



SUPPLEMENTARY AGENDA

16th August 2022

18.1 PREPARING AUSTRALIAN COMMUNITIES PROGRAM GRANT - TECHNICAL MEMORANDUM

Council have received a technical memorandum from Ms Kate Kiseleva, Civil Engineer at GHD which is provided as an interim communication under our agreement with Central Highlands Council. The technical memorandum is provided to have a thorough understanding of the data available for the project area and to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way or for any other purpose.

The technical memorandum provides a brief outline of:

- Summary of data reviewed to date
- Recommendation of additional data required to build the model
- Outline of the modelling methodology

Data and information available from previous studies/flood events was collated and examined. A search for any additional relevant data was also performed. It is found that the available Digital Elevation Model (Elvis website) is of sufficient quality to construct the hydrologic and hydraulic model. However, it is necessary to capture critical topographic features of the river such as bends and flow paths, and sufficient details of hydraulic features such as river cross sections, bridges, culverts and levees.

This brief progress memo will summarise the data available and quality of the data and confirm the methodologies of the hydrologic/hydraulic analyses based on the quality of the data.

GHD has prepared this technical memorandum on the basis of information provided by the Client and others who provided information to GHD (which may also include Government authorities), which GHD has not independently verified or checked for the purpose of this memorandum. GHD does not accept liability in connection with such unverified information, including errors and omissions in the memorandum which were caused by errors or omissions in that information.

This preliminary review will determine and document the following parameters:

- Bathymetry and topography.
- Availability of model input data.
- Data gaps and providing recommendations for additional studies or field investigations.
- Confirmation of the proposed flood modelling methodology and discussion of any expected limitations and uncertainties regarding the modelling outcomes.

Review of existing documents

A review of relevant documents of the study area is summarised below.

Table 1 Document Summary

Document/Model/. dwg	Date	Author	Client	Contents
Stormwater Infrastructure Survey and Assessment of the Bothwell Township	May 2019	PDA Surveyors (PDA)	Central Highlands Council	PDA undertook the stormwater Infrastructure survey, flood analysis of stormwater infrastructure and concept design for proposed upgrading to control flood in Bothwell township.

				<p>The hydraulic modelling discovered that the existing pipework is critically under capacity and replacement /add pipelines or culverts to accommodate the flow.</p> <p>PDA investigated 3 options to upgrade the system. The modelled options are as follows:</p> <p>Option 1. Below William Street, new stormwater pipework to be laid down High Street to a new head wall in Arthur Crescent. The detail survey in this area shows that this section of pipework would also need to be around 3 metres deep in some places along High Street.</p> <p>Option 2. Below William Street, new stormwater pipework to be laid down High Street to a new head wall adjacent to the sewer treatment plant. Our detail survey in this area shows that this section of pipework would need to be around 3 metres deep in some places along High Street.</p> <p>Option 3. Below William Street, new stormwater pipework to be laid along the local overland flow path through the back of the hotel and through No 8 Patrick St and No 4 Patrick St.</p> <p>PDA were advised that Option 1 is the Councils preferred option for implementation.</p> <p>Subsequently Council installed a new stormwater pipework along High Street and new head wall in Arthur Crescent.</p>
PDA DRAINS Model	2019	PDA Surveyors (PDA)	Central Highlands Council	<p>Model includes the existing stormwater pipe and pit data: invert level, surface level and diameter, as well as cross section data for the overland flow paths.</p> <p>However, the DRAINS model does not include the proposed pipe network as subsequently constructed by Council.</p>
H-2012UBKGRD_170620.dwg H-2012U-1-13_170926.dwg	2019	PDA Surveyors (PDA)	Central Highlands Council	Drawing included the background data, paved areas, folio reference, building polygons, Clyde River centreline.
V731AC Cadastre_contours_control_ridgelines_MGAz55	-			Drawing included cadastral parcels, contours, and ridge lines.
ELVIS LIDAR-DEM 1m GDA2020 zone55	Downloaded on 3/08/2022	Tas. Gov.		A preliminary review of Elvis's DEM 1m (2019) has highlighted no issues within the study area. However, a thorough review of the ground elevations will be carried out during the hydraulic model development, and the artificial steps will be identified and treated.

Information required to allow model setup

It is recommended to obtain the following information in order to build the model for the project area:

- A feature survey of geometric characteristics of all bridges/crossings in the project area to allow the hydraulic model to correctly reflect the structures crossing the Clyde River.
- AutoCad/GIS files of new sections of the pipeline along High Street to Arthur Crescent to reflect upgraded infrastructure within project area.

The additional below data was identified as potentially useful information for incorporation into the model. This data has not yet been provided to allow review of the relevance.

- DPI hydrology data
- GHD Project Number (Previous flood mapping works)
- River Clyde Trust data
- Luke Taylor consultant - flood mapping works

Modelling Methodology

Below is an outline of the proposed modelling methodology for Clyde River and to include the major changes within the project area.

- Data collection (survey of hydraulic features such as river cross sections, bridges, culverts and levees)
- A site visit
- Perform GIS assessment to delineate the sub-catchments (to be undertaken using DEM data).
- Perform land use classification (to be undertaken using TheList data centre “interim planning scheme zoning statewide” layer).
- Assign the roughness coefficients and initial and continuing losses.
- Catchment hydrology assessment and develop rainfall-runoff models for current and future design rainfall events.
- Develop a coupled 1D/2D hydraulic model.
- Design events - the hydraulic model will be simulated for design flood events with AEPs of 5% and 1%, qualitative consideration of the impact of climate change to flooding of River Clyde will be given in accordance with the ARR2019.
- Perform sensitivity analysis, calibration and validation of the models (assume that rainfall and river gauging data in the catchment is not limited).
- Perform analysis of design flows and water levels for current and design rainfall events.
- Produce flood risk/hazard maps suitable for emergency response planning and increase community awareness of flood risk.
- Land Use Planning analysis.
- Undertake Natural Values Assessment.
- Undertake landowner, Council and stakeholder engagement.
- Provide flood mitigation options in a final report to Council; and
- Cost/Benefit Analysis into the feasibility of a flood levy or related dam works.
- Land Use Planning input and analysis (feasibility of works under the Resource Management and Planning System Tasmania).

Recommendation:

That Council receive the technical memorandum from GHD for the River Clyde Flood Mapping / Study.

Technical Memorandum

11 August 2022

To	Adam Wilson	Contact No.	12571871
Copy to		Email	AWilson@centralhighlands.tas.gov.au
From	Cameron Ormes	Project No.	12571871
Project Name	River Clyde Flood Mapping Study		
Subject	Progress Report		

1. Introduction

Data and information available from previous studies/flood events was collated and examined. A search for any additional relevant data was also performed. It is found that the available Digital Elevation Model (Elvis website) is of sufficient quality to construct the hydrologic and hydraulic model. However, it is necessary to capture critical topographic features of the river such as bends and flow paths, and sufficient details of hydraulic features such as river cross sections, bridges, culverts and levees.

This brief progress memo will summarise the data available and quality of the data and confirm the methodologies of the hydrologic/hydraulic analyses based on the quality of the data.

1.1 Purpose of this Memorandum

This Technical memorandum is provided as an interim communication under our agreement with Central Highlands Regional Council. It is provided to have a thorough understanding of the data available for the project area and to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way or for any other purpose.

1.2 Scope and limitations

This technical memorandum has been prepared by GHD for Central Highlands Regional Council. It is not prepared as, and is not represented to be, a deliverable suitable for reliance by any person for any purpose. It is not intended for circulation or incorporation into other documents. The matters discussed in this memorandum are limited to those specifically detailed in the memorandum and are subject to any limitations or assumptions specially set out.

Accessibility of documents

If this Technical Memorandum is required to be accessible in any other format this can be provided by GHD upon request and at an additional cost if necessary.

GHD has prepared this memorandum on the basis of information provided by the Client and others who provided information to GHD (which may also include Government authorities), which GHD has not independently verified or checked for the purpose of this memorandum. GHD does not accept liability in connection with such unverified information, including errors and omissions in the memorandum which were caused by errors or omissions in that information.

This Technical Memorandum is provided as an interim output under our agreement with Central Highlands Regional Council. It is provided to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way.

2. Scope

This preliminary review will determine and document the following parameters:

- Bathymetry and topography.
- Availability of model input data.
- Data gaps and providing recommendations for additional studies or field investigations.
- Confirmation of the proposed flood modelling methodology and discussion of any expected limitations and uncertainties regarding the modelling outcomes.

3. Review of existing documents

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Regards

Kate Kiseleva
Civil Engineer