Flood Hazard Modelling

Identification Information

Dataset Name: Rapid Flood Hazard Model, Detailed Flood Hazard Model

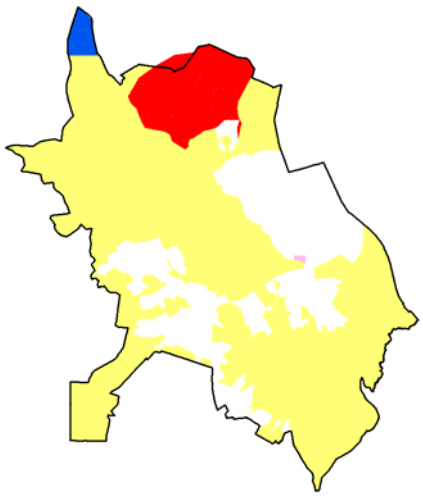
Dataset Abstract:
The flood hazard model identifies areas that may be subject to flooding in a 100 year event.

The document **Stormwater Flood Hazard Report** (see the 'Further Metadata Information' section) has full details about these datasets and the methodologies used to produce them.

The datasets contain the following information:

Rapid Flood Hazard Model
The rapid flood hazard assessment provides a high level understanding of areas that may flood in a significant storm event and was used to prioritise areas for the detailed flood hazard modelling. This assessment did not include the primary stormwater network infrastructure in the model i.e. pipes, watercourses, drains, ponds and catchpits (apart from road culverts) and assumed that all ground acts like an impervious surface i.e. all rainfall becomes surface runoff.

Four separate rapid flood hazard model datasets were produced, each covering a discreet geographical area of the city as illustrated below:



m1_Citywide_5m_20121211

m7_Kirikiriroa_2m20121211

m8_Rototuna_2m_20121115'

m9_NorthernExtn_5m

Detailed Flood Hazard Model

The detailed flood hazard model was undertaken on a number of sub catchments identified in the rapid flood hazard assessment as having the highest number of properties at risk of flooding. The model included all primary stormwater network infrastructure. These sub catchments represent approximately 16% of the city and the remainder is likely to be assessed over the next 10 year period (2012-2022). The detailed flood hazard model, along with historic flooding information, was used to inform the Hamilton proposed district plan.

Content of Dataset:

RAPID FLOOD HAZARD MODEL

The data is maintained in its 'delivered' format, being a file geodatabase which is contained in the following location:

L:\GIS\1 Working\City Waters\Hydraulic Model Results\FHM\1 - Current Datasets\AECOM Rapid FHM Results Supplied 26-02-13\Rapid_FHM_20121211.gdb

Rapid Flood Hazard Model Layers:

Rapid FHM Layer Name	Description
m1_Citywide_5m_20121211	Rapid flood model dataset for the 'm1_Citywide_5m_20121211' Rapid Flood Hazard Model result containing individual model results for each cell (5x5m) for nominated model parameters. VxD, Bathy, MaxDepth, MaxVelocity
m7_Kirikiriroa_2m_20121211	Rapid flood model dataset for the 'm7_Kirikiriroa_2m_20121211' Rapid Flood Hazard Model result containing individual model results for each cell (2x2m) for nominated model parameters. VxD, Bathy, MaxDepth, MaxVelocity
m8_Rototuna_2m_20121115	Rapid flood model dataset for the 'm8_Rototuna_2m_20121115' Rapid Flood Hazard Model result containing individual model results for each cell (2x2m) for nominated model parameters. VxD, Bathy, MaxDepth, MaxVelocity
m9_NorthernExtn_5m_20121127	Rapid flood model dataset for the 'm9_NorthernExtn_5m_20121127' Rapid Flood Hazard Model result containing individual model results for each cell (5x5m) for nominated model parameters. VxD, Bathy, MaxDepth, MaxVelocity

Rapid Flood Hazard Model Attributes:

Rapid FHM Field Name	Description
ObjectID	*ArcGIS System Field*
Shape	*ArcGIS System Field*
Confidence	AECOM-HCC confidence level in the results based on modelling methodology

Rapid FHM Field Name	Description
Method	Model method used e.g. 5m RFA
Input_Model	Source model for results
MaxV_Velocity	Maximum Velocity (V) – Velocity Value(m/s) Maximum velocity of water experienced in the cell during the modelled storm event'.
MaxV_Depth	Maximum Velocity (V) – Depth Value(m) Depth of water in the cell at the time when maximum water velocity occurs'.
MaxD_Depth	Maximum Depth (D) – Depth Value(m) Maximum water depth experienced in the cell during the modelled storm event'.
MaxD_Velocity	Maximum Depth (D) – Velocity Value(m/s) Velocity of water in the cell at the time when maximum water depth occurs'.
Hazard_Factor	Hazard classification (based on hazard factor classification graph)
Surface_RL	Ground surface level for cell in model from Digital Elevation Model (DEM)
FH_VxD	Greatest value of velocity multiplied by depth (V x D)
Adjusted_Hazard_Factor	Numeric value after processing of original HF data to remove isolated squares and rationalise the data for generation of smoothed representation of grid based model results.
Shape_length	*ArcGIS System Field*
Shape_Area	*ArcGIS System Field*

DETAILED FLOOD HAZARD MODEL

The data is maintained in its 'delivered' format, being a file geodatabase which is contained in the following location:

L:\GIS\1 Working\City Waters\Hydraulic Model Results\FHM\1 - Current Datasets\AECOM Detailed FHM Model Results Supplied 14-05-13\FHM_Wai_Mang_Model_Reruns_20130509_v93.gdb

Detailed Flood Hazard Model Layers:

Detailed FHM Layer Name	Description
FH_Phase_2_Detailed_Model_Merged_20130513	Merged up detailed flood model datasets for Rapid Flood Hazard Model result containing individual model results for each cell (2x2m) for nominated model parameters.

Detailed Flood Hazard Model Attributes:

Detailed FHM Field Name	Description
ObjectID	*ArcGIS System Field*
Shape	*ArcGIS System Field*
Confidence	AECOM-HCC confidence level in the results based on modelling methodology
Method	Model method used e.g. Detailed
Input_Model	Source model for results

Detailed FHM Field Name	Description
MaxV_Velocity	Maximum Velocity (V) – Velocity Value(m/s) Maximum velocity of water experienced in the cell during the modelled storm event'.
MaxV_Depth	Maximum Velocity (V) – Depth Value(m) Depth of water in the cell at the time when maximum water velocity occurs'.
MaxD_Depth	Maximum Depth (D) – Depth Value(m) Maximum water depth experienced in the cell during the modelled storm event'.
MaxD_Velocity	Maximum Depth (D) – Velocity Value(m/s) Velocity of water in the cell at the time when maximum water depth occurs'.
Hazard_Factor	Hazard classification (based on hazard factor classification graph)
Surface_RL	Ground surface level for cell in model from Digital Elevation Model (DEM)
FH_VxD	Greatest value of velocity multiplied by depth (V x D)
Adjusted_Hazard_Factor	Numeric value after processing of original HF data to remove isolated squares and rationalise the data for generation of smoothed representation of grid based model results.
Shape_length	*ArcGIS System Field*
Shape_Area	*ArcGIS System Field*

Layer ID: N/A

Metadata Date: 29 March 2016

Spatial Information

Geographic Extent: For the Rapid Flood Hazard Model: Hamilton City Boundary. For the Detailed Flood Hazard Model: The following sub-catchments of Hamilton East, Mangakotukutuku, Waitawhiriwhiri, City CBD, Callum Brae. See the Stormwater Flood Hazard Report for maps of these extents.

Projection: New Zealand Transverse Mercator (GD2000), Moturiki Vertical Datum (Local MSL Datum: Moturiki 1953, Datum Code: MOTUHT1953, Reference Mark: BC 84 (B309)).

Source data (from which the model data was derived) that required transforming into this coordinate system was done so using the published algorithm provided within the ESRI ArcGIS system.

Spatial Accuracy: The Rapid FHM was undertaken using 2008 LiDAR survey data to develop a 3-D ground surface profile. The LiDAR is generally understood to have an accuracy level of +/-250mm. The Rapid FHM was completed across the entire city using a 5x5m grid. The grid models the ground surface as a single level by averaging the surveyed ground levels within the grid i.e. the smaller the grid spacing, the more accurate the model surface. The range of uncertainty in flood water level for Rapid FHM processes as a result of the combined effect of LiDAR and other inaccuracies could in some situations be in excess of 0.5m. See the Stormwater Flood Hazard Report for further information.

It is estimated that the overall grading is 2 (+/-5%) (IIMM 2011 Grading).

Data Quality Information

Data Quality: Refer to the Stormwater Flood Hazard Report for details.

Attribute Accuracy: It is estimated that the overall grading is 2 (+/-5%) (IIMM 2011 Grading).

Distribution Information

Data Form: Digital GIS Files- ESRI File Geodatabase (gdb)

Digital Format: The spatial data was modelled separately and captured and edited in ArcGIS. Refer to the Stormwater Flood Hazard Report and the 3 Waters Modelling - Spatial Data Management - Data Dictionary and Application Guidelines for further information.

Layer Availability: In terms of Rapid FHM data, it is available to consultants working on City Waters behalf. Where a consultant is working on behalf of council (but not City Waters) then a request must be made to City Waters for approval. Otherwise, the data is not available for general use.
In terms of the Detailed FHM data, it is available to everyone. This metadata and the disclaimers must be included in all cases.

Disclaimer:

1. Use of this data is entirely at the risk of the user.
2. Hamilton City Council (the Council) and its employees, while providing this information in good faith, accept no responsibility or liability for any loss, damage, injury, or loss in value to any person, property, service or otherwise resulting from its use.
3. The preparation and provision of the information has been made in good faith from a number of sources. While all due care has been taken, the Council does not give any warranty in regard to the availability, accuracy, completeness, currency or reliability of the information.

RAPID FLOOD HAZARD MODEL:
The rapid flood hazard assessment provides a high level understanding of areas that may flood in a significant storm event and was used to prioritise areas for the detailed flood hazard modelling. This assessment did not include the primary stormwater network infrastructure in the model i.e. pipes, watercourses, drains, ponds and catchpits (apart from road culverts) and assumed that all ground acts like an impervious surface i.e. all rainfall becomes surface runoff.

Copyright: Copyright Hamilton City Council

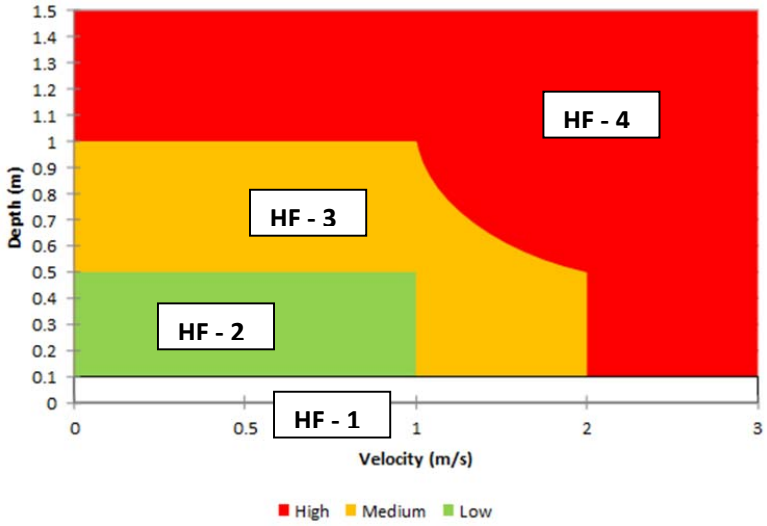
Licence: Subject to Hamilton City Council Digital Data License Agreement. An agreement must be signed by the third party before any data is supplied. That agreement must include the disclaimer herein.

Data Acquisition History

Period and Frequency of Record: The 2008 LiDAR data was used to produce the models and the data was compiled between approximately 2010 and 2012.

The data is a snapshot in time and will be augmented over a 10 year period (2012-2022) with the development of integrated catchment management plans.

The Hazard Factor (and Adjusted Hazard Factor) was calculated in accordance with the Hazard Classification Graph:



Refer to the Stormwater Flood Hazard Report for full details.

Completeness: Refer to the Stormwater Flood Hazard Report for full details.

Status Information

Data Status: In terms of Rapid FHM, the data is current to 2012. In terms of Detailed FHM, the data is current to 2013.

Further Metadata Information

Related Information: 3 Waters Modelling - Spatial Data Management - Data Dictionary and Application Guidelines, TRIM D-1495618

Stormwater Flood Hazard Report - Final - Contract 10006 - AECOM - 29/10/12, TRIM D-695883
(Also available online at http://www.hamilton.govt.nz/our-council/council-publications/districtplans/flood/Pages/default.aspx)

Stormwater Modelling Overview Report - Proposed District Plan - AECOM - Contract 10006 - Final - 29/10/12, TRIM D-695885
(Also available online at http://www.hamilton.govt.nz/our-council/council-publications/districtplans/flood/Pages/default.aspx)

Need More Help? Email citywatersdata@hcc.govt.nz

Contact Details

Contact Organisation:
Hamilton City Council

Contact Position:
Asset Information Team Leader, City Waters

Contact Address:

Council Building

Garden Place

Private Bag 3010

Hamilton 3240

Phone: 07 838 6999

Email: citywatersdata@hcc.govt.nz

Supplier: As above