

Development of a Critical Assets Database for the Sunshine Coast Council

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Introduction

The Stormwater Services Unit of the Sunshine Coast Council (SCC) identified the need to develop a Critical Assets Database for those stormwater assets which were considered to be vital to the effective operation of the drainage network during times of flooding.

The proposal was to undertake a level of risk management to identify those critical assets to ensure effective functioning of the drainage network during severe weather events. Once the assets were identified it is then possible to ascertain and refine key maintenance and operational plans. A key criteria when identifying a critical asset is the consequences of failure the asset would have on the health and safety of the community, service delivery and unforeseen costs to the asset owner. Critical assets would be placed in a separate Levels of Service (LoS) category highlighting their importance in the annual bid for Capital Works funding.

During the initial consultation phase with a variety of Stakeholders, it soon became clear that there was a need and desire to expand the database to include other Critical Assets impacted by stormwater assets failing such as:

- Hospitals, ambulance, fire and police stations
- SES and council depots
- Community centres to be used as emergency meeting points
- Telecommunications facilities, sewer and water treatment plants
- Major roadways and access roads

This paper outlines how the process has been developed and areas to be investigated for further works. Key outcomes from the program include the importance of robust and comprehensive consultation with all key stakeholders, and prioritisation of risk mitigation plans to assist with allocation of future funding.

Background

In early 2017, Sunshine Coast Council identified the need to undertake a study of the region to ascertain where stormwater assets may be significantly impacted in a major storm event, and thus have a negative impact on the public or crucial infrastructure. It would be desirable to be able to inspect these assets immediately before during and after a major storm or cyclone, to be able to deal with any potential flow impediments, and thus minimize flooding.

Initial Development

Initial development included undertaking desktop surveys of council's ArcGIS system to identify catchments that may have a more significant impact on local communities during severe storm events. It was clear in these early stages of the survey that there needed to be a more detailed investigation focusing on the overall region.

Further to this the Stormwater Unit identified other utilities and facilities that would be impacted and thus further engagement with other stakeholders both internally and externally would be required. Part of the initial development was to identify the key assets, relevant asset owners, and their respective responsibilities.

Broadening of Scope and Key Stakeholders

Due to the regional significance of the project, it became essential to broaden the scope of the survey. This started with engaging internal stakeholders to ascertain key assets and the units that were responsible for the maintenance of these assets. Construction and Maintenance Services were engaged early in the development of the program due to their knowledge and experience when dealing with incidents as a result of major storm event. Other units included Stormwater Planning and Policy Unit and Sunshine Coast Council Disaster Management Team.

The stakeholders were invited to identify assets they deemed critical and the level of significance the assets have to the community. Finally a contractor was engaged to undertake the study and part of their reporting would be to include any external stakeholders, such as the State Emergency Services (SES), and the Queensland Police Service (QPS) as part of the scope of works.

Critical Asset Identification Criteria

The contractor undertook a comprehensive review of existing assets to identify facilities, road networks used to access these facilities, and also undertook an assessment of the stormwater assets. All trunk collector roads were included in this assessment, even if they are not required for access to critical facilities. Once the contractor had received this information a register was developed listing all possible affected facilities and assessed against Sunshine Coast Council's flood modelling system.

Stormwater assets were assessed only if they were negatively affected by at least one flood model. In some cases, an asset was affected by more than one flood model, and thus the most relevant model was noted in the register. Typically, most cases were worst impacted by current and future climate riverine flooding, and thus riverine flooding was noted most frequently in the register.

Data Capture and Distribution

In many cases where storm-tide flooding was affecting stormwater assets, the future climate flooding level was typically slightly higher than the storm-tide level. The registers have been compiled as *Tables* in *Excel* format, to allow the user to easily sort and filter data. This is useful for interrogating an attribute, such as filtering for suburb name, road name, facility type, road type or flood type. A combination of filtering and sorting can be used to assist with future prioritization, such as filtering for road type and then sorting for flood type.

The assessment is presented in such a way that it can be used for future site inspection works. In support of this, local maps have been compiled to identify stormwater assets on site and to present the flood modal affecting the critical facility or critical road. The local map can be accessed electronically by selecting the link on the critical assets registers. The assessment is represented in two registers, one for assets associated with critical facilities and one for assets associated with critical roads. The register includes details of stormwater assets located on the facility property and directly downstream of the property, having a hydraulic influence on the site. The register is available to all council employees and has been introduced as an important source of information for Council Disaster Management team.

Figure 1. An Extract of Critical Asset data from the CONFIRM AM System

Classification / Facility Use	Asset Name	Owner	Suburb	Critical Access Road	Stormwater Asset	Asset ID	US IL	DS IL	Length	Comments	Local	GIS Map	Assessment Complete
Aged Care	Arcare Maroochydore	Private	Maroochydore	Dalton Drive	no critical stormwater assets defined	-	-	-	-	* Roads 1% AEP affected * Facility 1% AEP affected * Stormwater Quality Devices Present - Possible GPT	Link		yes
Aged Care	Arcare Perregrin Springs	Private	Perregrin Springs	Perregrin Springs Drive	no critical stormwater assets defined	-	-	-	-		Link		yes
Aged Care	Blue Care Bli Bli Aged Care Facility	Private	Bli Bli	Bli Bli Road	no critical stormwater assets defined	-	-	-	-	* Roads 1% AEP affected * Facility 1% AEP affected * Maroochy Wetlands adjacent	Link		yes
Aged Care	Blue Care Caloundra Aged Care Facility	Private	Caloundra	Caloundra Road	no critical stormwater assets defined	-	-	-	-	* Roads 1% AEP affected	Link		yes
Aged Care	Blue Care Dicky Beach Aged Care Facility	Private	Dicky Beach	Cooroora Street	no critical stormwater assets defined	-	-	-	-	* Roads 1% AEP affected	Link		yes
Aged Care	Blue Care Warana Beachwood Aged Care Facility	Private	Warana	Nicklin Way	Stormwater pipes in Nicklin Way but no gully pits in close proximity. Could possibly be a Field Inlet to south which isnt shown on mymaps	-	-	-	-	* Affected by Local Flooding * Canals adjacent	Link	Link	yes
Aged Care	Buderim Views Assisted Aged Care	Private	Buderim	Mooloolaba Road	no critical stormwater assets defined	-	-	-	-		Link		yes
Aged Care	Caloundra Adventist Retirement Village	Private	Little Mountain	Sunset Drive Sugar Bag Road Caloundra Rd	no critical stormwater assets defined	-	-	-	-		Link		yes
Aged Care	Coolum Waters Retirement Resort	Private	Coolum Beach	David Low Way	no critical stormwater assets defined	-	-	-	-	* Roads 1% AEP affected * Facility 1% AEP affected * Shummers Creek adjacent	Link		yes
Aged Care	Estia Health Mount Coolum	Private	Mount Coolum	Suncoast Beach Drive David Low Way	Field Inlet Type 2 1050dia Open Drain Grassed Pipe 600RCP/1 Field Inlet type 2 1050dia	229196 1913 141595 229197	2.72 SL 1.83 1.32 2.85 SL	1.31 n/a 1.32 1.83	n/a u/n 100.69	* Roads 1% AEP affected * Facility 1% AEP affected * Drainage Reserve adjacent	Link	Link	yes
Aged Care	Estia Health Nambour	Private	Nambour	Glenbrook Drive Image Flat Road	Gully Pit Pipe 1350RCP/1 Manhole 1800 Pipe 1350RCP/1 Manhole 1800 Pipe 1350RCP/1	209247 124271 205204 106508 205205 123524	59.75 SL 57.4 59.42 SL 56.95 59.55 SL 56.7	57 56.75 56.5	35.24 59 64.97		Link	Link	yes
Aged Care	Glenbrook Residential Aged Care Facility	Private	Nambour	Jack St Glenbrook Dr Image Flat Rd	no critical stormwater assets defined	-	-	-	-		Link		yes
Aged Care	Immanuel Gardens Retirement Village	Private	Buderim	Magnetic Dr Whitehaven Dr Deloraine Dr Mooloolaba Road	no critical stormwater assets defined	-	-	-	-		Link		yes
Aged Care	IRT Woodlands	Private	Meridan Plains	Woodlands Boulevard Kawana Way Meridan Way	no critical stormwater assets defined	-	-	-	-	* Roads 1% AEP affected * Facility 1% AEP affected * Drainage Reserve adjacent * Stormwater Quality	Link		yes

Future development

Future stages of the project are recommended to include the following:

- Due to the large number of critical road stormwater assets affecting access to critical facilities, it is recommended that Sunshine Coast Council prioritise the remaining incomplete asset assessments i.e. CCTV and condition assessments. Site inspections can then be carried out in this same order of priority, as the assessment. Prioritising the assessment will allow site inspections to be staged, and ensure that the most critical assets be inspected first. The assessment may be prioritised according to various attributes, such as suburb, road hierarchy or flood hazard type. An approach may be to prioritise according to road hierarchy and according to low-lying coastal suburbs. The prioritisation model could be weighted to reflect the overall risk, and thus more accurately meet the objectives of the project.
- Major sewer pump stations should be included into the critical facilities register, and therefore access roads to the major sewer pump stations must be added to the critical roads register. A list of major sewer pump stations should be compiled and reviewed in conjunction with the service provider, to determine if they are critical in terms of the project objectives.

- More detailed investigation/comment by facilities owners, with possible inclusive links to Environmental Management Plans; Fire & Evacuation Plans; Disaster Management Plans and other emergency services providers.
- Display of the location of critical assets (including major details) on a new GIS layer in Geohub and ArcGis. (or in a format preferred by Disaster Management).
- Identification of “sub-standard” assets (both stormwater and other, eg. non-resilient shelters, roads, hospitals), and projected upgrades where required.

Conclusion

The assessment of critical facilities stormwater assets is complete, with the exception of sewer pump stations. The assessment of critical road stormwater assets is incomplete due to the large number of critical stormwater assets across the region. The assessment has been completed for critical roads located in the a number of suburbs, comprising 23 critical road assessments complete out of a total of 220 critical roads identified. The number of stormwater assets assessed for the 23 critical roads is approximately 1000 assets.

Sunshine Coast Council as a result of this critical asset register has a strong base to work from when identifying existing assets and at the same time has a robust model that will allow future critical assets to be easily surveyed and allow various key stakeholders to quickly define which assets require greater attention during large storm events.

Keywords: Council; Flooding; Community; Stormwater; Disaster Management