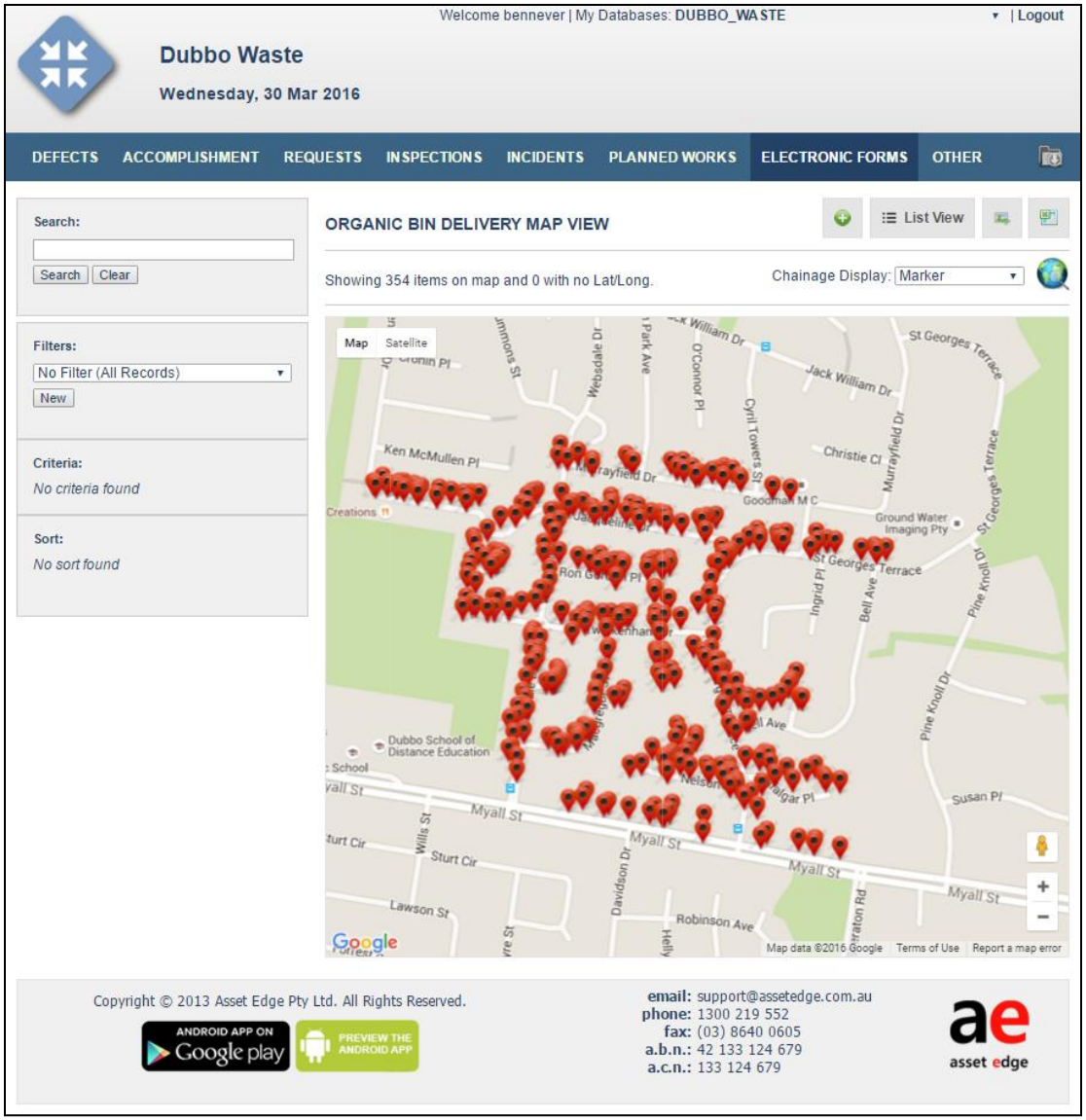
Dubbo City Council also uses various electronic forms for Waste Management.

These forms are created in **Reflects** Windows version and then made available to view and edit, with the user also having access to add new forms in both Android and Web platforms.



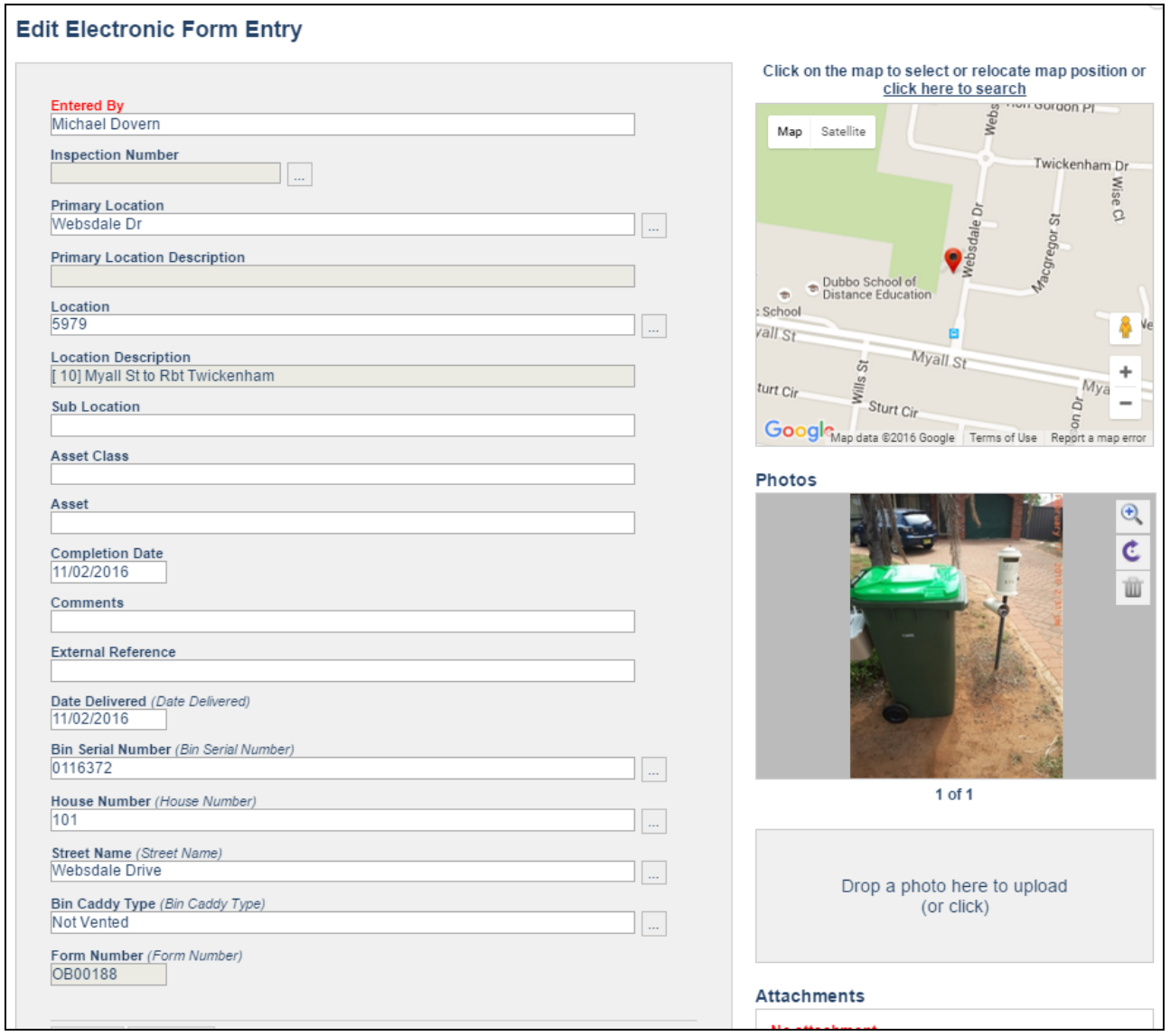


BINS - Dubbo City Council



Reflect Web - Google Street view showing Organic Bin placements at Dubbo City Council.

BINS - Dubbo City Council



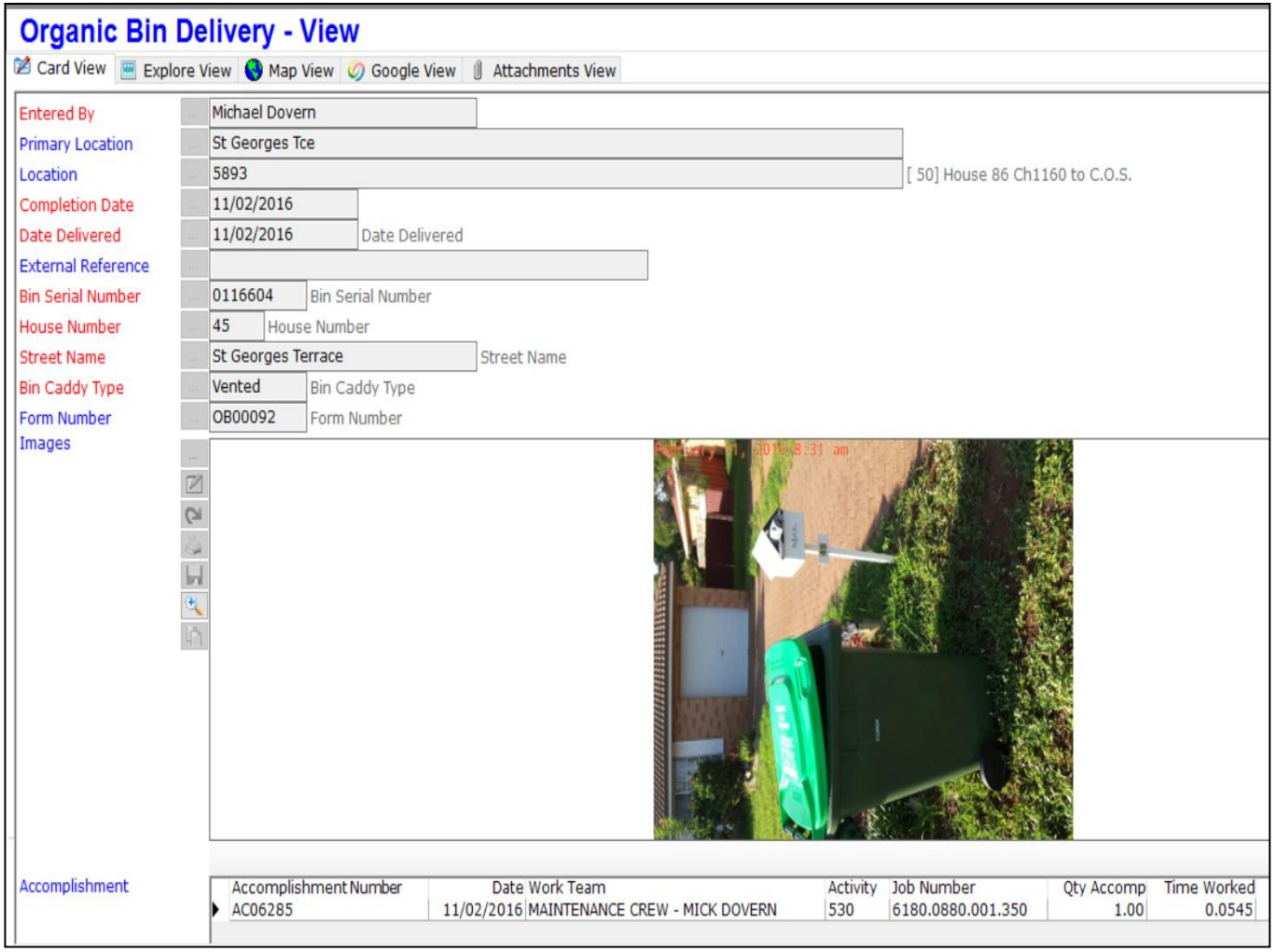
Reflect - Web view - List view - Edit Record view showing the details of the bin placement including

- Serial Number
- Address
- Date
- Image *(Stamped)*
- Latitude/Longitude

BINS - Dubbo City Council

Reflect - Windows Card view - Record view showing the details of the bin placement including

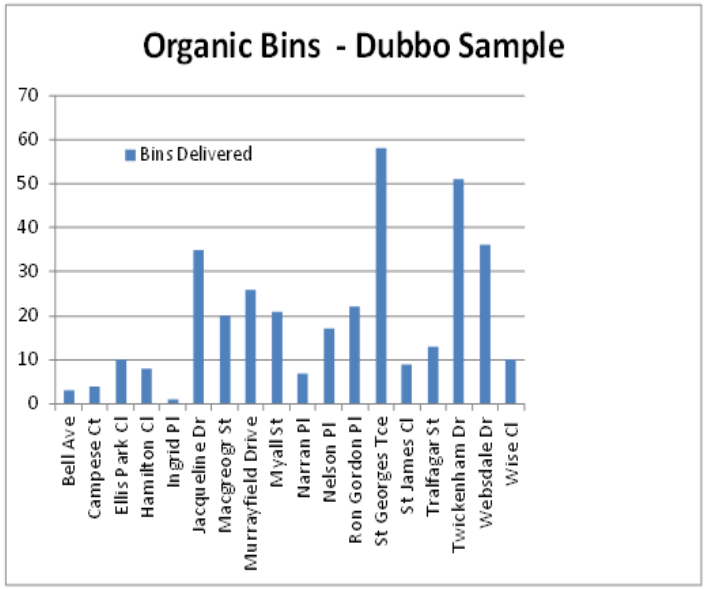
- Serial Number
- Address
- Date
- Image
- Latitude/ Longitude



BINS - Dubbo City Council

Organic Bin Delivery Report by Street - Sample

Primary Location	Bins Delivered
Bell Ave	3
Campese Ct	4
Ellis Park Cl	10
Hamilton Cl	8
Ingrid Pl	1
Jacqueline Dr	35
Macgreogr St	20
Murrayfield Drive	26
Myall St	21
Narran Pl	7
Nelson Pl	17
Ron Gordon Pl	22
St Georges Tce	58
St James Cl	9
Tralfagar St	13
Twickenham Dr	51
Websdale Dr	36
Wise Cl	10



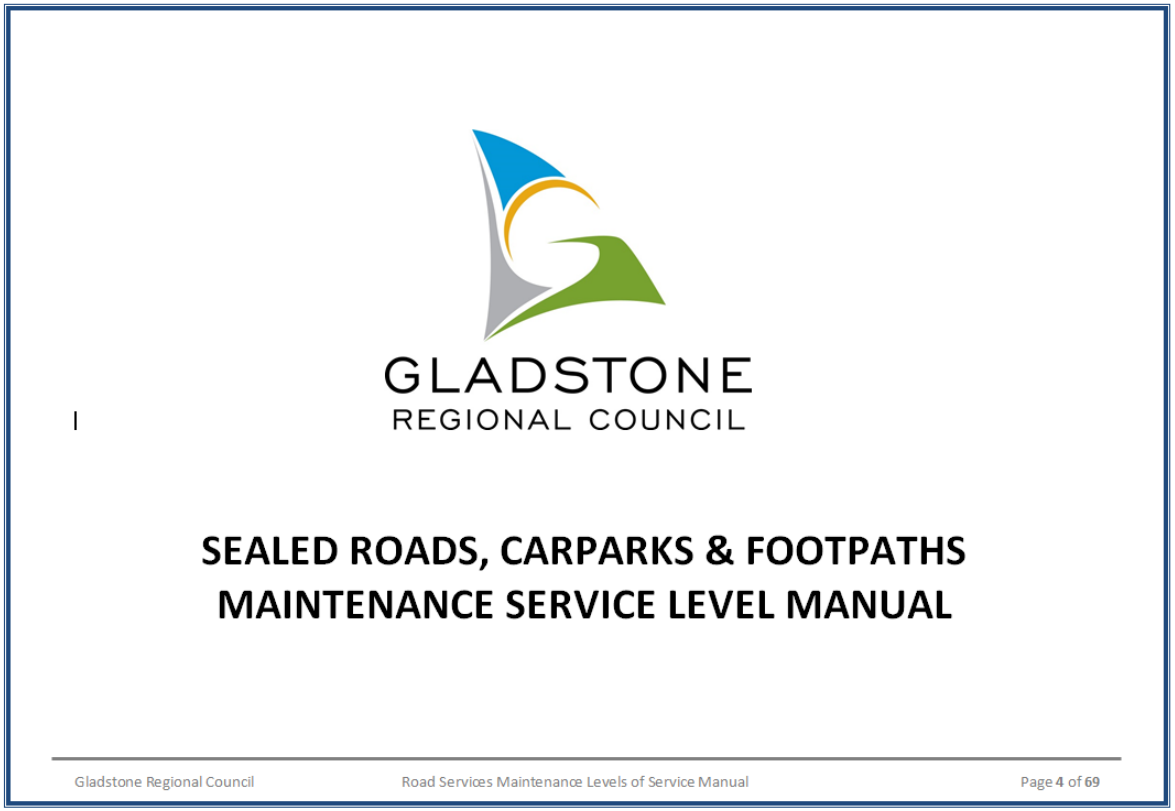
Reporting and historical reference is quick and easy once the initial form data has been collected.

Footpaths - Gladstone Regional Council

Background:

Gladstone Regional Council have excelled in using **Reflect** to manage various Asset Classes for inspection and maintenance.

Council operations are based around the Maintenance Service Level manual.



GLADSTONE
REGIONAL COUNCIL

SEALED ROADS, CARPARKS & FOOTPATHS MAINTENANCE SERVICE LEVEL MANUAL

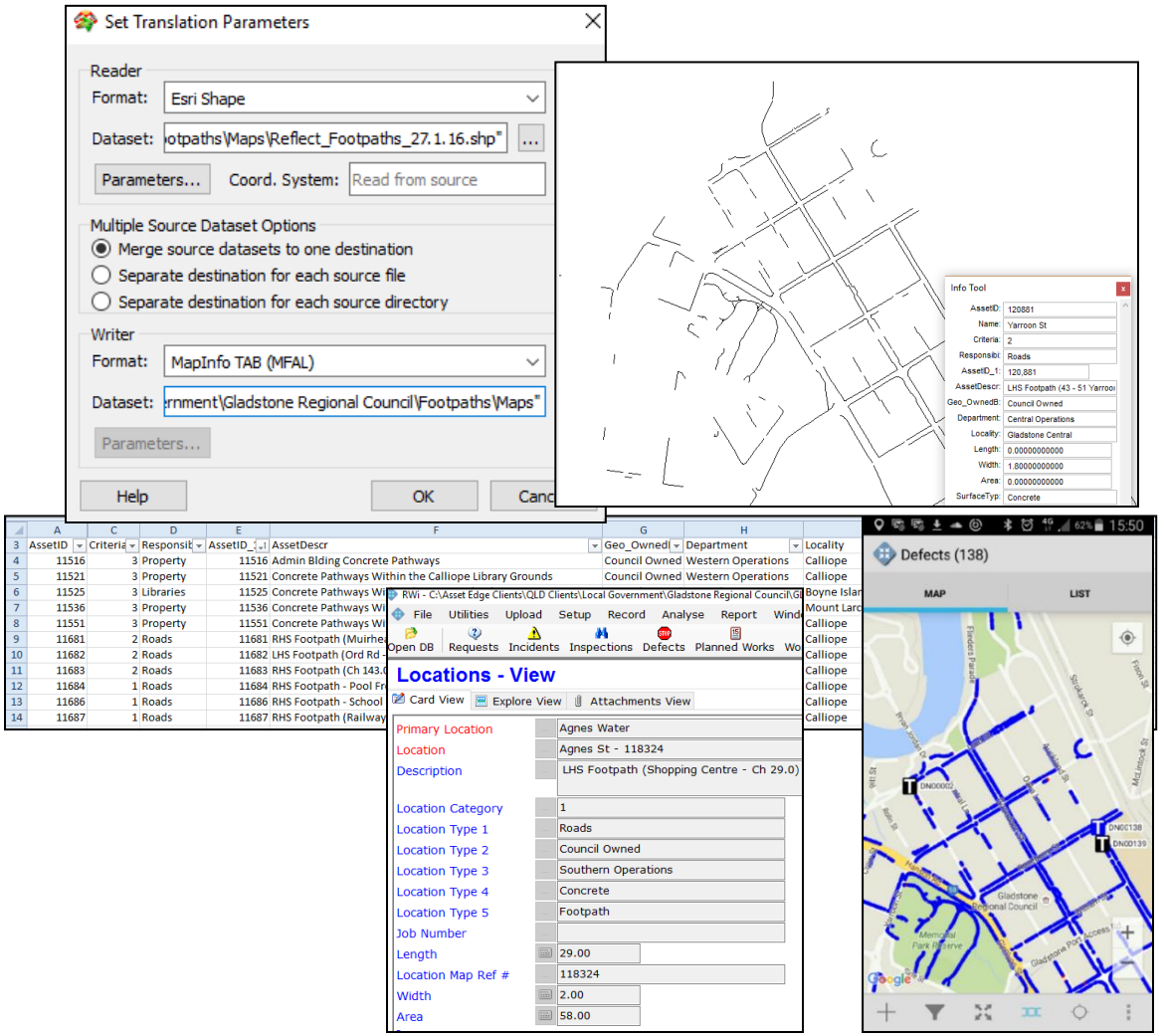
Gladstone Regional Council Road Services Maintenance Levels of Service Manual Page 4 of 69

Reflect was setup to comply to the recording and reporting requirements of the Council's approved document.

Footpaths - Gladstone Regional Council

As with most new **Reflect** Asset Class models the locations were generated from the Council's spatial information database.

1. Convert Esri Shp to Map Info
2. Export the map data and develop location model
3. Generate chainage points on spatial line at 2 metre intervals
4. Import Location and Chainage data into the Reflect Footpaths database
5. Assign the Mapinfo Layers in Reflect using GPS settings – Map Layers
6. Load database and chainages onto the Android mobile devices

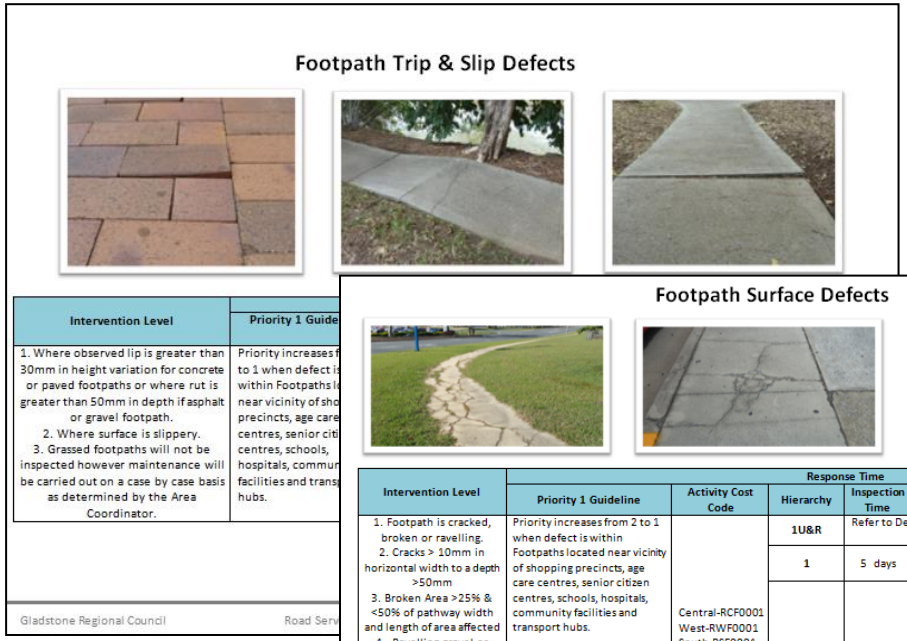


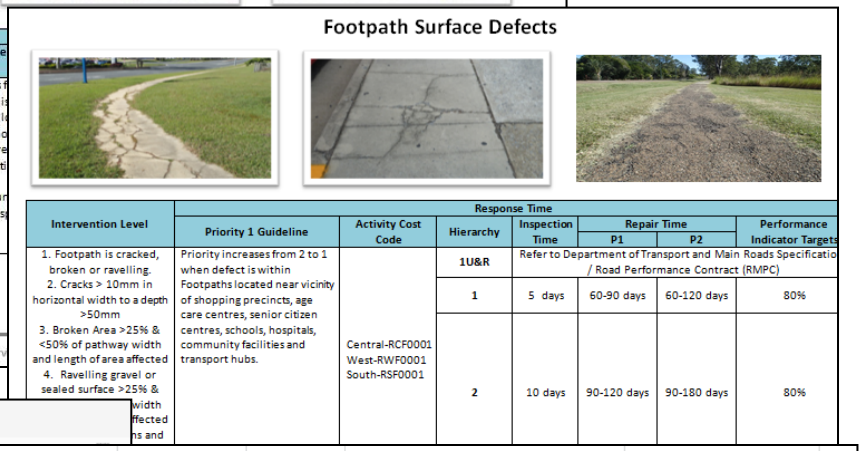
Footpaths - Gladstone Regional Council

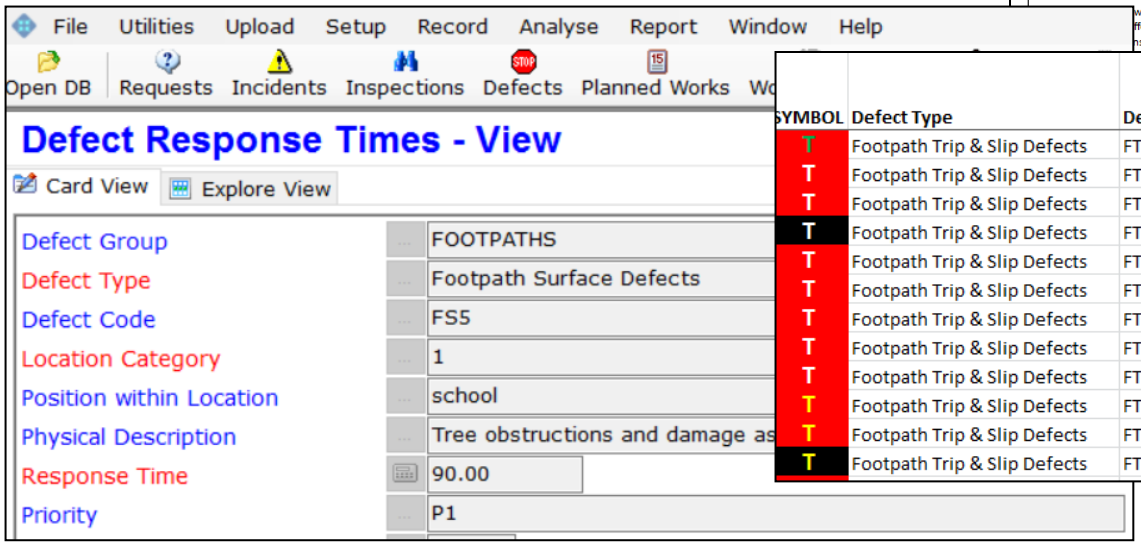
The Defect Model was interpreted from the maintenance service level document.

Initial defect model build was completed in MS Excel and then imported into **Reflect**.

The **Reflect** Symbol Utility was used to developed the Defect map symbols.







SYMBOL	Defect Type	Defect Code	Location Category	Physical Description	Position within Location	Resp
T	Footpath Trip & Slip Defects	FT3	3	Grassed footpaths will not be ins	transport hub	
T	Footpath Trip & Slip Defects	FT1	3	Lip > 30mm in height variation fo	age care centre	
T	Footpath Trip & Slip Defects	FT1	3	Lip > 30mm in height variation fo	community facilities	
T	Footpath Trip & Slip Defects	FT1	3	Lip > 30mm in height variation fo	footpath	
T	Footpath Trip & Slip Defects	FT1	3	Lip > 30mm in height variation fo	hospital	
T	Footpath Trip & Slip Defects	FT1	3	Lip > 30mm in height variation fo	school	
T	Footpath Trip & Slip Defects	FT1	3	Lip > 30mm in height variation fo	senior citizen centre	
T	Footpath Trip & Slip Defects	FT1	3	Lip > 30mm in height variation fo	shopping precinct	
T	Footpath Trip & Slip Defects	FT1	3	Lip > 30mm in height variation fo	transport hub	
T	Footpath Trip & Slip Defects	FT2	3	Where surface is slippery	age care centre	
T	Footpath Trip & Slip Defects	FT2	3	Where surface is slippery	community facilities	
T	Footpath Trip & Slip Defects	FT2	3	Where surface is slippery	footpath	

Footpaths - Gladstone Regional Council

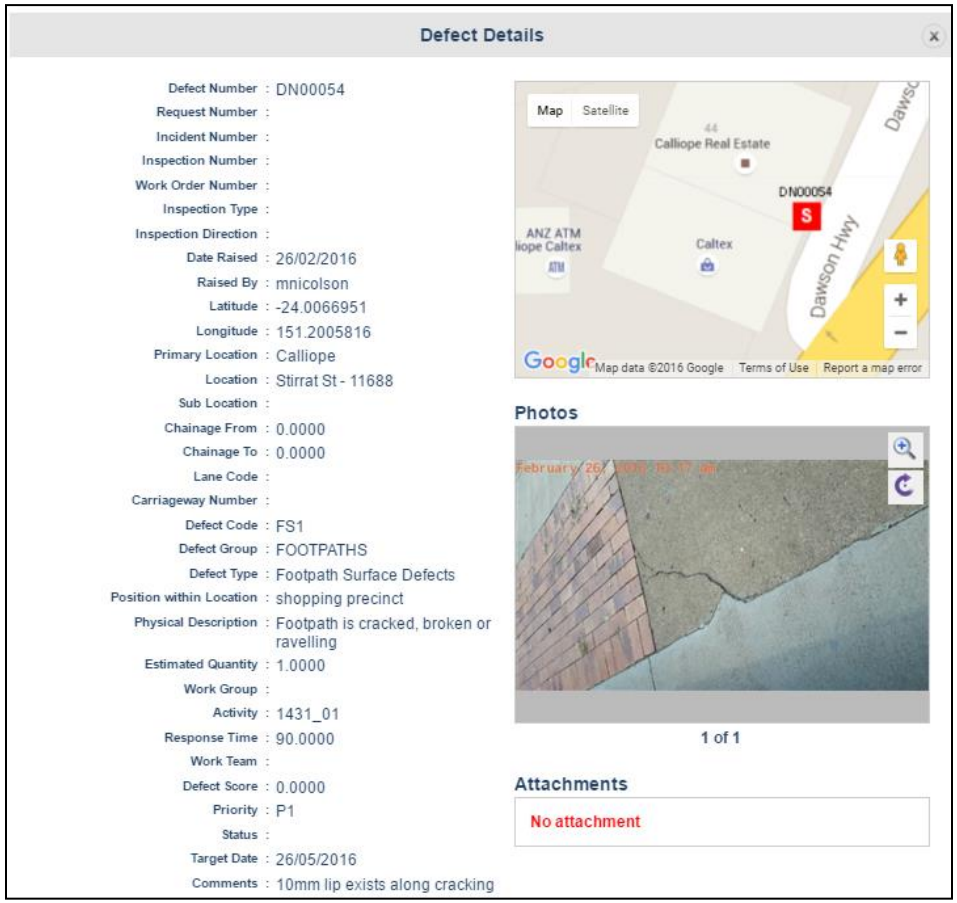
The Activity model also came from existing tasks as listed in the Accounting System.

Symbols were developed as an overlay in mapping to assist Council with the analysis of works performed.

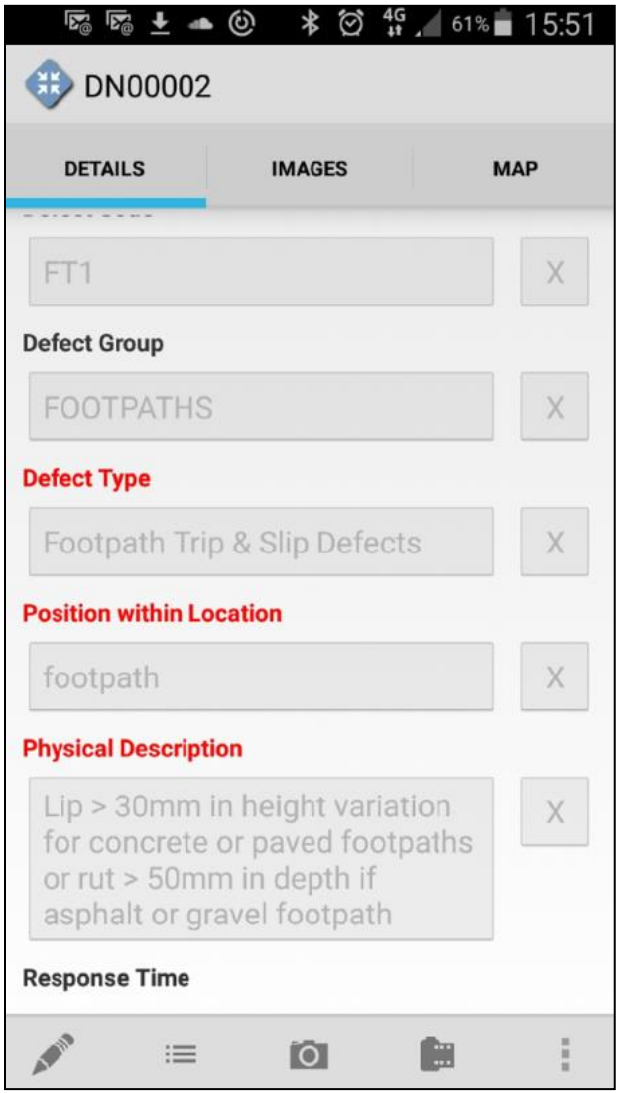
	Work Group	Activity	Activity Name
P	ALL FOOTPATHS	0282	Pathways and cycleway - Construction
I	ALL FOOTPATHS	1401	Inspections - General Requirements - Parks and Recreation Areas
M	ALL FOOTPATHS	1412	Grass mowing in road reserves
V	ALL FOOTPATHS	1413	Tree and vegetation control in road reserves
W	ALL FOOTPATHS	1414	Weed control in road reserves
P	ALL FOOTPATHS	1415	Spray Weeds in Footpath pavement
L	ALL FOOTPATHS	1431_01	RELAY - Footpath paving
R	ALL FOOTPATHS	1431_02	REPLACE - Footpath paving
C	ALL FOOTPATHS	1431_03	CLEAN - Footpath paving
G	ALL FOOTPATHS	1432	Gravel footpath repairs
G	ALL FOOTPATHS	1433_01	GRIND - Footpath kerb ramp
R	ALL FOOTPATHS	1433_02	REPLACE - Footpath kerb ramp
P	ALL FOOTPATHS	1433_03	PATCH - Footpath kerb ramp
C	ALL FOOTPATHS	1433_04	CLEAN - Footpath kerb ramp
E	ALL FOOTPATHS	1433_05	Fill Edge Drop off
S	ALL FOOTPATHS	1434	Pavement sweeping
B	ALL FOOTPATHS	1441	Bituminous surface repairs
F	ALL FOOTPATHS	1672	Road reserve fences and handrails
Z	ALL FOOTPATHS	1673	Street seats and bus shelters
R	ALL FOOTPATHS	1675	Road reserve guard fence
X	ALL FOOTPATHS	1676	Road reserve signs
X	ALL FOOTPATHS	1677	Road reserve guide signs
L	ALL FOOTPATHS	1691	Road reserve litter collection
G	ALL FOOTPATHS	1692	Removal of graffiti visible from roads
Q	ALL FOOTPATHS	1693	Removal of waste from storm water quality devices
O	ALL FOOTPATHS	OTHER	Other Identified Work
M	ALL FOOTPATHS	SAFE	Make Safe - Awaiting Repair
T	ALL FOOTPATHS	TACTILE	TACTILE REPLACEMENT REPAIR

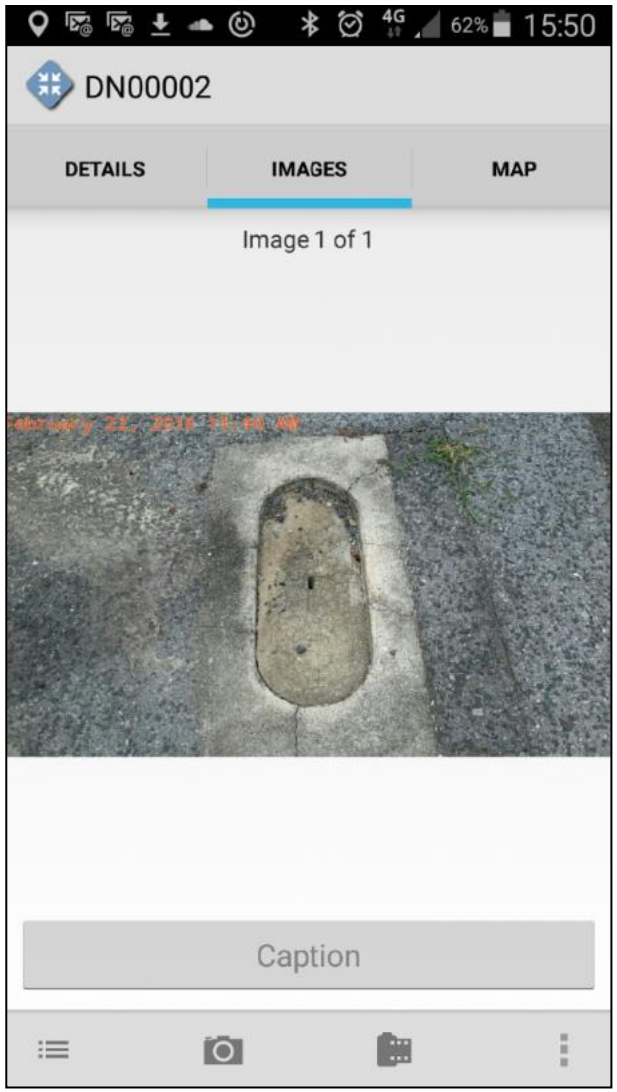
Footpaths - Gladstone Regional Council

Chainage points have two purposes - firstly to show footpath sections and secondly to auto-populate the sections Asset ID's in both the Defects and Accomplishments data input screens.



Footpaths - Gladstone Regional Council





All inspections are conducted on foot using handheld tablets.

Inspectors are encouraged to record as much information as they can, including images for each defect.

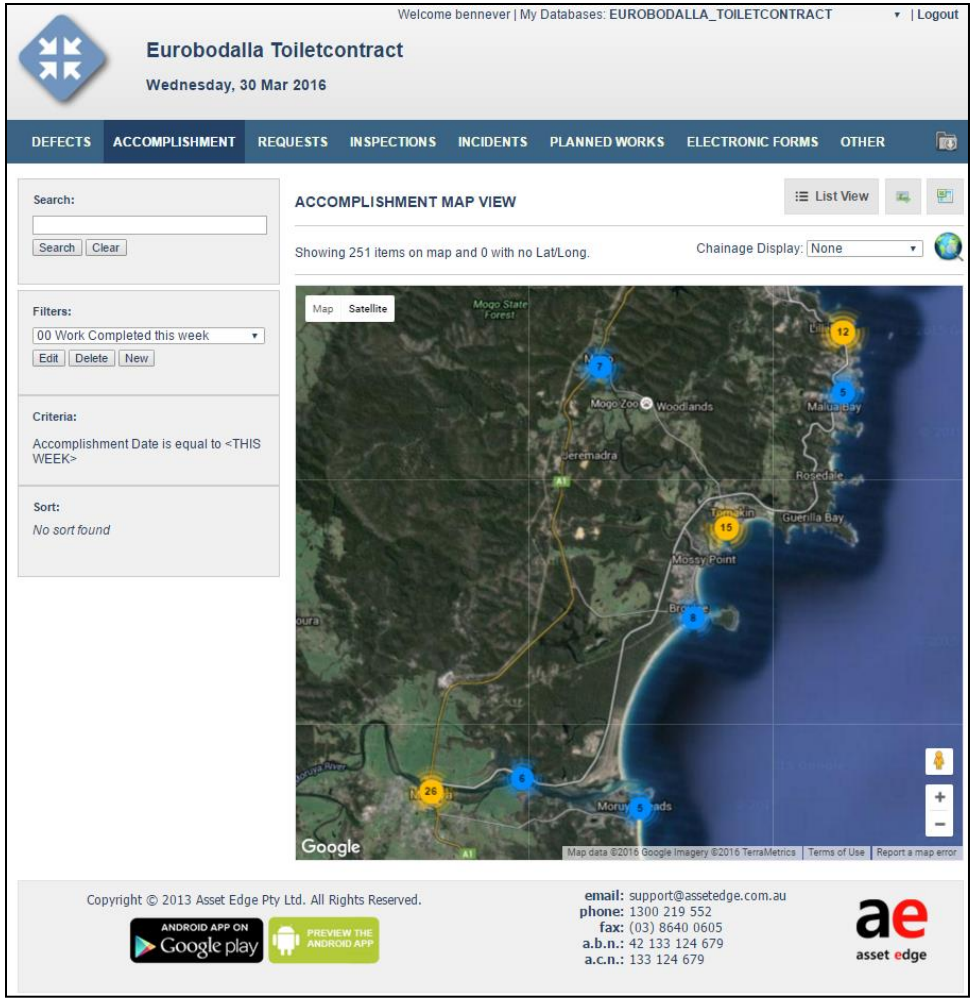
This information is then used to define the condition of the asset and the probable risk to the general public.

Contract Toilet Cleaning Eurobodalla

Background:

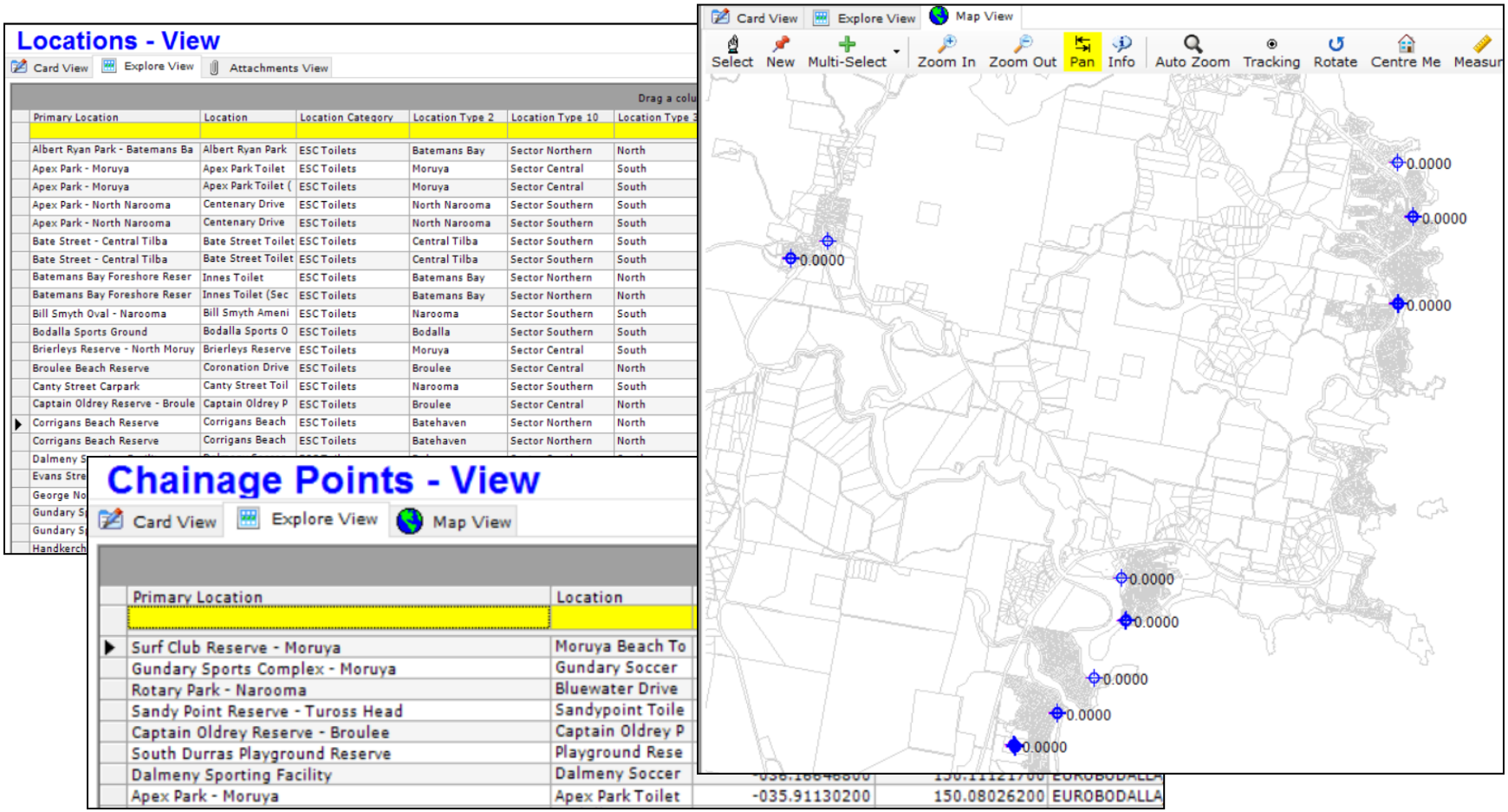
The Eurobodalla Shire Council situated on the NSW South Coast contracts out the majority of its amenity maintenance for the 68 toilet facilities within the Council.

Cleaning is completed for most facilities twice a day. An electronic program of planned work is issued to the contractors to record different activities, assisting in the overall maintenance of the assets.



Contract Toilet Cleaning Eurobodalla

To provide correct mapping of the asset, each toilet facility was set up in **Reflect** using GPS coordinates. These coordinates are also used in Google maps for Android and Web.



Contract Toilet Cleaning Eurobodalla

Defects found are recorded on the mobile device. A drop down list provides the user with preset defect types.

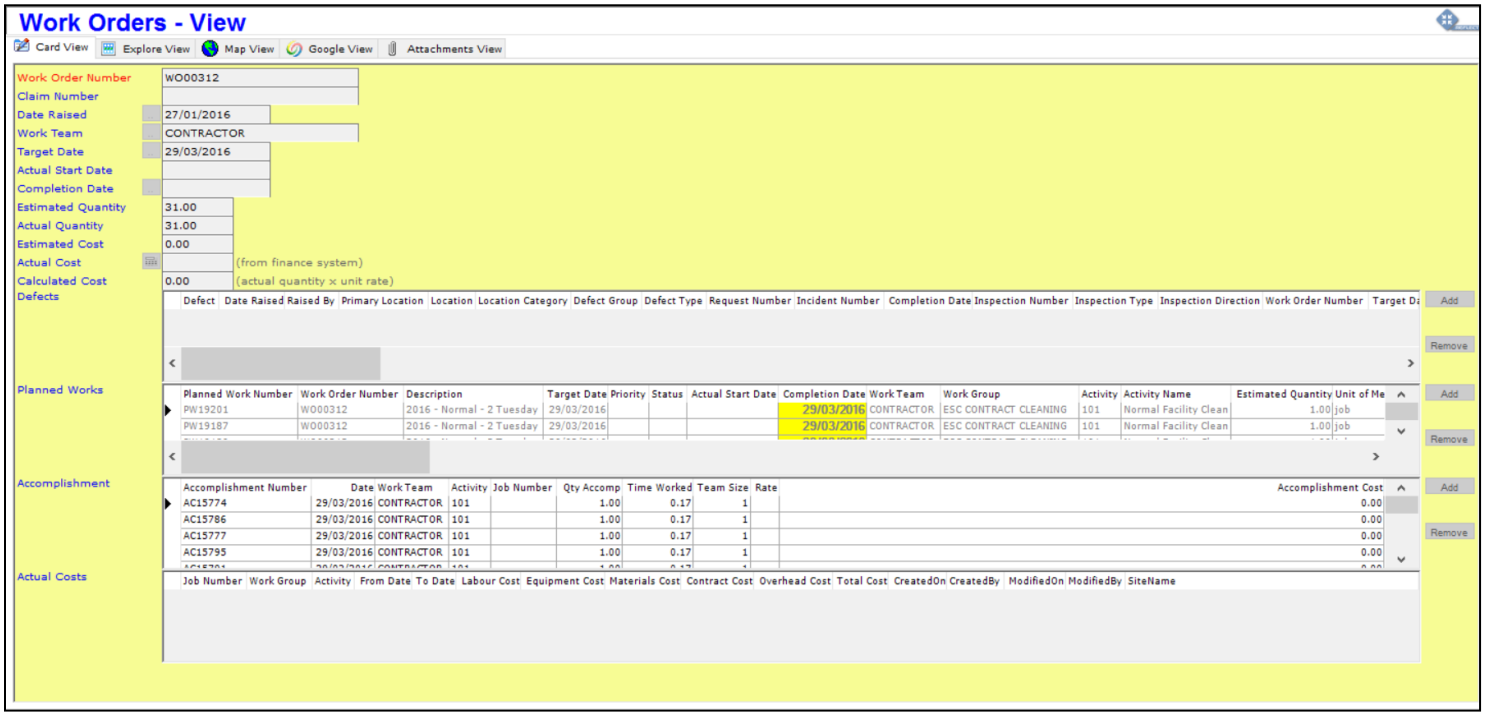
Standard activities to rectify these defects are used when recording accomplishments.

SYMBOL	Defect Type	Defect Cod	Defect Group	Location Category
L	C1 - Cistern leaking	C1	Cistern	ESC Toilets
C	C2 - Cistern not working	C2	Cistern	ESC Toilets
C	C3 - Cistern damaged	C3	Cistern	ESC Toilets
S	N1 - Non-scheduled Clean	N1	Clean Required	ESC Toilets
L	D1 - Door lock damage	D1	Door	ESC Toilets
D	D2 - Door damage	D2	Door	ESC Toilets
G	G1 - Graffiti less than 1m2	G1		
G	G2 - Graffiti greater than 1m2	G2		
H	H1 - Hand basin damaged	H1		
H	H2 - Hand basin tap leaking	H2		
L	L1 - Lights not working	L1		
L	L2 - Lights damaged	L2		
M	M1 - Miscellaneous	M1		
P	P1 - Paper holder not working	P1		
P	P2 - Paper holder damaged	P2		
P	P3 - Out of Paper	P3		
L	S1 - Service tap leaking	S1		
S	S2 - Service tap damaged	S2		
B	T1 - Toilet bowl blocked	T1		
D	T2 - Toilet bowl damaged	T2		
L	T3 - Toilet bowl leaking	T3		
P	U1 - Urinal blocked	U1	Urinal	ESC Toilets

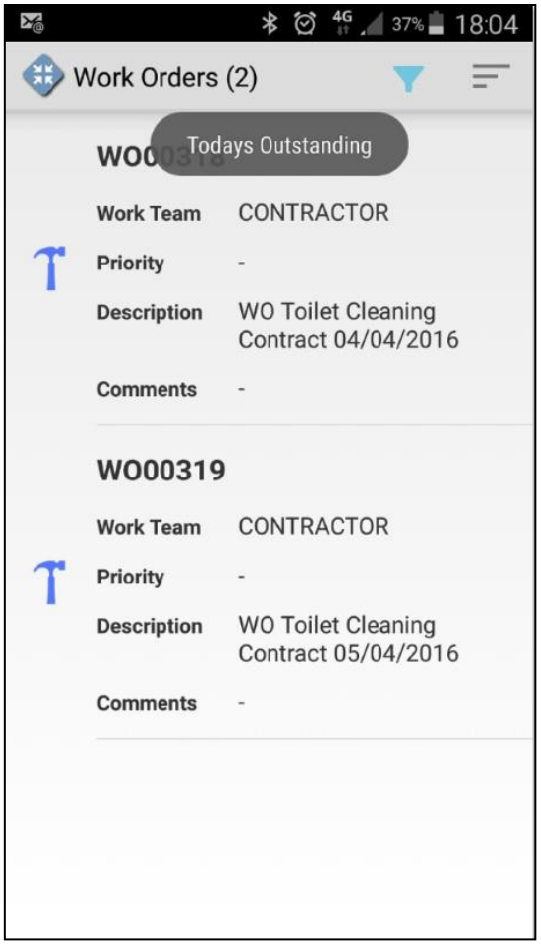
Symbol	Work Group	Activity	Activity Name
I	ESC CONTRACT CLEANING	101	Normal Facility Clean
W	ESC CONTRACT CLEANING	102	Presssure Wash Facility Clean
S	ESC CONTRACT CLEANING	103	Non-scheduled Clean
I	ESC STAFF	1100	Inspections
D	ESC STAFF	1200	Door and Access Mtce
B	ESC STAFF	1300	Toilet Bowl Mtce
P	ESC STAFF	1400	Paper Holders Mtce
G	ESC STAFF	1500	Graffiti Removal
L	ESC STAFF	1600	Lighting Mtce
T	ESC STAFF	1700	Taps and Basin Matce
C	ESC STAFF	1800	Cistern and Urinal Mtce
M	ESC STAFF	1900	Miscellaneous Mtce

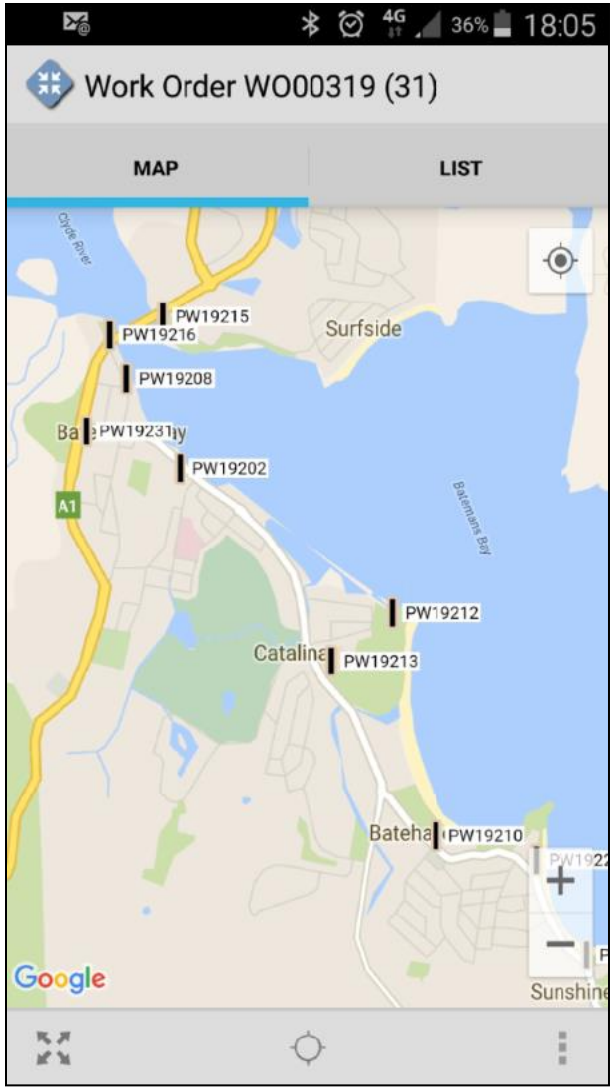
Contract Toilet Cleaning Eurobodalla

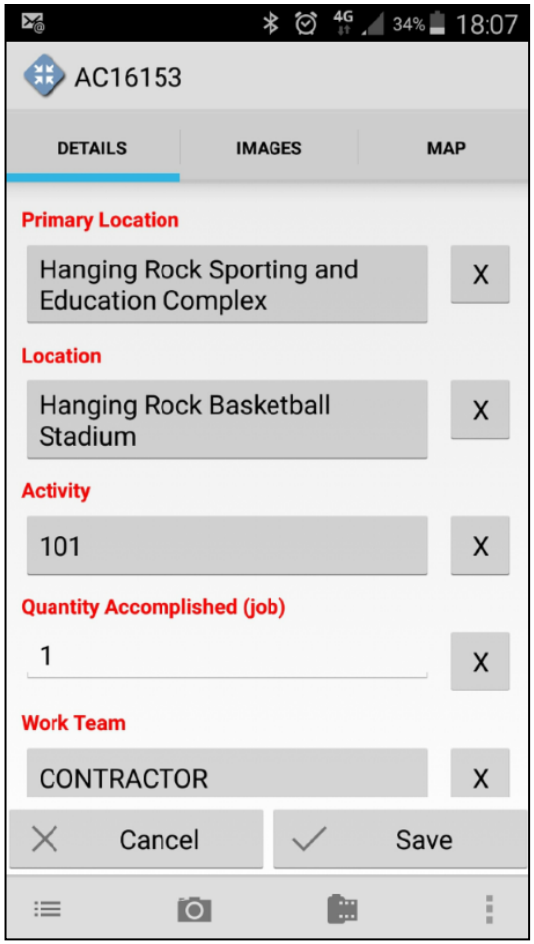
All scheduled cleaning and pressure washes are created as planned works using the Planned Work Scheduler in **Reflect.** A Reflect Work Order is then created for each day – generally a fortnight in advance. Once the database is synched, the Work Orders become available to the Cleaning Contractors carrying out the works.



Contract Toilet Cleaning Eurobodalla

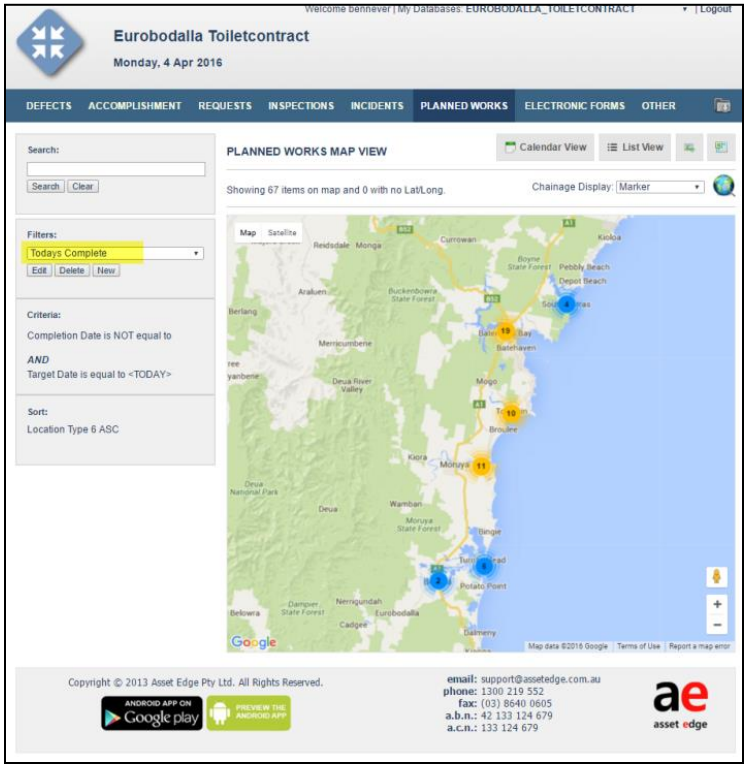


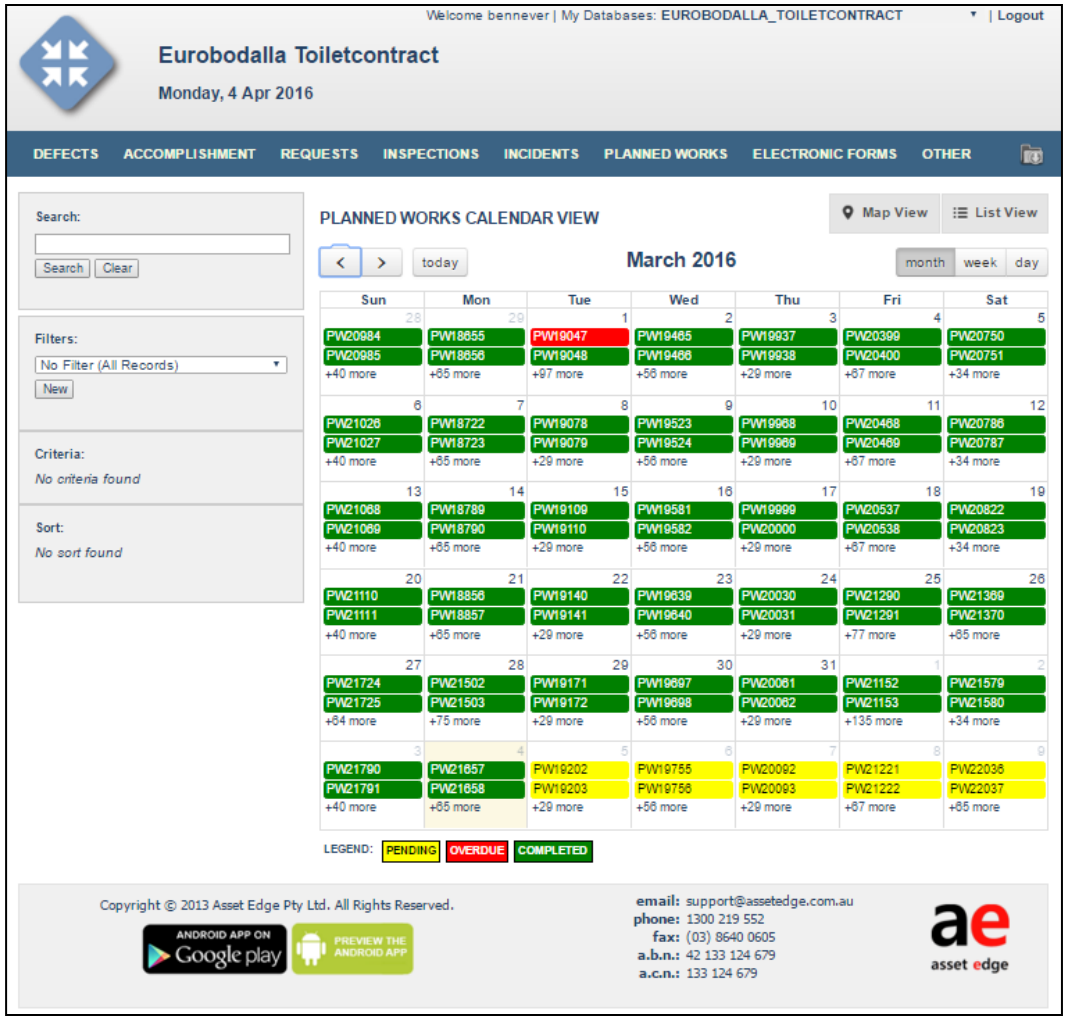




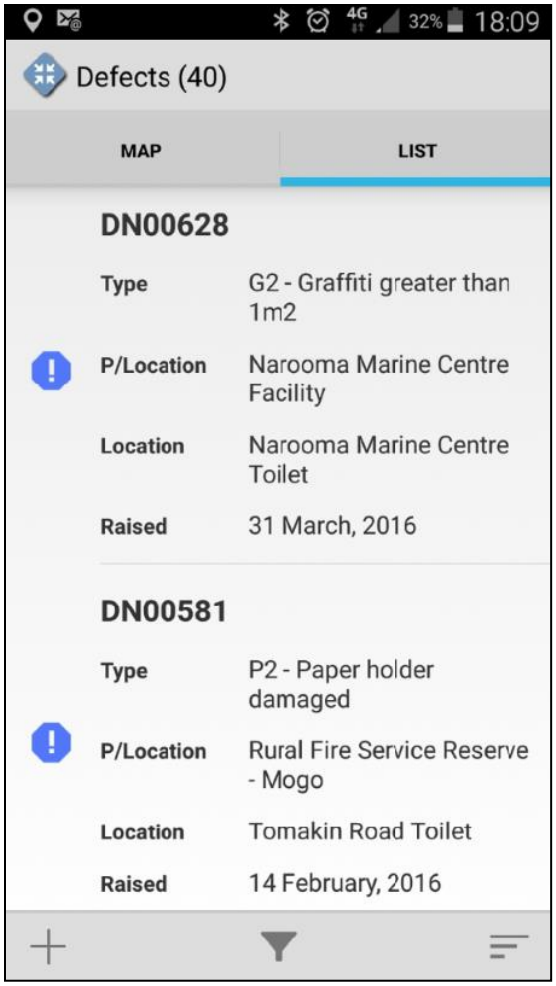
Contract Toilet Cleaning Eurobodalla

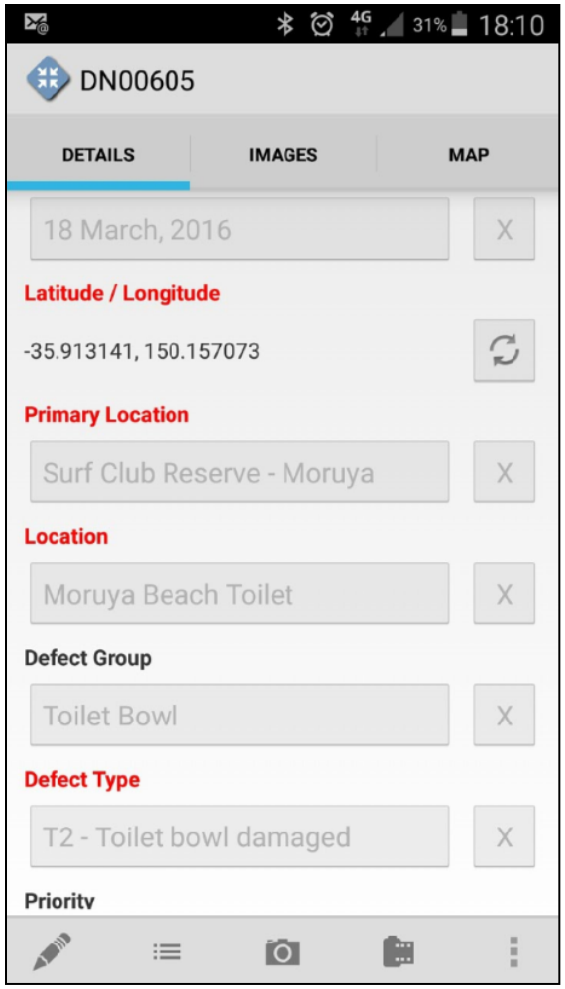
Cleaning activities can be monitored using the Planned Work Calendar View or via filtered Map Views.

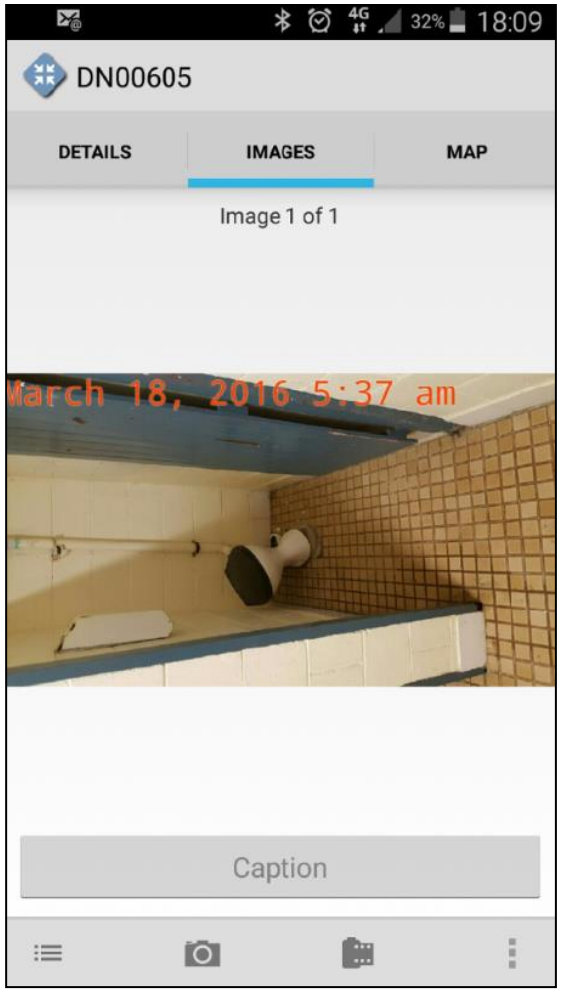




Contract Toilet Cleaning Eurobodalla



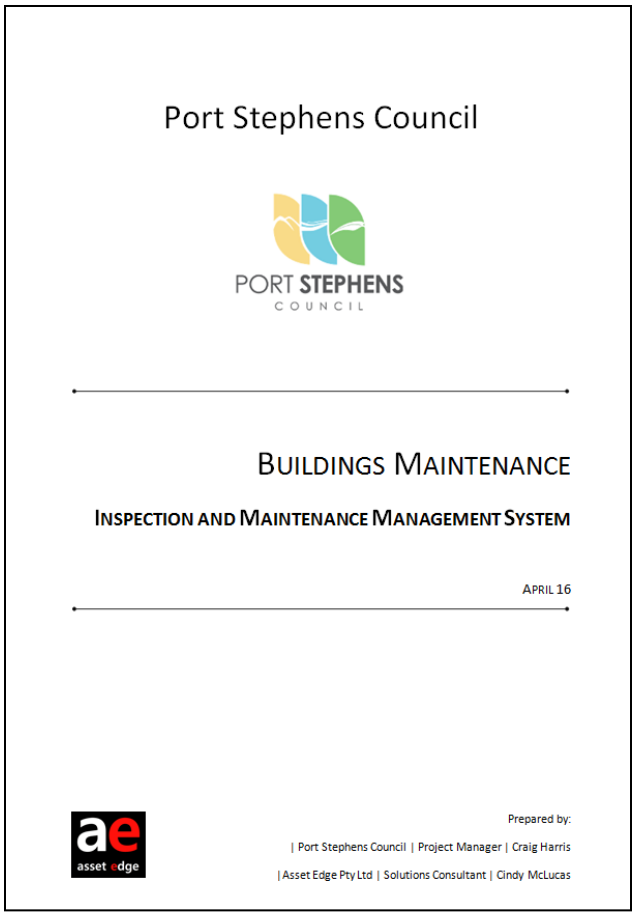




BUILDING MAINTENANCE - Port Stephens

Background:

The management of inspection and maintenance of Councils buildings and amenities using **Reflect** is becoming more prevalent in NSW and QLD.


Port Stephens Council

PORT STEPHENS COUNCIL

BUILDINGS MAINTENANCE

INSPECTION AND MAINTENANCE MANAGEMENT SYSTEM

APRIL 16

Prepared by:

| Port Stephens Council | Project Manager | Craig Harris

| Asset Edge Pty Ltd | Solutions Consultant | Cindy McLucas

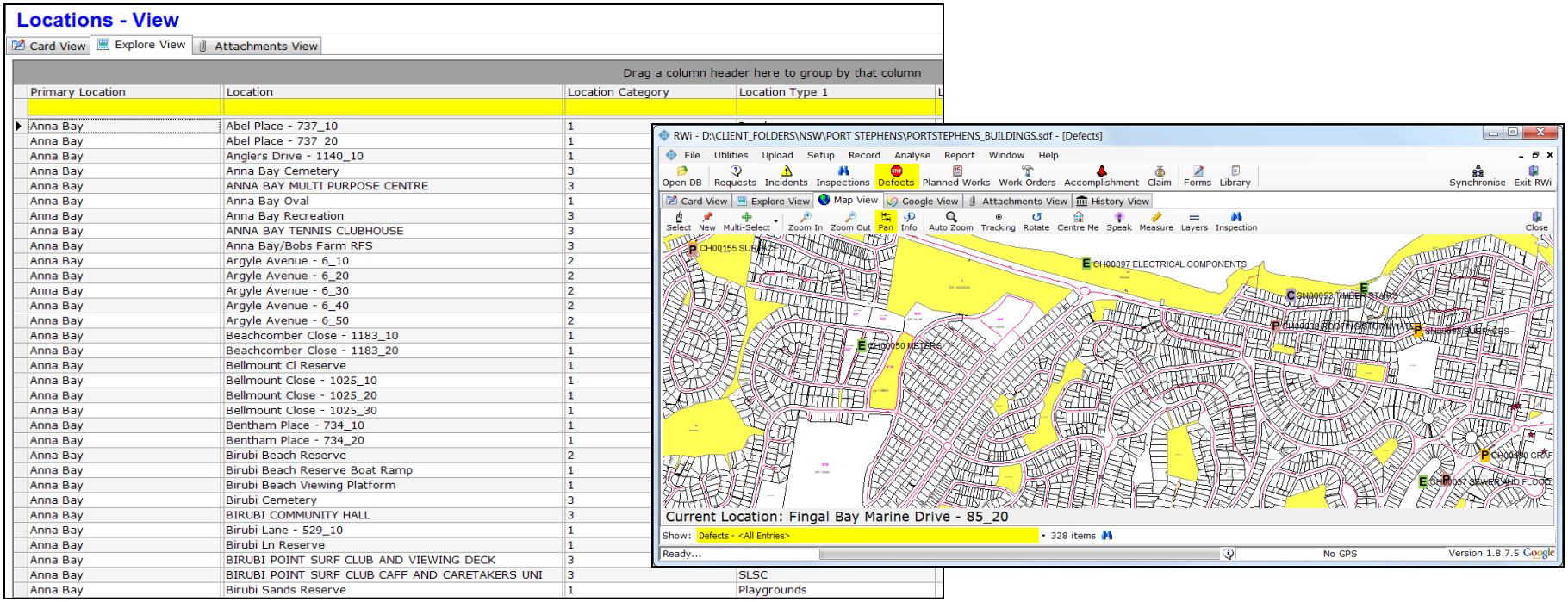
The additions of mobile Android technology and electronic forms enhances the capabilities of the software for the users.

Asset Edge was engaged by Port Stephens Council to assist with the setup of their building database in late 2015. The Reflect system links with Council's CRM system and is now in full operation.

BUILDING MAINTENANCE - Port Stephens

The Buildings database comprises of a variety of asset classes due to the service nature of the Buildings Maintenance Team. The locations developed for Port Stephens Council consist of:

- Primary Location – (Suburb) *Anna Bay*
- Location – (Amenity) *Gan Gan Amenities*
- Location Category – (Hierarchy) *Location category was assigned 1 – 5 .*



BUILDING MAINTENANCE - Port Stephens

Each asset is assigned a Location Category Value, also known as the Asset Hierarchy Value.

The Location Category is used to determine response times and/or priority of defects associated with each asset and also determines the frequency at which the asset is inspected.

(Refer Defect Intervention Matrix and Inspections for further information)

The Location Categories created for Buildings are:

Location Category	Description	Score
1	Lowest volume activity	1
2	Infrequent volume of user activity	2
3	Frequent volume of User Activity	3
4	High volume of User Activity	4
5	Highest volume of User activity	5

Location Category	Value
Amenities	3
Amenities (Closed)	0
Amenities/Sports	3
Aquatic Centres	3
Child Care Centre	3
Child Care Centres	3
Community Buildings	3
Cultural Significance	2
Foreshore	3
General Community	1
Urban Park	1

Location Category	Value
Holiday Parks	4
Libraries	3
Natural Area	1
SLSC	3
SLSC/Amenities	3
Sport Facilities	3
Sports Facilities	3
Sports Faculties	3
Sports field	3

BUILDING MAINTENANCE - Port Stephens

DEFECT MODEL

The defect model defines defects types that may be identified during inspection or as a course of usual maintenance management activities. The defect model allows the combination of location hierarchy, defect description and position within location to determine the appropriate risk score, response time and units of measure.

This model is based on best practice guidelines with the formula representing:

Defect Score = (Location Category x 2) + Physical Description Score

For example, a blocked toilet at the Anna Bay Multi-Purpose centre would calculate at:

Defect Score = (3 x 2) + 11

= 17

DEFECT TYPE	PHYSICAL DESCRIPTION	WHS RISK	RISK TO ADJOINING INFRASTRUCTURE	SECURITY RISK	FINANCIAL RISK	ENVIRONMENTAL RISK	REPUTATION RISK	TOTAL	ACTIVITY
TOILETS	Blocked or overflowing toilet or urinal or offensive odour	3	1	1	1	3	2	11	toilet clearing
TOILETS	Defective Plumbing Component, leaking or running, not flushing, broken seat, broken bowl or cistern, broken vent pipe	2	1	1	1	1	2	8	Plumbing repair
SOLAR POWER	Defective or leaking Solar Appliance	2	2	1	2	2	1	10	Plumbing repair
IRRIGATION	Faulty Control Values, solenoids and non-return valves	1	1	1	1	1	2	7	Plumbing repair
IRRIGATION	Faulty Dripper or Microjet/ sprinklers	1	1	1	1	1	1	6	Plumbing repair
IRRIGATION	Faulty Filters	2	1	1	1	1	2	8	Plumbing repair
IRRIGATION	Faulty locking system	2	1	2	1	1	1	8	Plumbing repair
IRRIGATION	Faulty Pit and/or Cover	3	1	2	2	1	2	11	Plumbing repair
IRRIGATION	Faulty Pump and/or Motor, poor water pressure	2	1	1	2	1	2	9	Plumbing repair

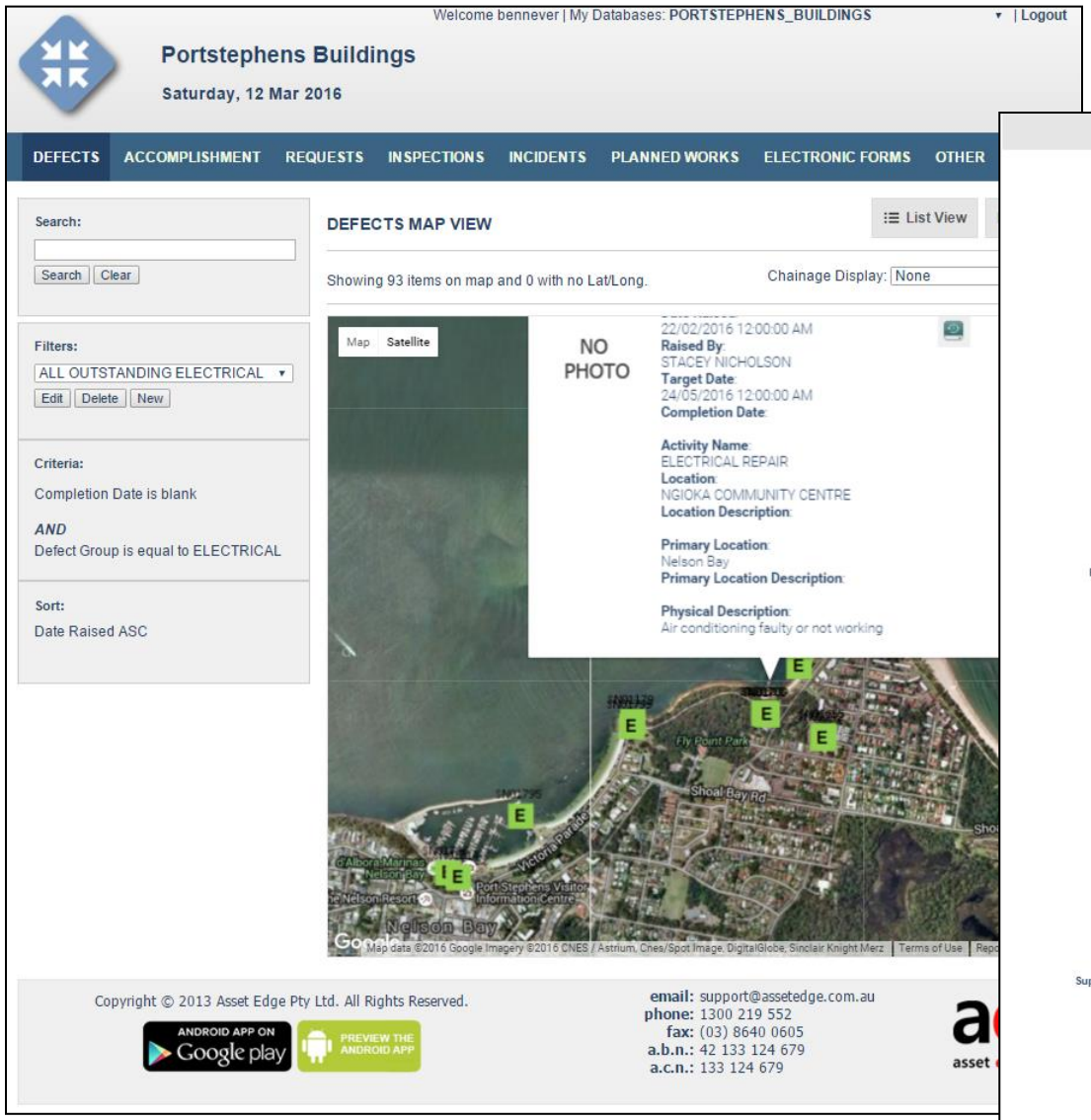
BUILDING MAINTENANCE - Port Stephens

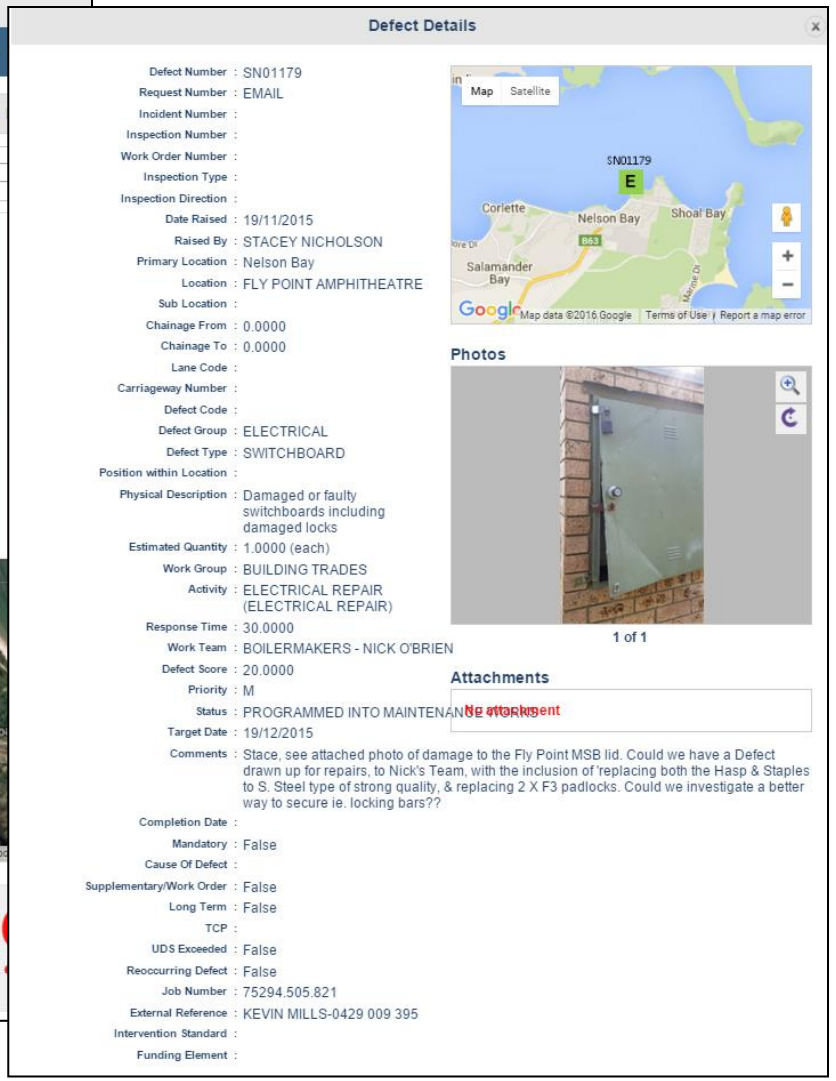
SYMBOL	Defect Type		Activity
C	AIR CONDITIONING	S	AIR CON BRACKET REPAIRS
C	ANT CAPS	A	AIR CON REMOVAL
C	AWNINGS	A	ANT CAP REPAIR
C	BBQ/FISH TABLE SHELTERS	A	ASHPHALT REPAIR
C	BIN STANDS	A	AWNING REPAIR
C	BLIND AND CURTAINS	B	BARRIER REPAIR
C	BOOM GATES	B	BENCH TOP REPAIR
C	BRICK LAYING/BLOCK WORK	B	BIN STAND REPAIR
C	BUS SHELTERS	B	BLIND REPAIRS
C	CLADDING REPAIR	B	BLOCK WORK REPAIR
C	CONCRETE	B	BOOM GATE REPAIR
C	DOG BAG STANDS	B	BUS STOP REPAIR
C	EVE SHEET	C	CAGE REPAIR
C	EXTERNAL DOORS	C	CHRISTMAS LIGHT INSTALL
C	FASCIA	C	CLADDING REPAIR
C	FENCING	C	CLEAN
C	FLOOR COVERINGS	C	CONCRET EDGE REPAIR
C	FLY SCREENS	C	CONCRETE SLAB REPAIR
C	FOOTBRIDGE/BOARDWALK/DECKING	L	CONSTRUCT LOG BARRIERS
C	GAP FILL	S	CONSTRUCT NEW SLAB
C	GROUND MAINTENANCE	R	CONSTRUCT RETAINING WALL
C	HANDRAILS	W	CONSTRUCT WALL
C	INTERNAL DOORS	P	CONSTRUCTION PAVED PATHWAY
C	JOINERY	D	DAYLIGHT SAVINGS UPGRADE
C	LOCKS	D	DECKING REPAIR
C	LOG BARRIERS	D	DECKING STRUCTURE REPAIR
C	MIRRORS	D	DISPENSER REPAIR
C	MONUMENTS	D	DOG BIN REPAIR
C	NEEDLE BIN	E	EAVE REPAIR
C	OFFICE REHAB/REFURB	E	ELECTRICAL ADVISE
C	PANIC BARS	E	ELECTRICAL AUDIT
C	PAVING/ FOOTPATHS	E	ELECTRICAL INSPECTION COMPLIAN
C	PEST CONTROL	E	ELECTRICAL INSPECTION PROACTIV
C	PICNIC TABLE/SEAT REPAIR	E	ELECTRICAL METER READING
C	PLASTER BOARD AND CORNICE	E	ELECTRICAL QUOTE
C	PLAYGROUNDS SURROUNDS	E	ELECTRICAL REPAIR
C	RETAINING WALLS	D	EXTERNAL DOOR FRAME REPAIR
C	ROLLER SHUTTERS	D	EXTERNAL DOOR REPAIR
C	ROOF SHEETS	F	FASCIA REPAIR
C	RUBBISH REMOVAL	F	FENCE REPAIR
C	SEAT INSTALLATION	F	FLASHING REPAIR
C	SECURITY DOORS	F	FLOOR COVER REPAIRS
C	SHADE STRUCTURE	F	FLOOR SANDING & SEALING
C	SHADE STRUCTURE/WIND BREAKS	f	FLYSCREEN REPAIR
C	SHARK NET/SWIM ROPES	f	FULL INSTALLATION OF NEW DOG B

Each Defect Type is also given a unique map symbol for easy reference within Reflect map view and references the associated rectification activity.

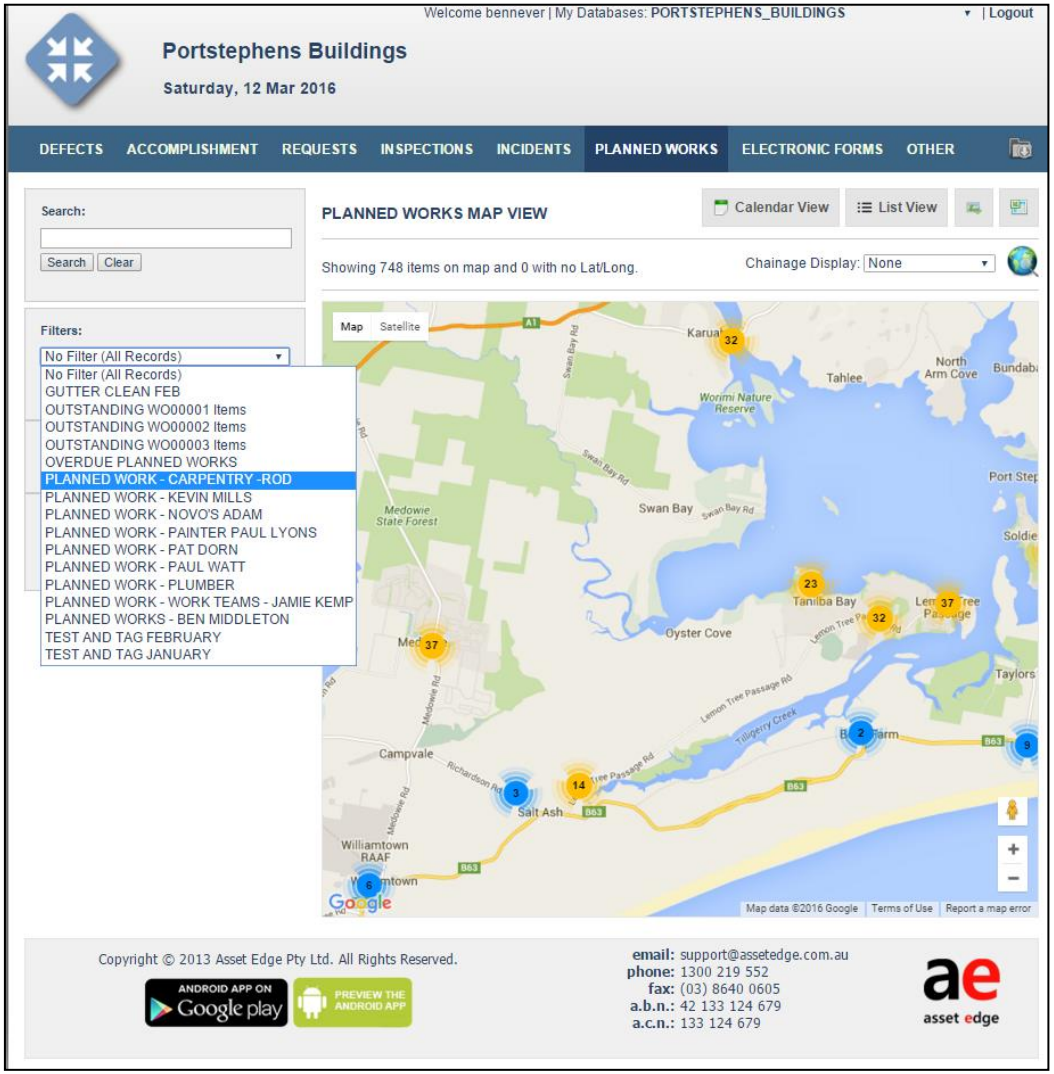
Other information such as ‘Long or Short Term’ and the rectification activity code are also stored in the Reflect database.

BUILDING MAINTENANCE - Port Stephens





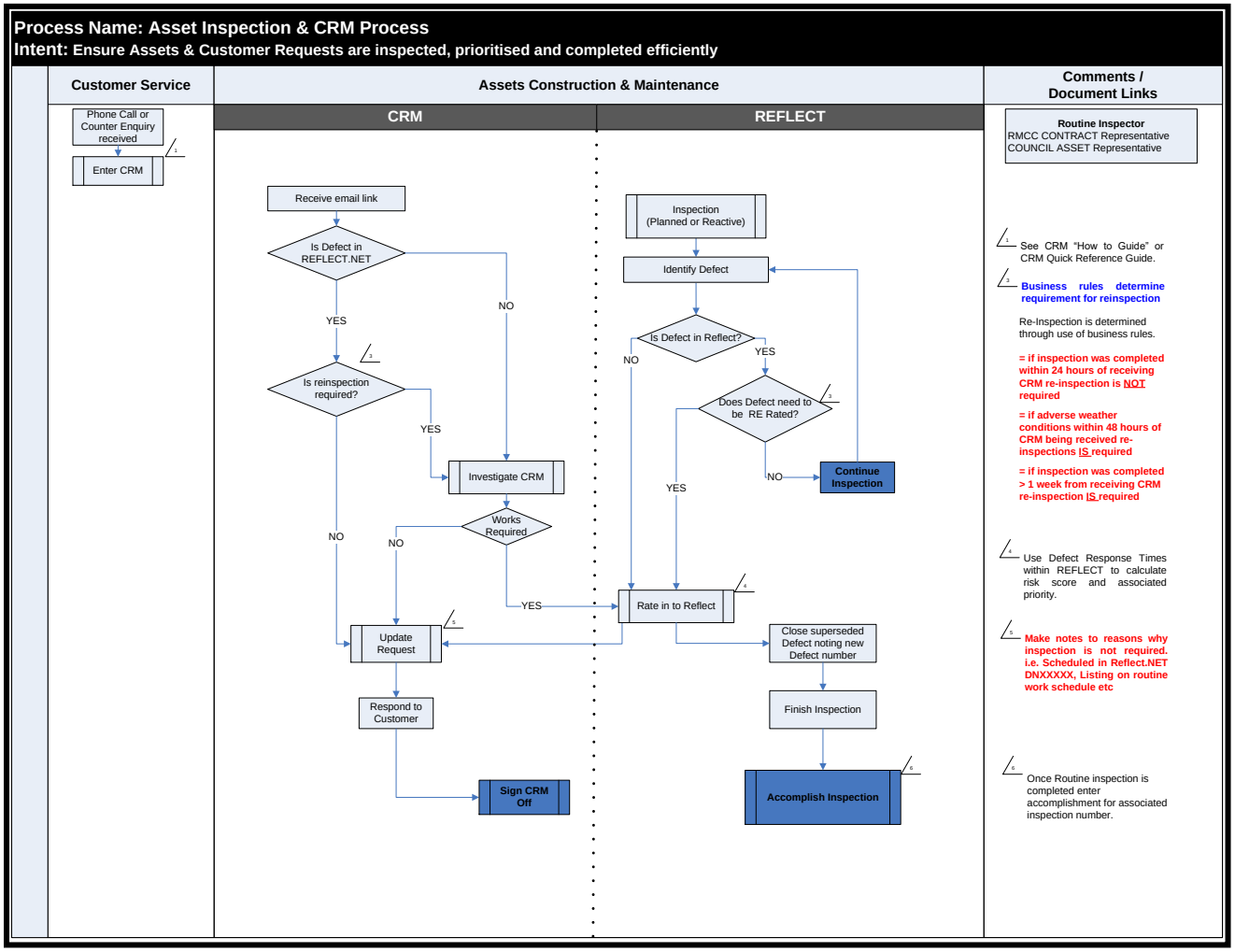
BUILDING MAINTENANCE - Port Stephens



The Port Stephens Buildings database has an extensive list of activities that are used in Planned Work and Accomplishments.

SYMBOL	Activity Group	Activity	Unit of Measure
S	Carpentry	STAIR STRUCTURE REPAIR	each
T	Carpentry	TILE REPAIR	each
T	Carpentry	TOILET INDICATORS	each
T	Carpentry	TREAD REPAIR	each
T	Carpentry	TREE REMOVAL	each
T	Carpentry	TRIP HAZARD REPAIR	each
W	Carpentry	WALL BACKFILLING	each
W	Carpentry	WALL FRAME REPAIR	each
W	Carpentry	WALL REPAIR	each
W	Carpentry	WEED REMOVAL	each
W	Carpentry	WHIRLYBIRD REPAIR	each
W	Carpentry	WINDOW FRAME REPAIR	each
W	Carpentry	WINDOW LEAKS	each
W	Carpentry	WINDOW TINT	each
C	Electrical	CHRISTMAS LIGHT INSTALL	each
D	Electrical	DAYLIGHT SAVINGS UPGRADE	each
E	Electrical	ELECTRICAL ADVISE	each
E	Electrical	ELECTRICAL AUDIT	each
E	Electrical	ELECTRICAL METER READING	each
E	Electrical	ELECTRICAL QUOTE	each
E	Electrical	ELECTRICAL REPAIR	each
G	Electrical	GSM INSTALLATION	each
E	Electrical	INSTALL ELECTRICAL METER	each
E	Electrical	INSTALL NEW ELECTRICAL COMPONENT	each

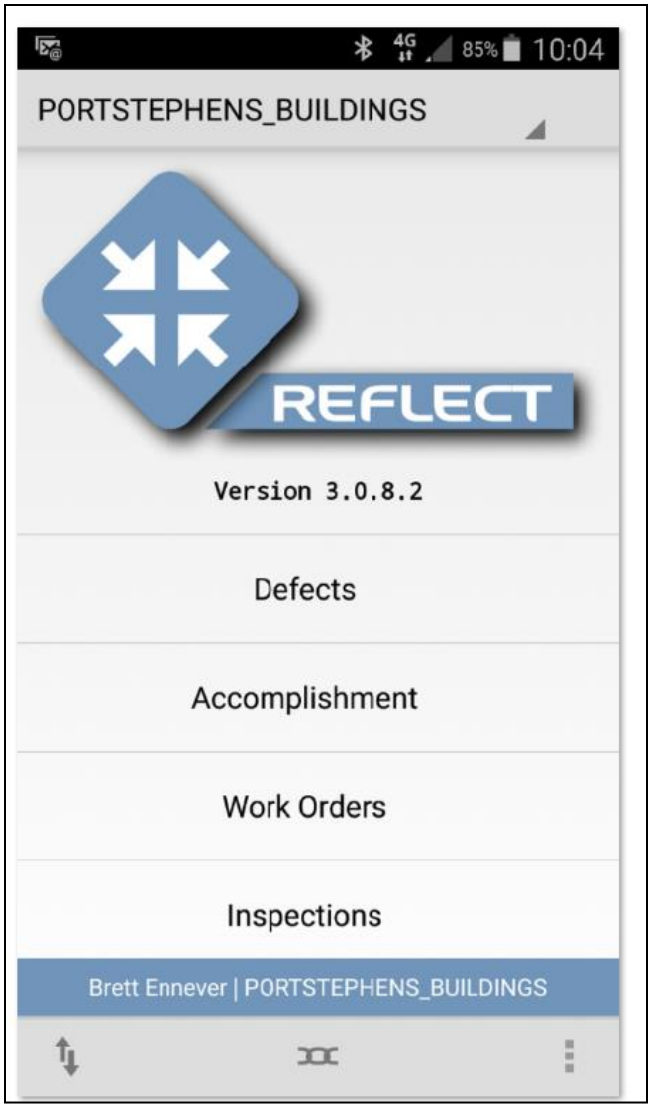
BUILDING MAINTENANCE - Port Stephens



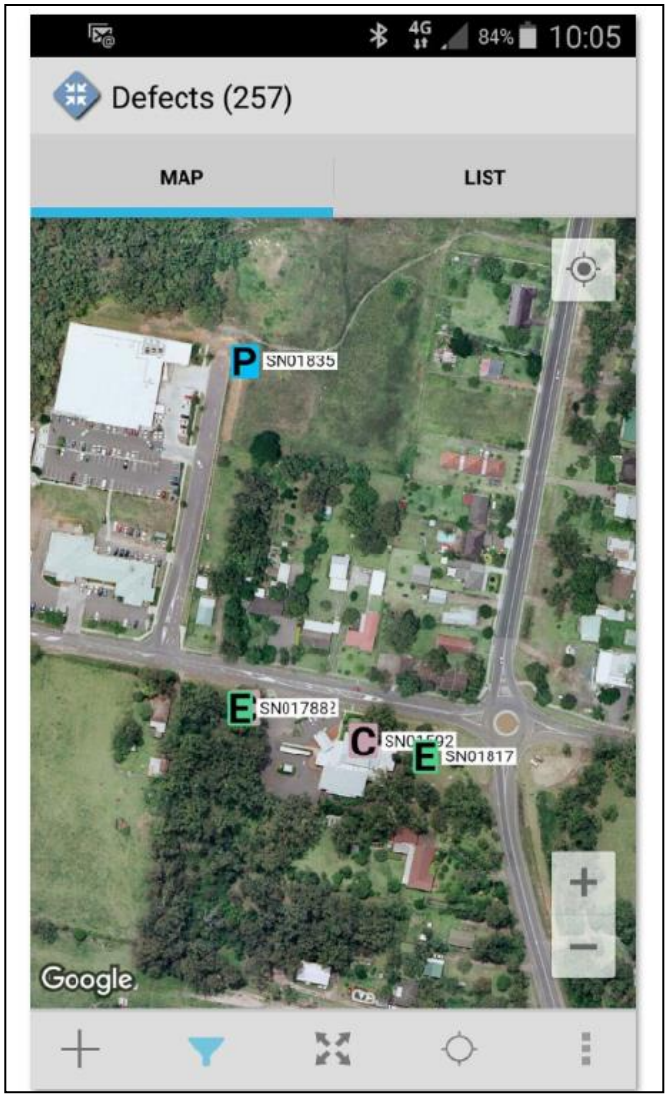
Inspections play an important role in managing risks and planning maintenance works. There are two types of inspections - **Routine** and **Reactive**.

Customer Requests are emailed from Civica's CRM module and then if required an inspection is generated.

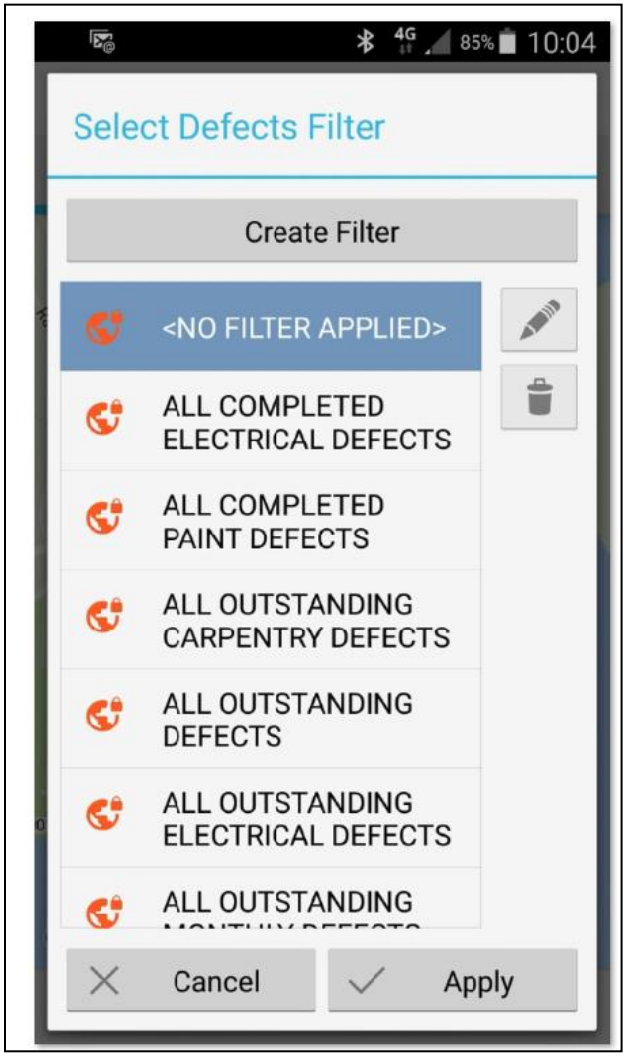
BUILDING MAINTENANCE - Port Stephens



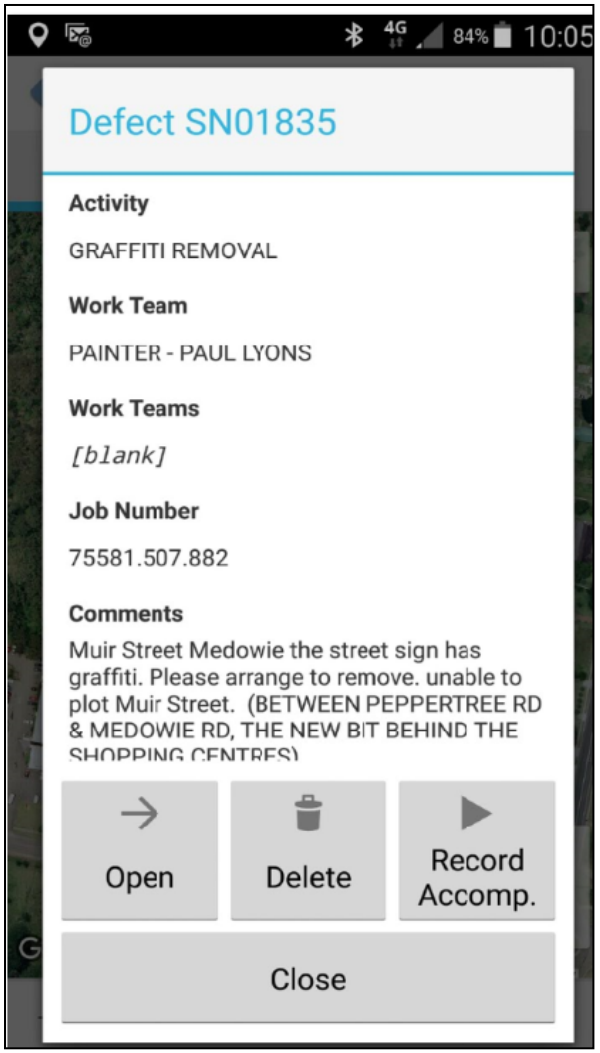
The Mobile version of **Reflect** allows the inspectors to record defects and planned works during programmed inspections or whilst responding to a Customer Request (CRM).



BUILDING MAINTENANCE - Port Stephens



Global filters assist inspectors and work teams when using the mobile devices.



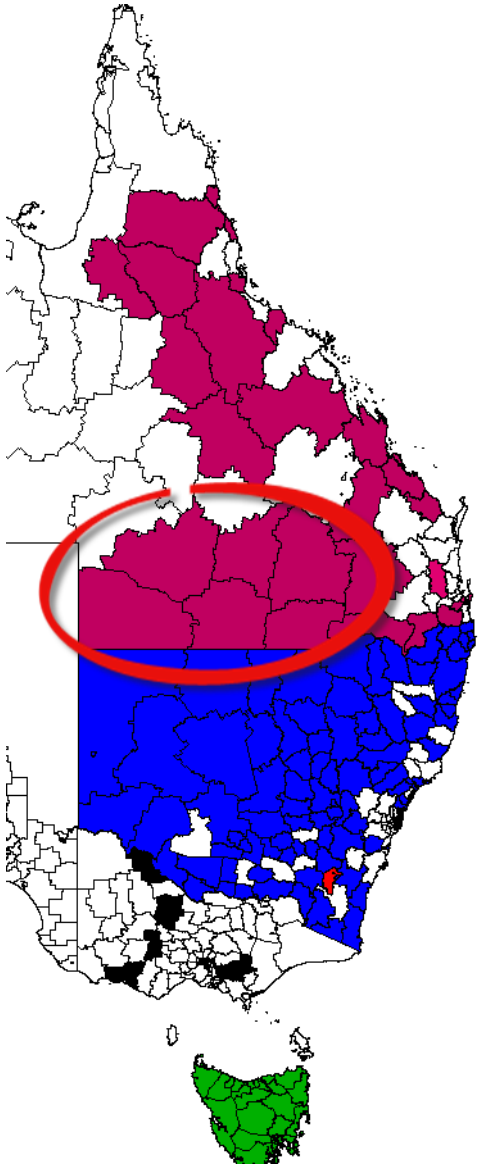
TMR Culvert Inventory – South West Councils QLD

Background:

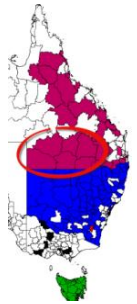
Six councils in the South West District of Queensland were asked by Queensland Transport and Main Roads to assist with the collection and verification of culvert data along all RMPC road lengths.

The existing data set was very poor and missing considerable asset information in some areas. There are in excess of 3000 minor culverts shared between Balonne, Bulloo, Maranoa, Murweh, Paroo and Quilpie Councils.

The decision to move from traditional paper based collection has improved the register and it is anticipated that this will assist in funding works under the culvert replacement program.



TMR Culvert Inventory – South West Councils QLD



Inspection Report – Minor Culverts — Sheet 1 of 2

Structure ID: | Road Number:
Crossing: | Road Name:
Structure Type: | Owner:
Construction Type: | District:
Construction Material: | Local Authority:
Inspector:

Permanent Standing Water[1] ☐ Holding Water[2] ☐ Programmed ☐ Exceptional ☐

Date of Inspection: | Date of Next Inspection:

Chainage: (km) on the to Road

Inspection Elements (*Refer to bottom of form)	Issue (tick) Y	Issue (tick) N	Location and Comments (include RMPC activity if applicable)	Rectified ^ Y	Rectified ^ N	Maintenance Required Y	Maintenance Required N	Further Inspection Required Y	Further Inspection Required N
Approaches									
1 Signs and Delineation									
• Missing, damaged, obscured (including guideposts)	☐	☐		☐	☐	☐	☐	☐	☐
2 Guardrail									
• Accident Damage	☐	☐		☐	☐	☐	☐	☐	☐
• Incorrect alignment	☐	☐		☐	☐	☐	☐	☐	☐
• Connections	☐	☐		☐	☐	☐	☐	☐	☐
• Delineators	☐	☐		☐	☐	☐	☐	☐	☐
3 Road Drainage									
• Blocked inlet/outlet	☐	☐		☐	☐	☐	☐	☐	☐
• Scour of embankment	☐	☐		☐	☐	☐	☐	☐	☐
4 Road Surface									
• Material Defects* – concrete	☐	☐		☐	☐	☐	☐	☐	☐
• Material Defects* – surfacing	☐	☐		☐	☐	☐	☐	☐	☐
• Settlement, depressions	☐	☐		☐	☐	☐	☐	☐	☐
• Rough joint transition	☐	☐		☐	☐	☐	☐	☐	☐
5 Footpaths									
• Clean	☐	☐		☐	☐	☐	☐	☐	☐
• Even	☐	☐		☐	☐	☐	☐	☐	☐
6 Barriers									
• Impact Damage	☐	☐		☐	☐	☐	☐	☐	☐
• Loose/damaged fixings	☐	☐		☐	☐	☐	☐	☐	☐
• Loose post base	☐	☐		☐	☐	☐	☐	☐	☐
• Material Defects*	☐	☐		☐	☐	☐	☐	☐	☐
• Delineators	☐	☐		☐	☐	☐	☐	☐	☐
Culverts									
7 Material Defects* in:									
• Walls	☐	☐		☐	☐	☐	☐	☐	☐
• Roof	☐	☐		☐	☐	☐	☐	☐	☐
• Aprons	☐	☐		☐	☐	☐	☐	☐	☐
• Wingwalls/Headwalls	☐	☐		☐	☐	☐	☐	☐	☐
• Steel Culverts **	☐	☐		☐	☐	☐	☐	☐	☐
Waterways									
8 General									
• Debris against structure	☐	☐		☐	☐	☐	☐	☐	☐
• Embankment Erosion	☐	☐		☐	☐	☐	☐	☐	☐
• Scour holes	☐	☐		☐	☐	☐	☐	☐	☐
• Damaged protection	☐	☐		☐	☐	☐	☐	☐	☐
Miscellaneous									
9 Damage to services									
• Pipe / Conduit & Openings	☐	☐							
• Fasteners / Brackets	☐	☐							

1. Water is permanently present through structure
2. Water is being retained in culvert by defect (e
^ Temporary or Permanent treatment installed

Inspection Report – Minor Culverts — Sheet 2 of 2

Structure ID: | Name:

Inspection Date:

Material *	Defects Description
Concrete	Cracking, spalling, corrosion or reinforcement, drummy areas
Steel	Bending, buckling, cracking, distortion, loose bolts, rivets, corrosion, coating damage
Timber	Splitting, crushing, decay, infestation, loose bolts or pins
Masonry (Rock/Brick)	Cracking, opening joints, mortar loss, bulging, break away
Bituminous Surfacing	Cracking, crazing, breaking up, lifting off, rutting, pushing/shoving
Protective Coatings	Cracked, peeling, weathered

** Steel Culverts	Probe or sound culvert wall at normal water level, check for pitting or loss of culvert material

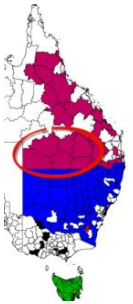
General Comments/Photos/Sketches:

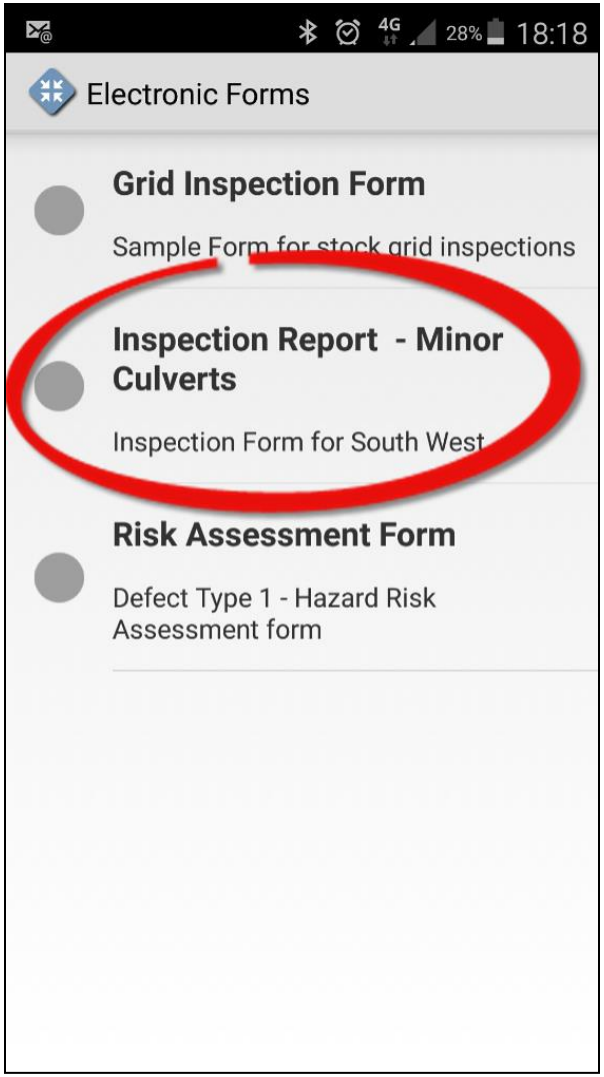
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1	Primary Location	Location	Local Authority Name	Owner	District	Latitude	Longitude	STRUCTURE_ID							
2	Reflect Location table.Primary Location	CulvertSpine_qry_Spine data for LGA 3 digital locations.Location	LGA			CulvertSpine_qry_Spine data for LGA 3 digital locations.Latitude	CulvertSpine_qry_Spine data for LGA 3 digital locations.Longitude	ID	Import Sheet.Primary Location	Import Sheet.Location	Service Provider	Import Sheet.Latitude	Import Sheet.Longitude	REGION_ID	ROAD_
3	Landsborough Highway	13A	Murweh (S)	TMR	South West	-26.164985	146.948922	1						211	13A
4	Landsborough Highway	13A	Murweh (S)	TMR	South West	-25.828431	146.61183	2						211	13A
5	Landsborough Highway	13A	Murweh (S)	TMR	South West	-25.824836	146.609555	3						211	13A
6	Landsborough Highway	13A	Murweh (S)	TMR	South West	-25.79195	146.592783	4						211	13A
7	Landsborough Highway	13B	Murweh (S)	TMR	South West	-25.667135	146.589622	5						211	13B
8	Landsborough Highway	13B	Murweh (S)	TMR	South West	-25.652064	146.593163	6						211	13B
9	Landsborough Highway	13B	Murweh (S)	TMR	South West	-25.652064	146.593163	7						211	13B
10	Landsborough Highway	13B	Murweh (S)	TMR	South West	-25.639831	146.596982	8						211	13B
11	Landsborough Highway	13B	Murweh (S)	TMR	South West	-25.639831	146.596982	9						211	13B
12	Landsborough Highway	13B	Murweh (S)	TMR	South West	-25.334233	146.596039	10						211	13B
13	Landsborough Highway	13B	Murweh (S)	TMR	South West	-25.331629	146.594437	11						211	13B
14	Landsborough Highway	13B	Murweh (S)	TMR	South West	-25.327312	146.591528	12						211	13B
15	Warrego Highway	18D	Maranoa (R)	TMR	South West	-26.595489	149.272168	13						211	18D
16	Warrego Highway	18D	Maranoa (R)	TMR	South West	-26.595251	149.269773	14						211	18D
17	Warrego Highway	18D	Maranoa (R)	TMR	South West	-26.594951	149.266779	15						211	18D

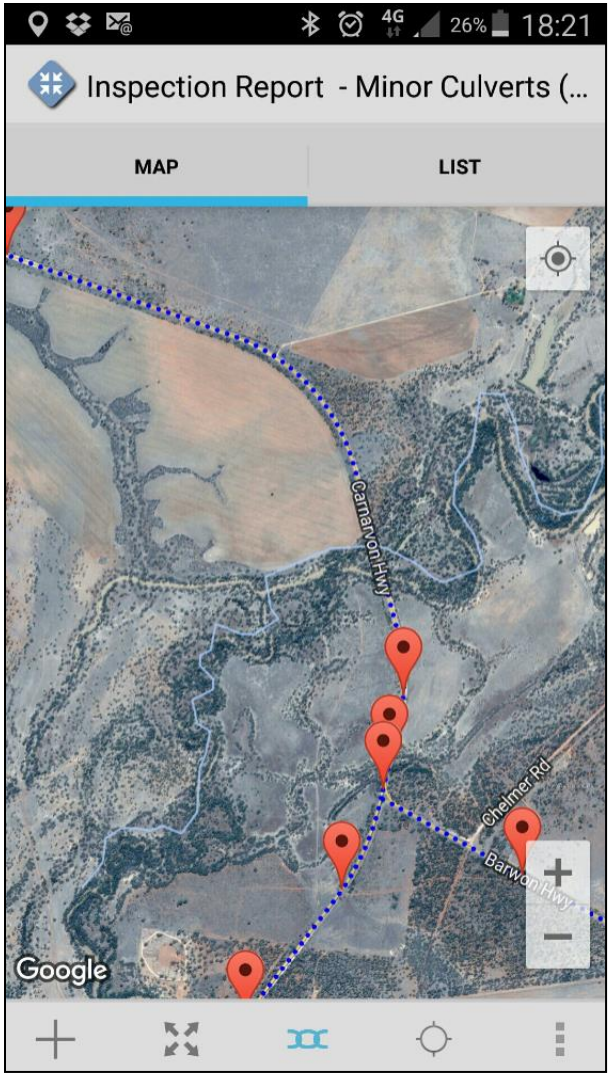
Various spreadsheets and databases were consolidated into one register.

Information was then imported into each Council's RMPC1516 database. The **Reflect** utility calculated Lat/Long from the supplied Road Number and chainage.

TMR Culvert Inventory – South West Councils QLD

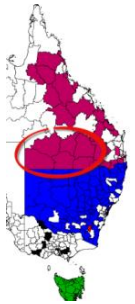


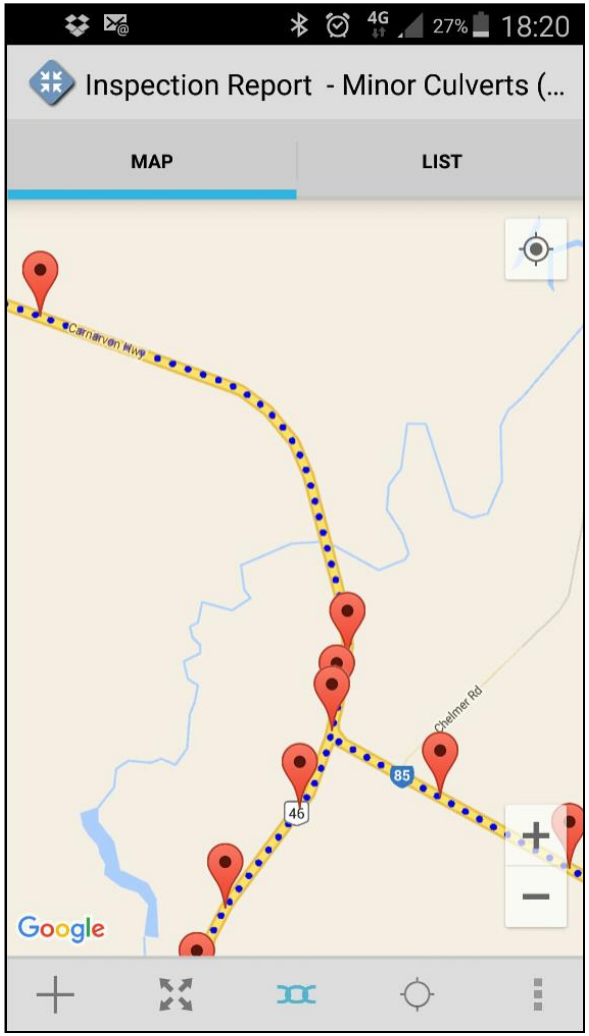


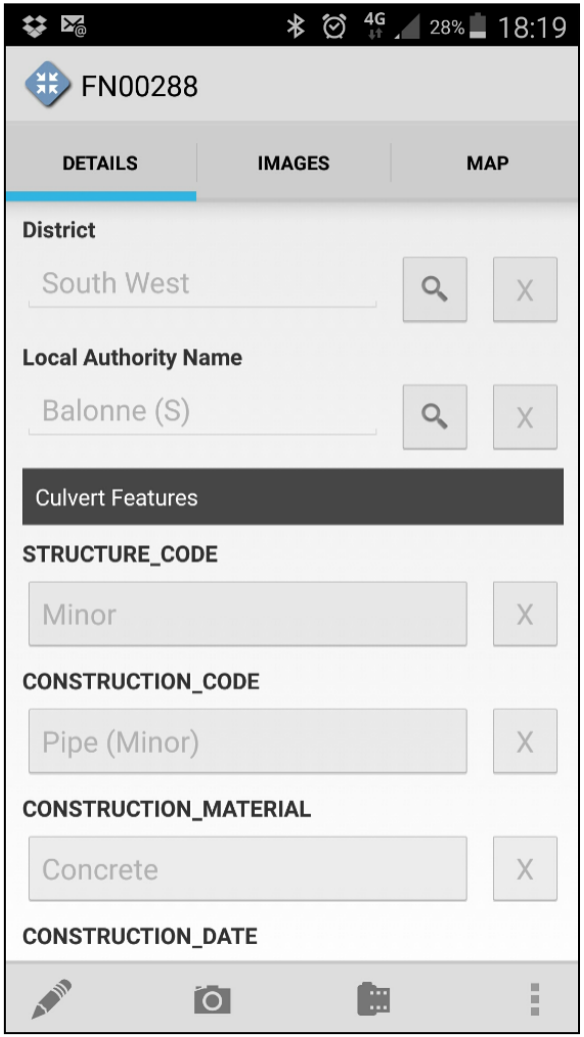


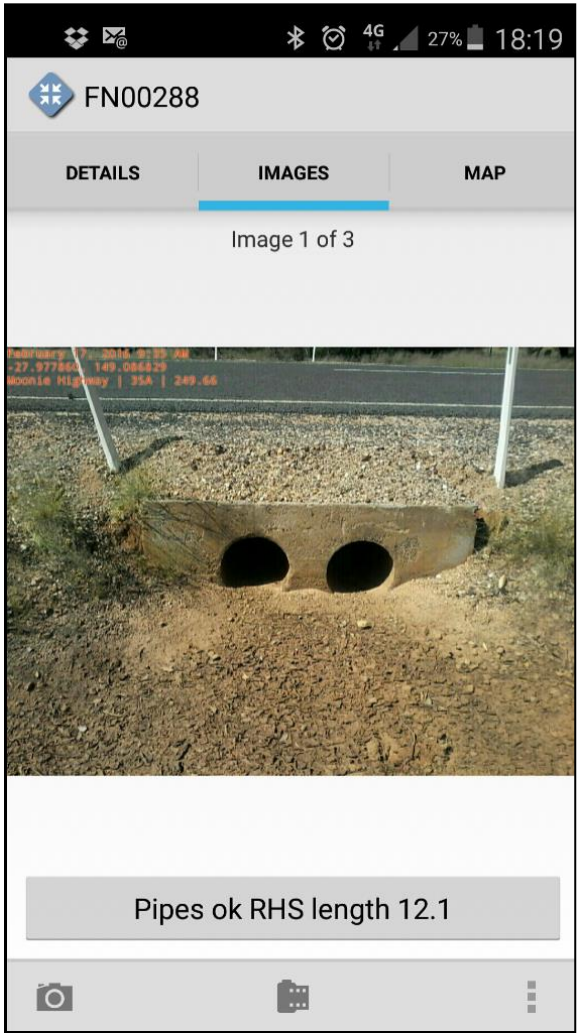
The mobile Android application is used with the Reflect Electronic Form to locate the asset, record information and to add images (3) for each culvert on the extensive South West district RMPC network.

TMR Culvert Inventory – South West Councils QLD

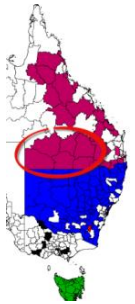








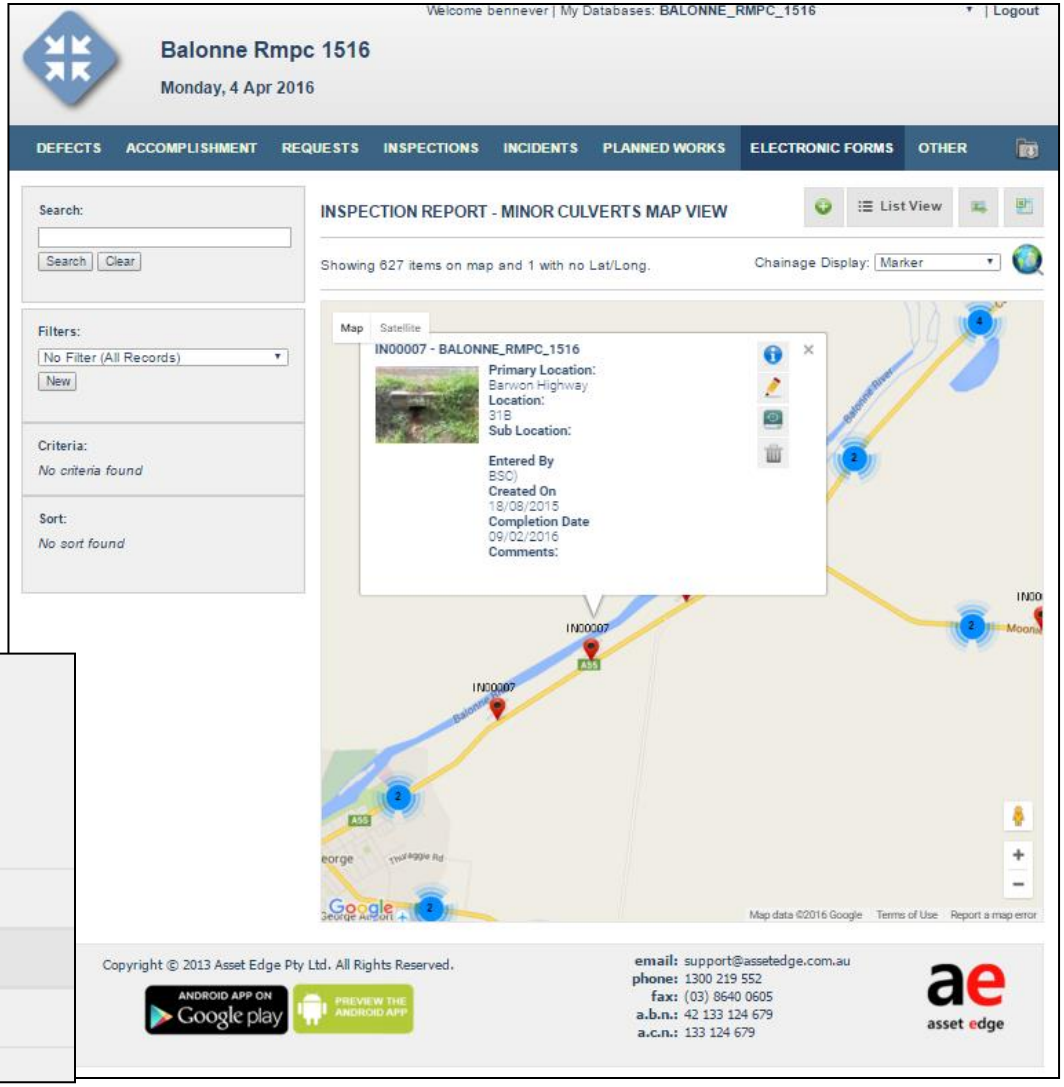
TMR Culvert Inventory – South West Councils QLD

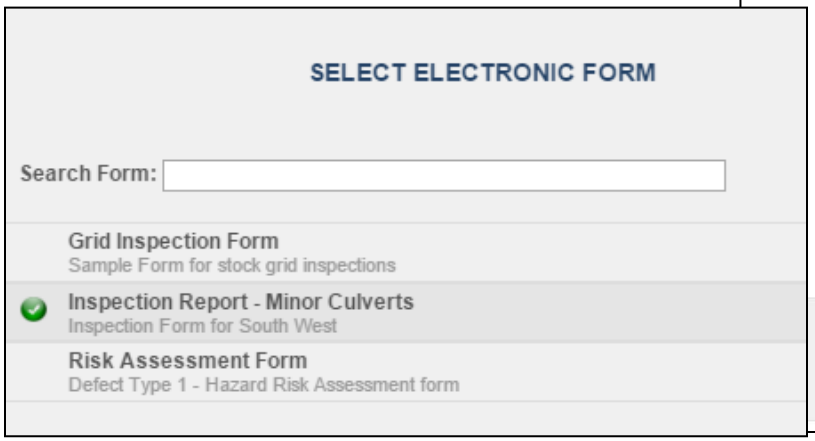


The recorded information is syncronised to the **Reflect** Server.

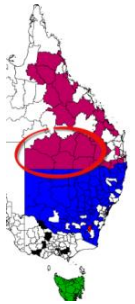
Other forms can also be used to record and manage the networks assets inventory and condition inspections.

Currently form data and images cannot be shared into Vigil.

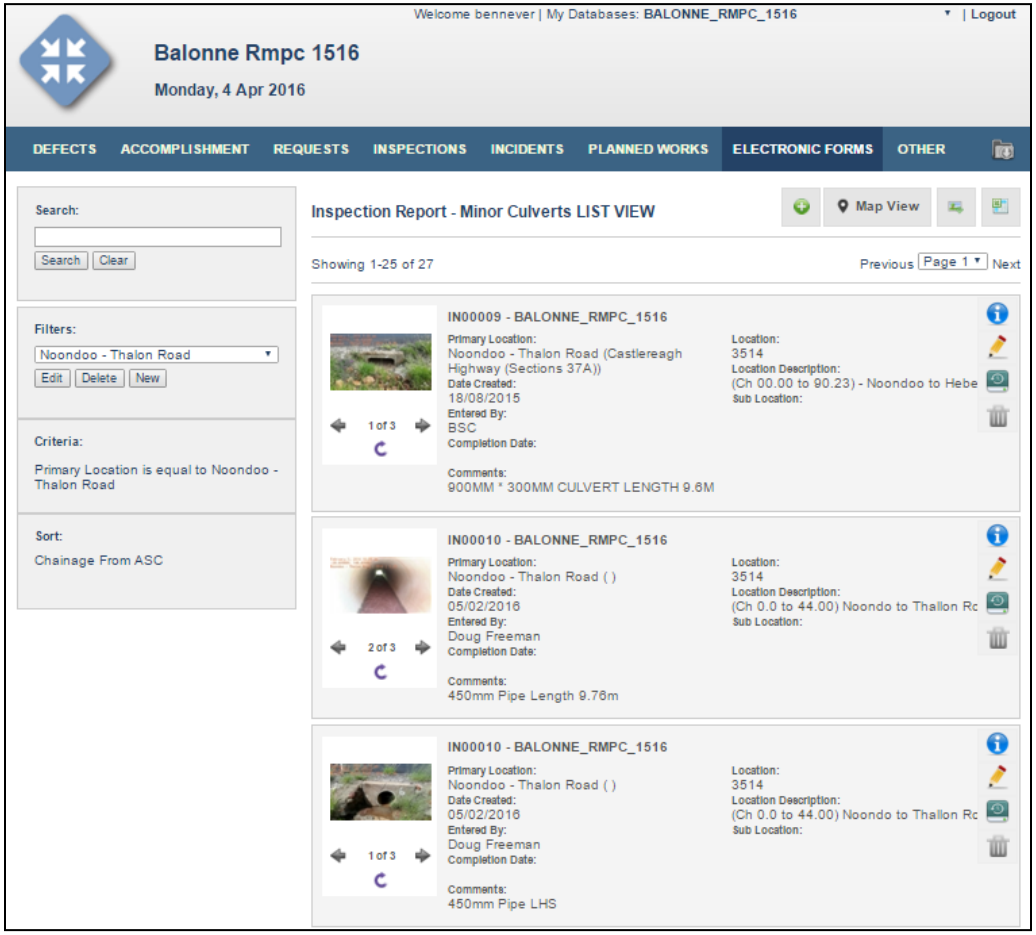


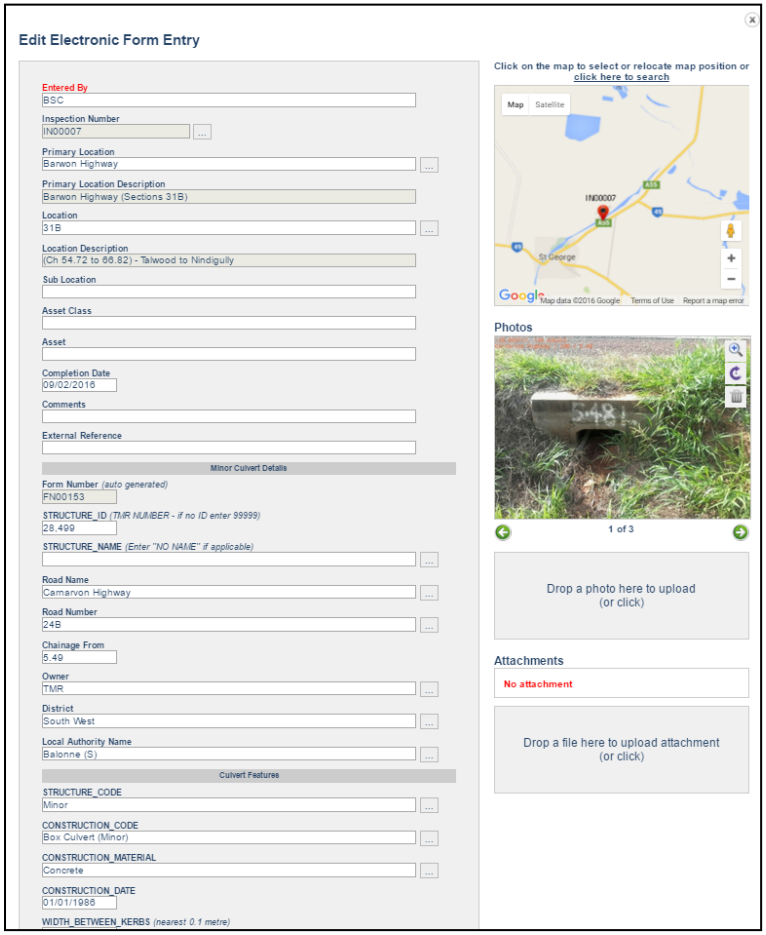


TMR Culvert Inventory – South West Councils QLD

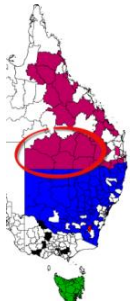


Information on any structure can be easily sourced through the forms.
All attributes can be used to filter and report specific sets of information.





TMR Culvert Inventory – South West Councils QLD

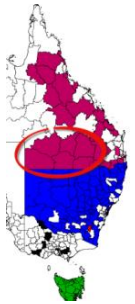


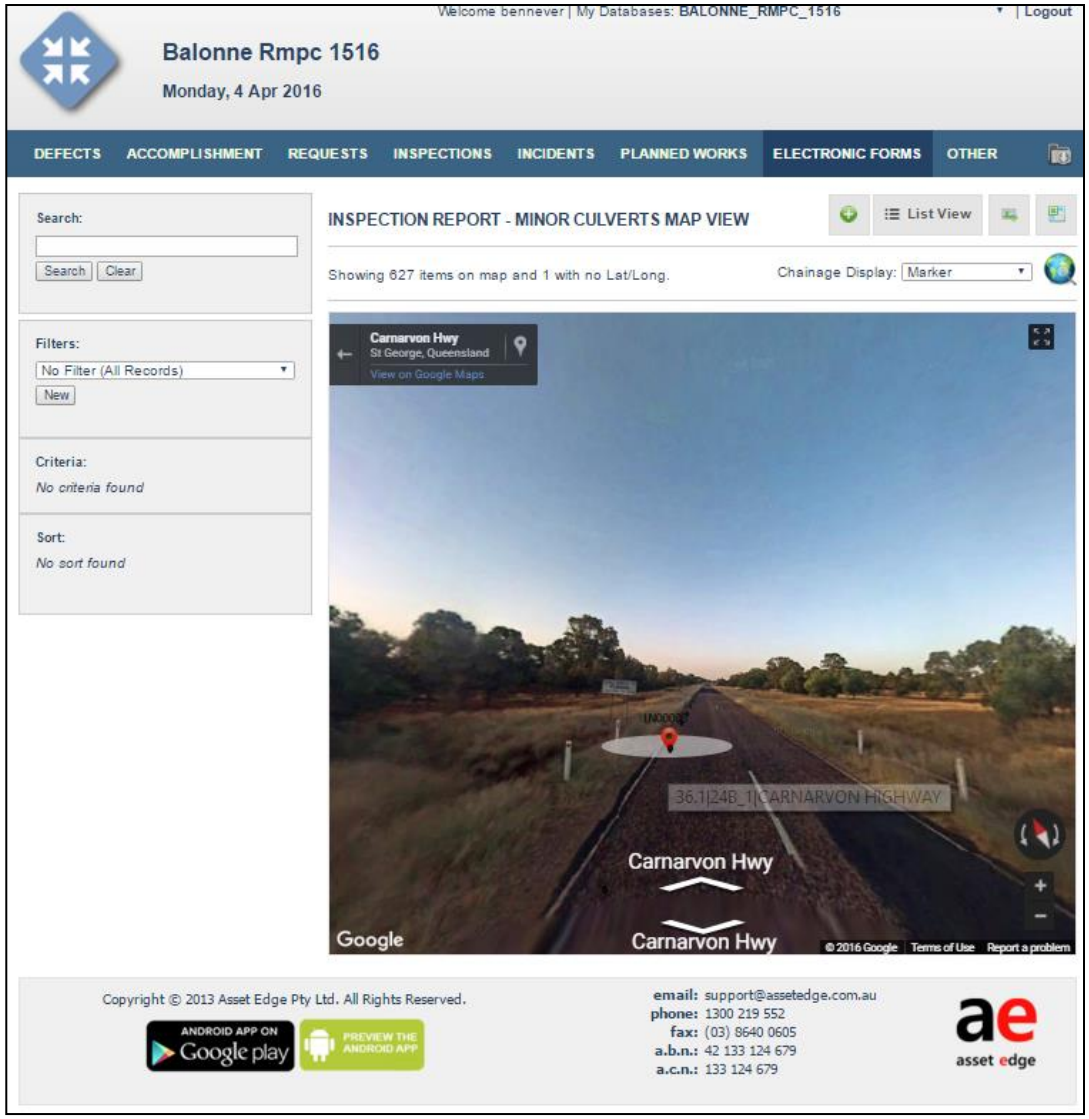
When completed the new data set will be extremely rich and have the added value of images and geo-reference against Google mapping.

Outputs can be designed and reported in the required formats.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Entered By	Primary Location	Location	Comments	Longitude	Latitude	STRUCTURE_CODE	CONSTRUCTION_CODE	CONSTRUCTION_MATERIAL	CONSTRUCTION_DATE	NO_CELLS	NO_PIPES	PIPE_SIZE	Inspectors Name	Date of Inspection
2	BSC	Balonne Highway	36A	Culvert ok	147.609848	-28.000923	Minor	Box Culvert (Minor)	Concrete	10/09/1976	1	4.5	450,300	mal ross	11/03/2016
3	BSC	Carnarvon Highway	24A	Culvert ok	148.898009	-28.772119	Minor	Box Culvert (Minor)	Concrete	1/01/1972	1	5	1208300	mal ross	26/02/2016
4	BSC	Moonie Highway	35A	2*450mm pipe length 12.2m	149.086713	-27.977953	Minor	Pipe (Minor)	Concrete	1/01/1950	2	5	450	mal ross	17/02/2016
5	BSC	Carnarvon Highway	24A	1200mm * 300mm culvert Length 12.0m	148.87396	-28.658911	Minor	Box Culvert (Minor)	Concrete	1/01/1972	1	5	1200300	Doug Freeman	16/02/2016
6	BSC	Moonie Highway	35A	pipe ok length 12.9	148.917028	-27.975875	Minor	Pipe (Minor)	Concrete	9/01/1963	1	5	450	mal ross	16/02/2016
7	BSC	Moonie Highway	35A	Culvert ok length 12.2	149.134604	-27.980053	Minor	Box Culvert (Minor)	Concrete	1/01/1950	1	5	1200450	mal ross	17/02/2016
8	BSC	Balonne Highway	36A	500mm Pipes Length 14.64m (Cells 4 Units 6)	148.511186	-28.027208	Minor	Pipe (Minor)	Concrete	1/01/1950	4	6	500	Doug	21/10/2015
9	BSC	Balonne Highway	36A	600mm * 300mm culvert Length 9.6m	148.096854	-27.96139	Minor	Box Culvert (Minor)	Concrete	13/06/1974	1	4	600,300	Doug	29/10/2015
10	BSC	Carnarvon Highway	24B	culvert 600300 ok	148.65717	-27.993038	Minor	Box Culvert (Minor)	Concrete	6/06/1975	1	7	600300	Jason parkes	2/02/2016
11	BSC	Carnarvon Highway	24B	pipes ok	148.789678	-27.724613	Minor	Pipe (Minor)	Concrete	1/01/1985	6	4.5	525	mal ross	8/02/2016
12	BSC	Carnarvon Highway	24A	12* 1200mm pipes Length 12.2m	148.806739	-28.319838	Minor	Pipe (Minor)	Concrete	24/09/1982	12	5	1,200	Doug Freeman	3/02/2016
13	BSC	Carnarvon Highway	24A	900mm * 300mm culvert Length 10.8m	148.669986	-28.101534	Minor	Box Culvert (Minor)	Concrete	1/01/1973	1	4.5	900300	Doug	18/11/2015
14	BSC	Mitchell - St.George Road	355	450mm Pipe Length 9.76m	148.492208	-27.858269	Minor	Pipe (Minor)	Concrete	1/01/1989	1	4	450	Doug	16/11/2015
15	BSC	Mitchell - St.George Road	355	450mm Pipe Length 12.2m	148.471226	-27.71222	Minor	Pipe (Minor)	Concrete	30/07/1981	1	5	450	Doug	17/11/2015
16	BSC	Barwon Highway	31B	2 * 1200mm * 300mm culvert Length 10.8m	148.854334	-28.354328	Minor	Box Culvert (Minor)	Concrete	16/04/1973	2	4.5	1200300	Doug Freeman	3/02/2016
17	BSC	Carnarvon Highway	24A	Culvert ok has had separation fixed needs monitoring	148.925986	-28.863924	Minor	Box Culvert (Minor)	Concrete	1/01/1972	2	4.5	1200300	mal ross	26/02/2016
18	BSC	Barwon Highway	31B	1200mm * 300mm culvert Length 10.8m	148.924652	-28.356442	Minor	Box Culvert (Minor)	Concrete	1/01/1980	1	4.5	1,200,300	Doug Freeman	3/02/2016
19	BSC	Carnarvon Highway	24A	450mm pipe length 10.98m	148.918666	-28.847932	Minor	Pipe (Minor)	Concrete	1/01/1972	1	4.5	450	Doug	23/03/2016
20	BSC	Carnarvon Highway	24A	6 * 2050mm * 800mm Length 9.1m	148.847607	-28.505995	Minor	Slab Deck (Minor)	Concrete	30/07/1953	6	4	2050800	Doug Freeman	16/02/2016
21	BSC	Balonne Highway	36A	600mm * 300mm culvert Length 10.8m	147.921315	-27.975987	Minor	Box Culvert (Minor)	Concrete	21/10/1975	1	4.5	600300	Doug	30/10/2015
22	BSC	Balonne Highway	36A	pipes ok	147.617757	-27.995834	Minor	Pipe (Minor)	Concrete	10/09/1976	3	4.5	680	mal ross	11/03/2016
23	BSC	Carnarvon Highway	24A	pipe ok length 12.5 m	148.983226	-28.972487	Minor	Pipe (Minor)	Concrete	1/01/1967	1	4.5	450	jason parkes	23/02/2016
24	BSC	Castlereagh Highway	37A		148.088019	-28.812845	Minor	Pipe (Minor)	Concrete	14/11/1980		2	450		
25	BSC	Carnarvon Highway	24B	partial blockage culvert ok	148.723416	-27.861668	Minor	Box Culvert (Minor)	Concrete	1/01/1973	1	4.5	1200300	jason parkes	3/02/2016
26	BSC	Mitchell - St.George Road	355	1200mm * 300mm culvert Length 9.6m	148.493118	-27.839743	Minor	Box Culvert (Minor)	Concrete	1/01/1989	1	4	1,200,300	Doug	17/11/2015
27	BSC	Carnarvon Highway	24A	Culvert OK 1200x300 Length 12.2m	148.886488	-28.717724	Minor	Box Culvert (Minor)	Concrete	7/09/1972	1	5	1200300	Doug Freeman	1/03/2016
28	BSC	Balonne Highway	36B	Culvert ok	147.41271	-28.023374	Minor	Box Culvert (Minor)	Concrete	22/01/1978	1	4.5	1200300	mal ross	10/03/2016
29	BSC	Carnarvon Highway	24A	450mm Pipe Length 12.2m	148.828717	-28.396547	Minor	Pipe (Minor)	Concrete	1/01/1950	1	5	450	Doug	18/11/2015
30	BSC	Balonne Highway	36A	Culvert appears to have been removed	148.556047	-28.035809	Minor	Pipe (Minor)	Concrete	1/01/1950				Doug	22/03/2016
31	BSC	Castlereagh Highway	37A	3 * 1200mm * 300mm culvert Length 13.2m	147.81998	-28.96245	Minor	Box Culvert (Minor)	Concrete	1/10/1990	3	5.5	1200300	Doug	23/10/2015
32	BSC	Balonne Highway	36B	Culvert ok	147.455669	-28.028878	Minor	Box Culvert (Minor)	Concrete	1/01/1978	1	4.5	450300	mal ross	10/03/2016
33	BSC	Balonne Highway	36B	Culvert ok	147.342036	-28.00436	Minor	Box Culvert (Minor)	Concrete	3/06/1979	1	4.5	1208300	mal ross	9/03/2016
34	BSC	Balonne Highway	36A	600mm * 300mm culvert Length 9.6m	147.994605	-27.982089	Minor	Box Culvert (Minor)	Concrete	20/11/1974	1	4	600300	Doug	29/10/2015
35	BSC	Carnarvon Highway	24A	3 * 1200mm * 300mm culvert Length 12.0m	148.867857	-28.628943	Minor	Box Culvert (Minor)	Concrete	1/01/1950	3	5	1200300	Doug Freeman	16/02/2016
36	BSC	Carnarvon Highway	24A	Culvert ok	148.977797	-28.955516	Minor	Box Culvert (Minor)	Concrete	12/05/1995	6	4.5	1200300	jason parkes	23/02/2016
37	BSC	Carnarvon Highway	24B	Culvert OK	148.594041	-28.029617	Minor	Box Culvert (Minor)	Concrete	22/10/1980	1	7	1,200,300	Doug Freeman	1/02/2016
38	BSC	Castlereagh Highway	37A	culvert ok 1200x300 length 12.2m needs desilting	148.375284	-28.603833	Minor	Box Culvert (Minor)	Concrete	21/09/1979	1	5	120300	Doug Freeman	1/01/2013

TMR Culvert Inventory – South West Councils QLD





Given the network lengths and distances required for travel to inspect structures - the culvert database should be the primary reference tool for years to come.

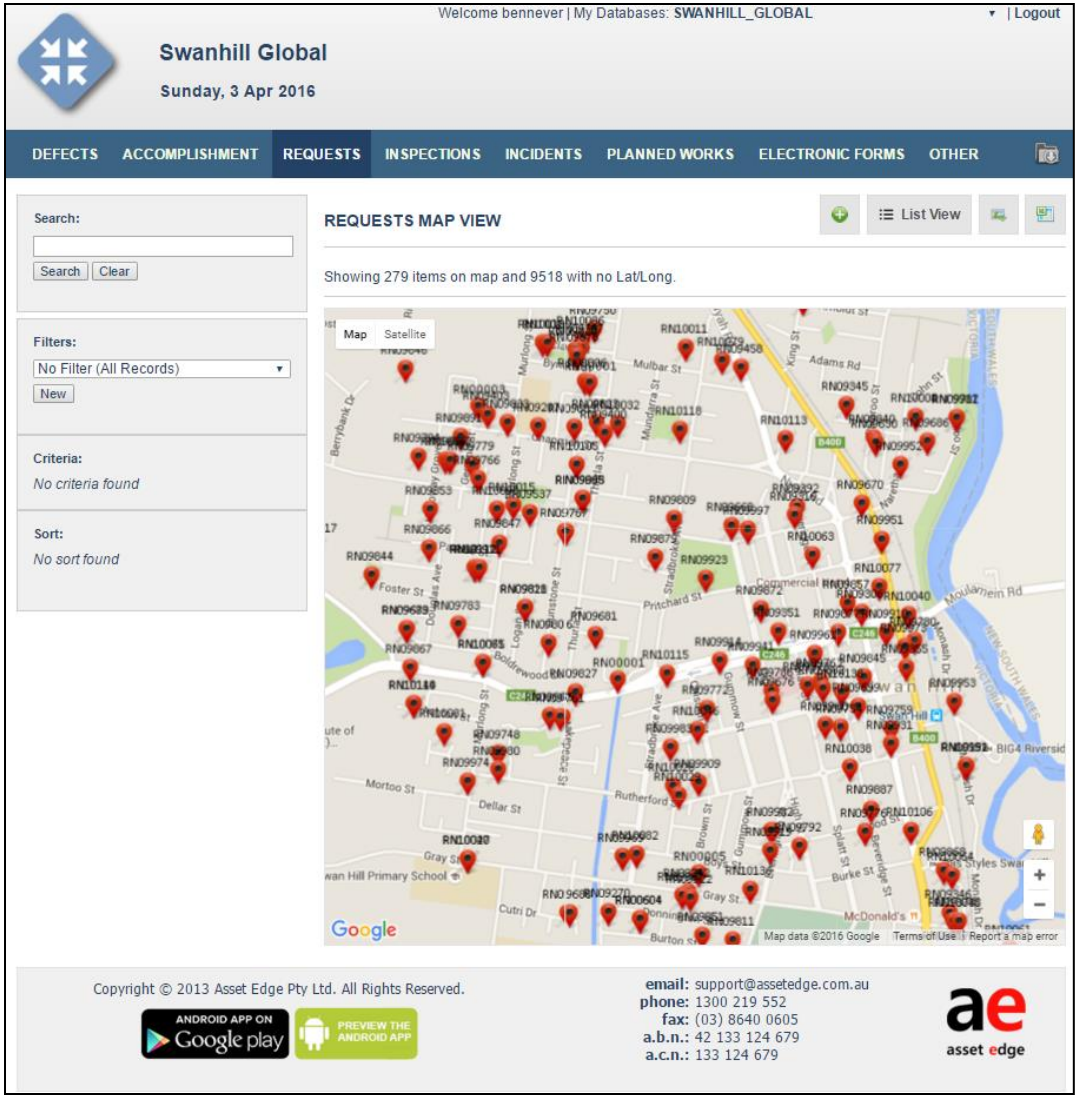
Future inspections will be considerably shortened in time as all information is loaded on the mobile device and only condition data may need to be amended.

REQUEST MANAGEMENT- Swan Hill

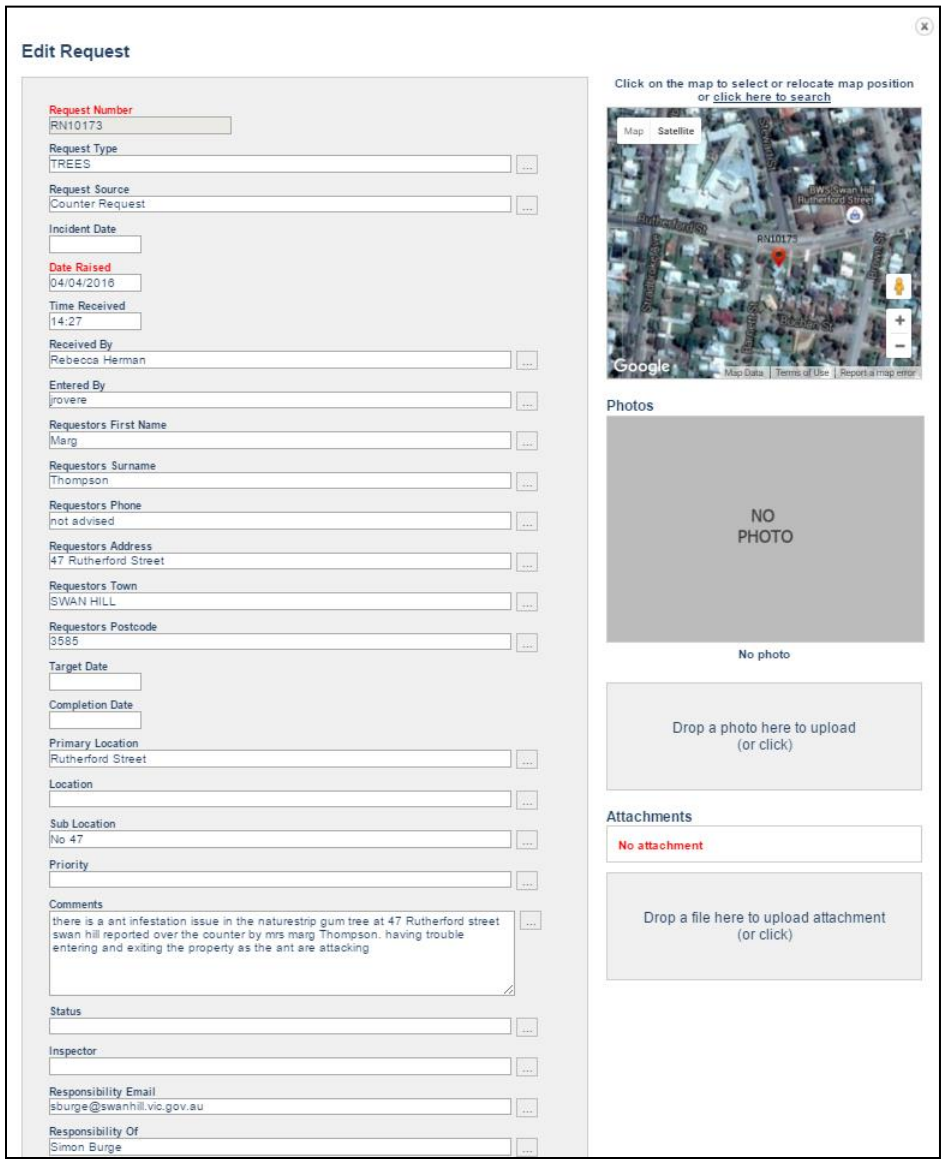
Background:

Swan Hill Rural City Council situated in North West Victoria is one of the most prolific users of the Request Module with Reflect.

With the introduction of Request Entry Web, Council is now able to manage and measure the delivery of its services to the community.



REQUEST MANAGEMENT- Swan Hill



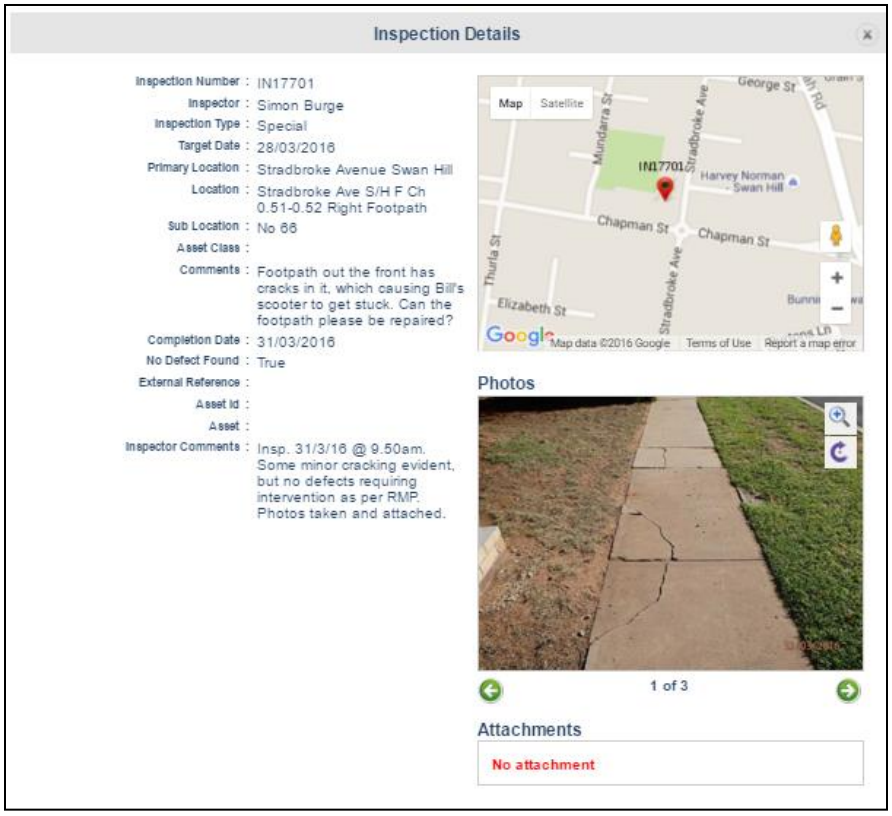
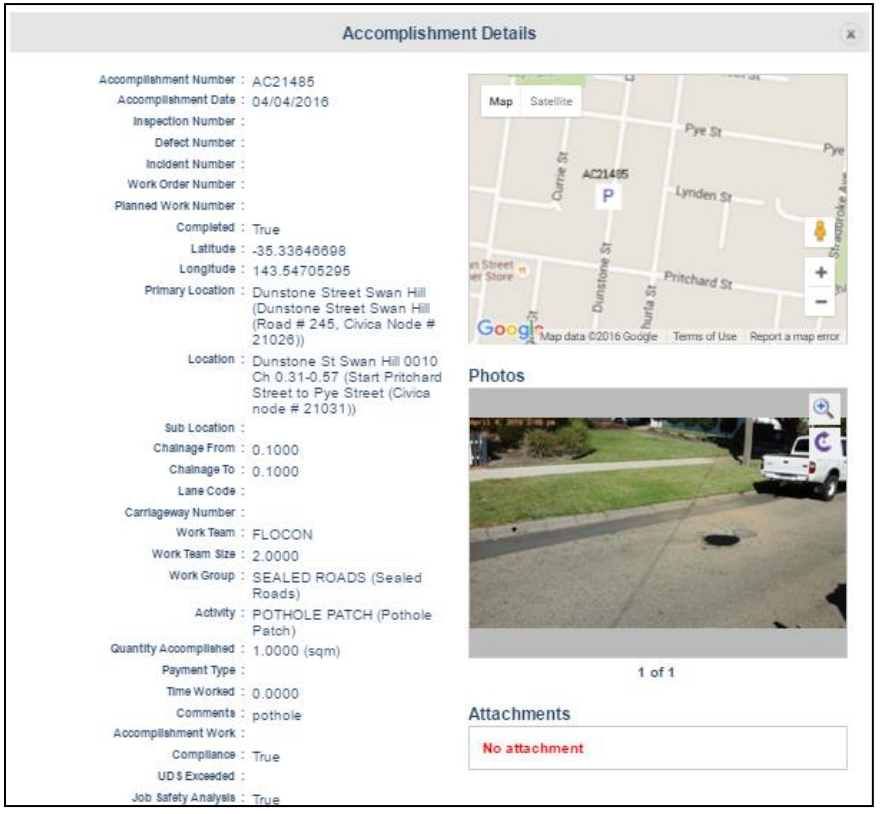
Swan Hill Rural City Council utilises the following system in **Reflect**

REQUEST *(front counter, email or calls)*

INSPECTION

ACCOMPLISHMENT
(closes out the Request)

There is also some utilisation of Planned Works and Defects by internal staff.

REQUEST MANAGEMENT- Swan Hill

Inspection and Accomplishment information is easily accessed from the **Reflect** Web interface. Search, filter and reporting tools enables the users to easily source required information.