Expert Report of Matthew Barnes

Extreme Sea Level Flood Mapping
Pabai & Anor v Commonwealth of Australia (VID622/2021)

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Reviewed By	Phillip Haines
Project Manager	Matthew Barnes

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The Amendment Record below records the history and issue status of this document.

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Contents

1 Introduction

Dr Matthew Barnes has been retained by the Australian Government Solicitor (acting on behalf of the Commonwealth of Australia) in the Pabai & Annor v Commonwealth of Australia (VID622/2021) class action before the Federal Court of Australia.

The letters of engagement and questions responded to in this report are provided in Annex A. The questions and responses relate to the development of maps that show the extent of inundation at Boigu, Saibai, Poruma and Warraber associated with extreme sea levels that have been derived by others. The structure of this report follows the questions posed:

- Section 2: Basis of expertise
- Section 3: Description of the mapping process, including key assumptions and uncertainties
- Section 4: Inundation maps for Boigu, Saibai, Poruma and Warraber based on extreme sea level scenarios
- Section 5: Interpretation of mapping provided in the Bettington Report

The opinions expressed in this report are those of Matthew Barnes. The following BMT staff members assisted with the preparation of this report:

- Dr Julian Manning (Senior Spatial Scientist) and Mr Jay Patel (Spatial Analyst) assisted with data processing and the preparation of mapping.
- Dr Phillip Haines (Senior Principal Engineer) provided a final review of this report.

Acknowledgement

I have read and complied with the Federal Court Expert Evidence Practice Note (GPN-EXPT) and the Harmonised Expert Witness Code of Conduct. I agree to be bound by them and I have complied with them in preparing this report.

The opinions in this report are based wholly or substantially on my specialised knowledge arising from my training, study and experience.

I declare that I have made all the inquiries which I believe are desirable and appropriate (save for any matters identified explicitly in the report), and that no matters of significance which I regard as relevant have, to my knowledge, been withheld from the Court.

BMT

Dr Matthew Barnes
APAC Coastal Programme Manager / QLD Coastal Team Leader

2 Basis of expertise for Dr Matthew Barnes

My tertiary qualifications include:

- Bachelor of Engineering Technology (Coastal Resource Management) from Deakin University, Victoria, Australia (2002)
- Master of Science (Applied Marine Science, Coastal Engineering Pathway) from University of Plymouth, Devon, United Kingdom (2004)
- Doctor of Philosophy in Civil (Coastal) Engineering from University of Queensland, Queensland, Australia (2009)

Since 2007 I have worked as a coastal engineering consultant. In 2010 I joined BMT, a maritime-oriented global consultancy. I currently hold the positions of Queensland Coastal Team Leader and Asia Pacific (APAC) Coastal Programme Manager. In these roles I lead or oversee the delivery of projects within port and coastal areas in support of strategic planning, development and operations. My areas of expertise include:

- Numerical modelling of coastal and estuarine processes
- Storm tide and coastal erosion assessment and mapping
- Climate change adaptation
- Coastal protection structures and beach nourishment
- Dredging studies and dredge plume modelling
- Coastal zone development approval

Some notable career highlights relevant to the questions answered in this report include:

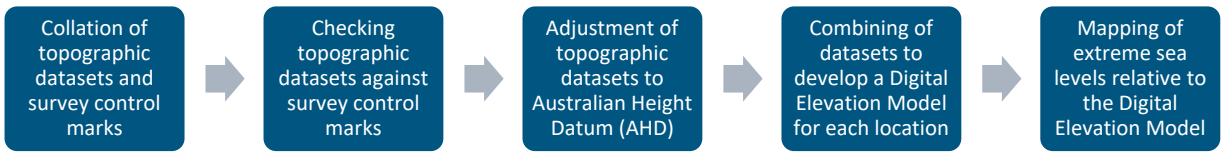
- Development of the ‘how to choose an appropriate spatial scale for coastal hazard mapping’ guide for CoastAdapt and the National Climate Chage Adaptation Research Facility established by the Australian Government.
- Recognition in 2018 as one of the Most Innovative Engineers (Engineers Australia) for work related to coastal hazard adaptation.
- Coordinating and providing technical input to several coastal hazard adaptation strategies throughout Australia.

My current BMT curriculum vitae is provided in Annex B and includes a list of recent projects and peer-reviewed publications.

3 Extreme sea level inundation mapping process

3.1 Introduction

The extreme sea level inundation mapping for Boigu, Saibai, Poruma and Warraber has followed the workflow illustrated below. Each stage of this process is described in this Section of the report. The extreme sea level inundation maps are presented in Section 4.



Some key definitions and abbreviations regarding 'datums' and 'Digital Elevation Models' that are used throughout this report are described below.

Datum

Modelling and mapping of flood extents requires elevation datasets (e.g. water level, topographic[1] and bathymetric[2]) to be of a consistent datum. The datum for altitude measurement in Australia is known as the Australian Height Datum (AHD).

In coastal science and engineering tidal datums are also commonly used, with elevation datasets sometimes obtained with reference to 'Port' (or 'Chart') Datum, Lowest Astronomical Tide (LAT) or Mean Sea Level (MSL).

An illustration of diurnal tidal planes and commonly used datums is shown in Figure 3.1. Also shown is a Permanent Mark (or survey control mark) that provides the reference point where the position and elevation is accurately known. It is noted that Figure 3.1 shows close alignment between AHD and MSL. This is true for most mainland coastal areas in Australia but not for islands in the Torres Strait (e.g. Metters and Pedderson 2011; SEA 2011)

The extreme sea levels referred to in this report are relative to AHD. Some topographic datasets were obtained in another datum, or the datum was uncertain, and appropriate adjustments to AHD was completed using survey control marks (as described in this Section of the report).

[1] Topographic datasets provide information about the elevation of land.
[2] Bathymetric datasets provide information about the elevation of underwater terrain (such as the seabed).

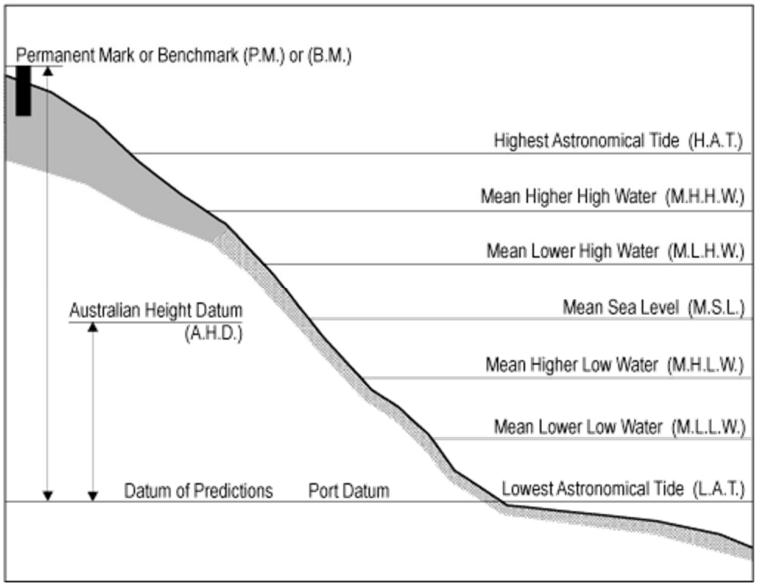


Figure 3.1 Illustration of dirunal tidal planes, Australian Height Datum (AHD) and permanent mark (Maritime Safety Queensland 2023)

Digital Elevation Model

A Digital Elevation Model (DEM) is three-dimensional model of the ground surface elevation. A DEM may be developed from elevation data obtained from ground survey, airborne techniques such as LiDAR (Light Detection and Ranging) or photogrammetry, or satellite. A DEM is needed to support the modelling and mapping of flood and coastal inundation depths and extents.

3.2 Collation of topographic datasets and survey control mark reports

The available topographic survey datasets for Boigu, Saibai, Poruma and Warraber are broadly described as either:

- Site-specific ground survey datasets obtained onsite by a surveyor. For each island these datasets covered limited sections of shoreline, often where seawalls have been constructed. These datasets were provided by the Torres Strait Island Regional Council (pursuant to the subpoena dated 20 April 2023). Details of the survey instruments and technologies used were not provided.
- High resolution elevation data captured using LiDAR technology (airborne laser scanning acquired from a fixed wing aircraft). These datasets were obtained by the Queensland Government between 2009 and 2011 and accessed via the Elvis – Elevation and Depth – Foundation Spatial Data website: https://elevation.fsdf.org.au/. For each island, two datasets were obtained:
  - Classified las (laser strikes classified as ‘ground’)
  - 1-metre resolution Digital Elevation Model (DEM)

The metadata details provided with the downloaded LiDAR suggests uncertainty with respect to the height datum. This issue has been examined and the approach for adjusting the LiDAR data to AHD using the survey control mark information is described in this Section of the report.

The survey control mark locations and reports were accessed via the Queensland Government Queensland Globe website: https://qldglobe.information.qld.gov.au/. Survey control marks (typically a

small bolt in concrete) provide an accurate measure of position and height at that location. For each island, survey control mark information was used to check the accuracy and reliability of the available topographic datasets and guide the adjustment of the datasets to AHD where this was required.

The topographic and survey control datasets and their primary purpose are listed in the tables below. The use of these datasets for developing the Digital Elevation Model for each island is described below.

Boigu

The Boigu topographic datasets are listed in Table 3.1. The ground survey was undertaken in 2019 (month uncertain) and elevations were provided relative to AHD. The metadata details provided with the downloaded LiDAR suggests uncertainty with respect to the height datum. The height datum is therefore listed as uncertain.

The survey control mark datasets are listed in Table 3.2. The report for each survey mark is provided in Annex C.

Table 3.1 Boigu datasets used to develop the Digital Elevation Model

Dataset	Height datum	Purpose
X_SV_DETAIL SURVEY.dwg (survey date: 2019)	AHD (m)	DEM for flood mapping
LiDAR Boigu Island 2009 Classified las	Uncertain	QA/QC with survey control marks
LiDAR Boigu Island 2009 1 metre Digital Elevation Model	Uncertain	DEM for flood mapping

Table 3.2 Boigu survey control marks

Mark number	AHD height (m)	Purpose
119880	3.201	Checking LiDAR
133973	3.29	Checking LiDAR
140483	2.706	Checking LiDAR
177940	3.085	Checking ground survey
177941	3.163	Checking ground survey
186491	2.99	Checking ground survey & LiDAR
186493	2.646	Checking LiDAR
189642	3.081	Checking LiDAR
189643	2.468	Checking LiDAR

Saibai

The Saibai topographic datasets are listed in Table 3.3. The date of the ground survey is uncertain but may have been undertaken between 2015 and 2017 to support seawall planning, design and construction. The ground survey elevations were provided relative to AHD. The metadata details provided with the downloaded LiDAR suggests uncertainty with respect to the height datum. The height datum is therefore listed as uncertain.

The survey control mark datasets are listed in Table 3.4. The report for each survey mark is provided in Annex D.

Table 3.3 Saibai datasets used to develop the Digital Elevation Model

Dataset	Height datum	Purpose
X_60283674_SAIBAI_SURVEY.dwg (survey date: uncertain, possibly between 2015 and 2017)	AHD (m)	DEM for flood mapping
LiDAR Saibai Island 2009 Classified las	Uncertain	QA/QC with survey control marks
LiDAR Saibai Island 2009 1 metre Digital Elevation Model	Uncertain	DEM for flood mapping

Table 3.4 Saibai survey control marks

Mark number	AHD height (m)	Purpose
177956	3.01	Checking ground survey
177954	3.069	Checking LiDAR
177952	4.733	Checking ground survey
173503	2.264	Checking LiDAR
173502	3.353	Checking ground survey
173501	2.793	Checking ground survey
123153	2.983	Checking ground survey & LiDAR
123152	2.989	Checking LiDAR
112444	2.747	Checking LiDAR

Poruma

The Poruma topographic datasets are listed in Table 3.5. The ground survey was undertaken in March 2020 and elevations were provided relative to Lowest Astronomical Tide (LAT). The metadata details provided with the downloaded LiDAR suggests uncertainty with respect to the height datum. The height datum is therefore listed as uncertain.

The survey control mark datasets are listed in Table 3.6. The report for each survey mark is provided in Annex E.

Table 3.5 Poruma datasets used to develop the Digital Elevation Model

Dataset	Height datum	Purpose
PR142018-2.dwg; PR142018-3.dwg (survey date: March 2020)	LAT (m)	DEM for flood mapping
LiDAR Coconut Island (Poruma) 2011 Classified las	Uncertain	QA/QC with survey control marks
LiDAR Coconut Island (Poruma) 2011 1 metre Digital Elevation Model	Uncertain	DEM for flood mapping

Table 3.6 Poruma survey control marks

Mark number	AHD height (m)	Purpose
140484	2.524	Checking ground survey
140886	4.078	Checking LiDAR
156559	3.094	Checking ground survey
156560	2.318	Checking ground survey
156562	5.227	Checking LiDAR
156563	5.267	Checking LiDAR
177937	2.633	Checking ground survey & LiDAR
700846	8.033	Checking ground survey

Warraber

The Warraber topographic datasets are listed in Table 3.7. The ground survey was undertaken in March 2021 and elevations were provided relative to AHD. The metadata details provided with the downloaded LiDAR suggests uncertainty with respect to the height datum. The height datum is therefore listed as uncertain.

The survey control mark datasets are listed in Table 3.8. The report for each survey mark is provided in Annex F.

Table 3.7 Warraber datasets used to develop the Digital Elevation Model

Dataset	Height datum	Purpose
PR148460-1_2d.dwg (survey date: March 2021)	AHD (m)	DEM for flood mapping
LiDAR Sue Island (Warraber) 2010 Classified las	Uncertain	QA/QC with survey control marks
LiDAR Sue Island (Warraber) 2010 1 metre Digital Elevation Model	Uncertain	DEM for flood mapping

Table 3.8 Warraber survey control marks

Mark number	AHD height (m)	Purpose
089040	3.516	Checking ground survey
126629	2.037	Checking ground survey
137967	4.148	Checking LiDAR
137968	3.187	Checking ground survey
146550	3.204	Checking LiDAR
156564	2.953	Checking LiDAR
177936	3.549	Checking ground survey
177935	6.605	Checking LiDAR

3.3 Checking topographic datasets against survey control marks

The elevation at each survey control mark was used for comparison with the topographic datasets. The purpose of this check was to:

- Assess the accuracy and reliability of the stated height datum of each ground survey dataset (either AHD or LAT),
- Estimate a value (offset) for adjusting the Poruma ground survey dataset height datum from LAT to AHD, and
- Estimate the value (offset) for adjusting the LiDAR datasets height datum to AHD.

The results of the topography survey checks are provided in Annex C (Boigu), Annex D (Saibai), Annex E (Poruma) and Annex F (Warraber) with the key outcomes discussed in Section 3.5.

3.4 Adjustment of topographic datasets to Australian Height Datum

Based on the comparison with the survey control mark heights relative to AHD, the following adjustments to topographic datasets were made:

- LiDAR Boigu Island 2009 1 metre Digital Elevation Model: +0.55 m vertical offset
- LiDAR Saibai Island 2009 1 metre Digital Elevation Model: +0.75 m vertical offset
- PR142018-2.dwg; PR142018-3.dwg (Poruma): +2.02 m vertical offset
- LiDAR Coconut Island (Poruma) 2011 1 metre Digital Elevation Model: +0.52 m vertical offset
- LiDAR Sue Island (Warraber) 2010 1 metre Digital Elevation Model: +0.55 m vertical offset

The positive adjustment (+) indicates that the original dataset was raised to align with AHD. No adjustment to the ground survey datasets at Boigu, Saibai and Warraber was deemed necessary.

The vertical offset (adjustment) was based on the average difference between the height of the survey control marks and the topographic survey dataset. The vertical offset was then applied uniformly to the topographic survey DEM. In some instances, the difference between a survey control mark and the topographic survey dataset was large (in the case of the ground survey datasets) or inconsistent with the differences observed at other survey control mark locations (in the case of the LiDAR datasets). The results at these survey control mark locations were not included in the averaging and not considered further. The discarded survey control marks are summarised below. Annex C (Boigu), Annex D (Saibai), Annex E (Poruma) and Annex F (Warraber) provide a summary of the retained survey control marks and the basis for the adopted vertical offsets.

It is acknowledged that the vertical offsets presented here provide ‘best-estimates’ for adjusting the LiDAR datasets to AHD and therefore a consistent datum with the survey control marks, ground survey datasets and water levels. The broader uncertainties regarding the island connections to AHD (e.g. Metters and Pedderson 2011; SEA 2011) have not been considered in this report.

3.5 Combining of datasets to develop a Digital Elevation Model for each location

For each island, the ground survey and adjusted LiDAR survey data were combined to create a single DEM. This involved ‘stamping’ the ground survey onto the adjusted LiDAR survey which means the ground survey data takes precedence in the limited areas where it is available. This ensures that any new seawalls or other structures captured by the ground survey are included in the DEM. In cases

where there has been significant shoreline change in the period (~10 years) between the LiDAR capture and ground survey there is an obvious discontinuity between datasets. This is most evident at the eastern and western extents at Poruma and northeastern and southwestern shoreline sections at Warraber.

The DEMs are shown in Figure 3.2 to Figure 3.5 and key features are described below.

Boigu

Key features of the Boigu Digital Elevation Model (Figure 3.2) include:

- The community is located on land with an elevation around 3.0 m AHD.
- The ground survey dataset elevation compared well with survey control marks 177941 and 18491 with the difference less than ±0.05 m.
- The average difference between the LiDAR dataset elevation and survey control marks 186491, 133973, 119880, 189642, 189643 and 186493 was +0.55 m (standard deviation 0.05 m). An offset of 0.55 m was therefore applied to the Boigu LiDAR dataset to adjust the elevations to AHD.
- Larger differences were observed between the topography dataset elevation and survey control marks 140483, 177940 and 177941 was greater than ±0.10 m. These survey control marks were not considered further.

Saibai

Key features of the Saibai Digital Elevation Model (Figure 3.3) include:

- The community is located on land with an elevation around 3.0 m AHD.
- The ground survey dataset elevation compared well with survey control marks 173501 and 123153 with the difference less than ±0.05 m. The Saibai ground survey dataset elevations were therefore considered representative of AHD.
- The average difference between the LiDAR dataset elevation and survey control marks 123153, 123152, 177954, 112444 and 173503 was +0.75 m (standard deviation 0.05 m). An offset of 0.75 m was therefore applied to the Saibai LiDAR dataset to adjust the elevations to AHD.
- Larger differences were observed between the topography dataset elevation and survey control marks 173502, 177956 and 177952. These survey control marks were not considered further.

Poruma

Key features of the Poruma Digital Elevation Model (Figure 3.4) include:

- The community is located to the west of the airstrip on land with an elevation around 4.0 m AHD.
- The ground survey dataset elevation was provided relative to Lowest Astronomical Tide (LAT). Comparison with survey control marks 140484, 156559, 156560 and 177937 suggested an average difference of 2.02 m (standard deviation 0.07 m). An offset of 2.02 m was therefore applied to the Poruma ground survey dataset to adjust the elevations to AHD.
- The average difference between the LiDAR dataset elevation and survey control marks 177937, 140886, 156563 and 156562 was +0.52 m (standard deviation 0.02 m). An offset of 0.52 m was therefore applied to the Poruma LiDAR dataset to adjust the elevations to AHD.

- A larger difference was observed between the topography dataset elevation and survey control mark 700846. This survey control mark was not considered further.

Warraber

Key features of the Warraber Digital Elevation Model (Figure 3.5) include:

- The community is located to the east of the airstrip on land with an elevation around 3.0 m AHD.
- The ground survey dataset elevation compared well with survey control marks 126629, 137968 and 177936 with the difference less than ±0.02 m. The Warraber ground survey dataset elevations were therefore considered representative of AHD.
- The average difference between the LiDAR dataset elevation and survey control marks 177935, 156564, 146550 and 137967 was +0.55 m (standard deviation 0.06 m). An offset of 0.55 m was therefore applied to the Warraber LiDAR dataset to adjust the elevations to AHD.
- A larger difference was observed between the topography dataset elevation and survey control mark 089040. This survey control mark was not considered further.

Note :

Extent of Ground Survey (Feb 2019)

Survey Datasets:

1. Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset
2. X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg

Title:
Boigu Digital Elevation Model and Location of AHD Survey Control Marks

Drawing: 3-2

Rev: A

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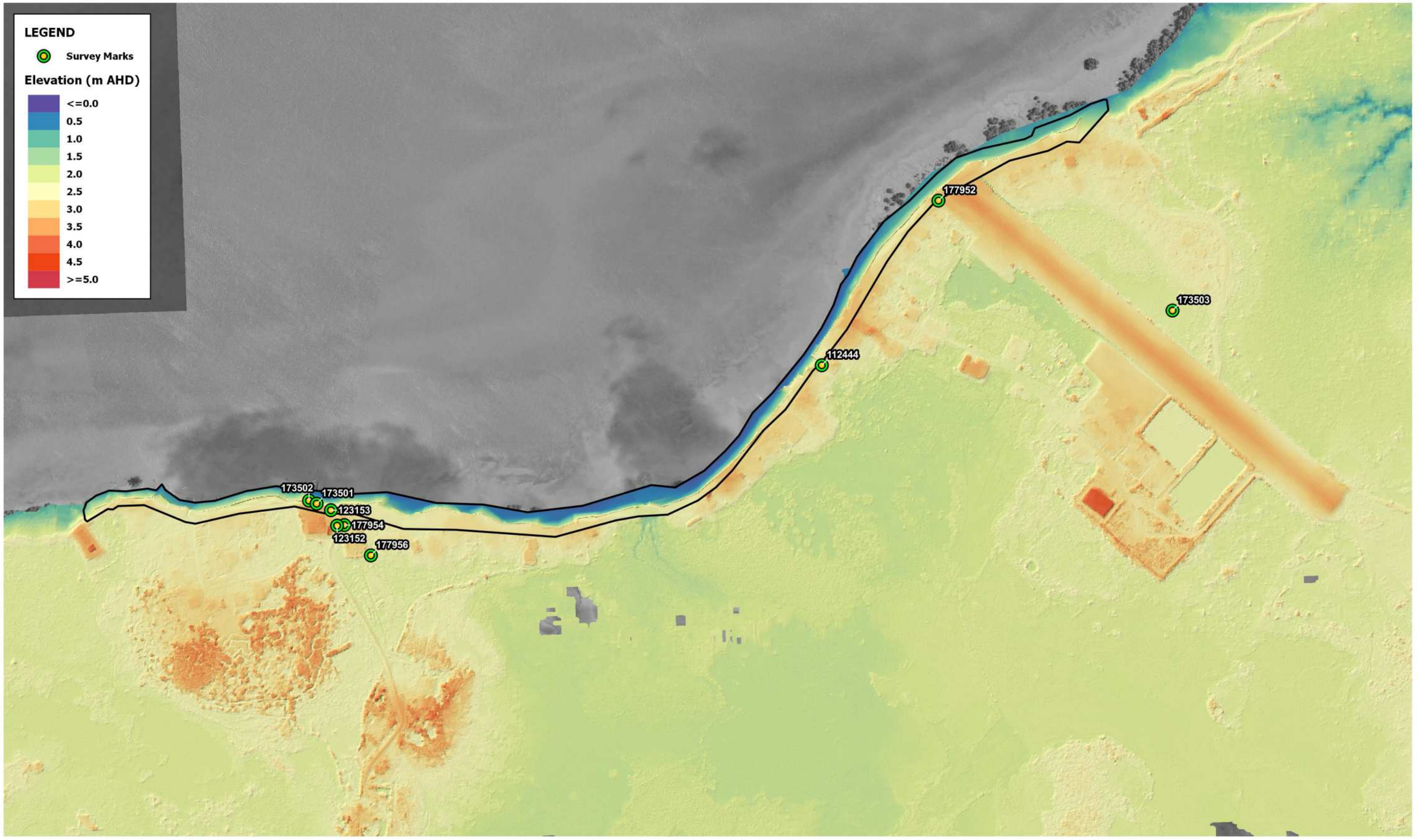

Note :

Extent of Ground Survey

Survey Datasets:

1. Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset
2. X_60283674_SAIBAI_SURVEY.dwg

Title:

Saibai Digital Elevation Model and Location of AHD Survey Control Marks

Drawing: 3-3

Rev: A

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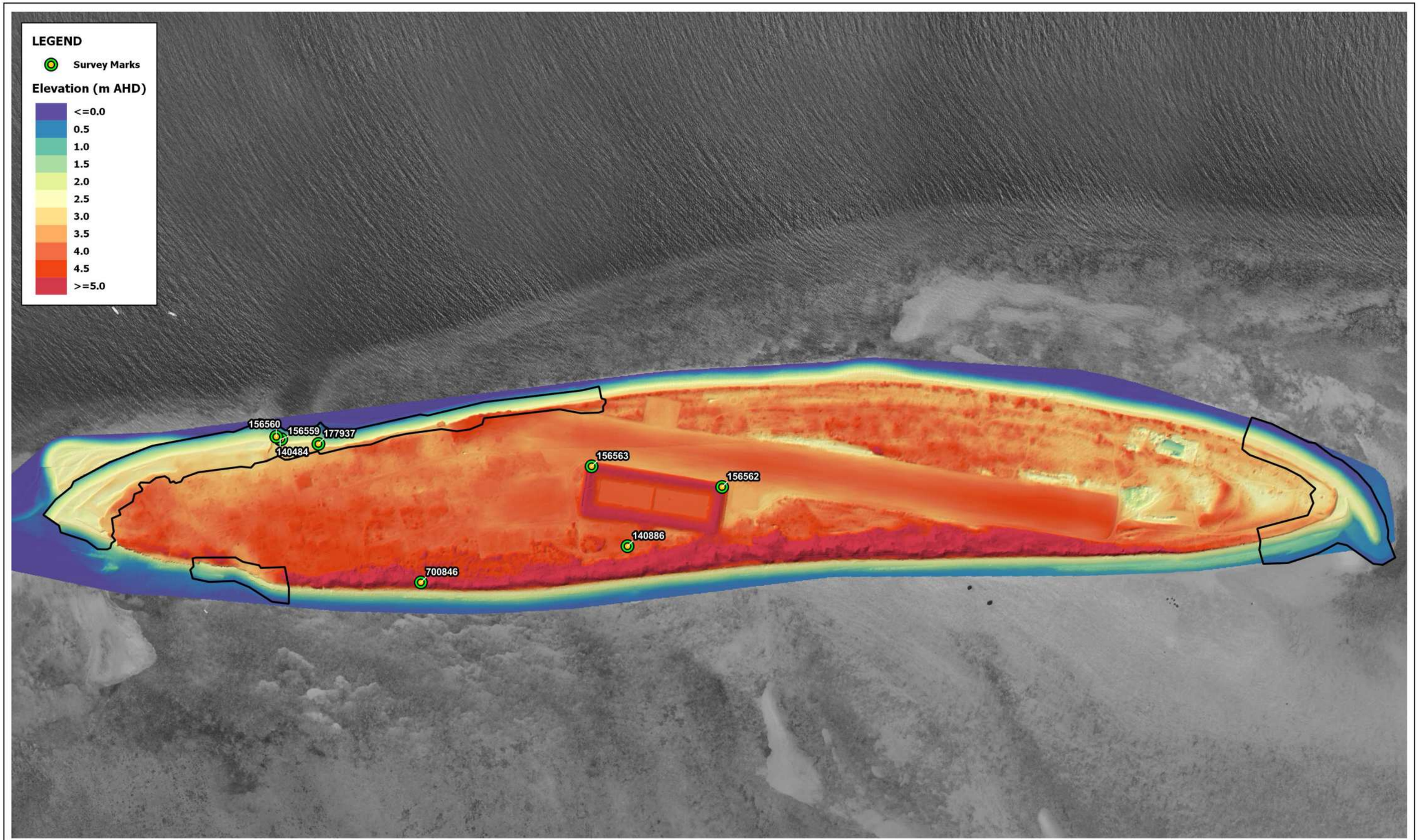

Note :

Extent of Ground Survey (March 2020)

Survey Datasets:

1. Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset
2. PR142018-2.dwg ; PR142018-3.dwg

Title:

Poruma Digital Elevation Model and Location of AHD Survey Control Marks

Drawing: 3-4

Rev: A

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0 100 200 m

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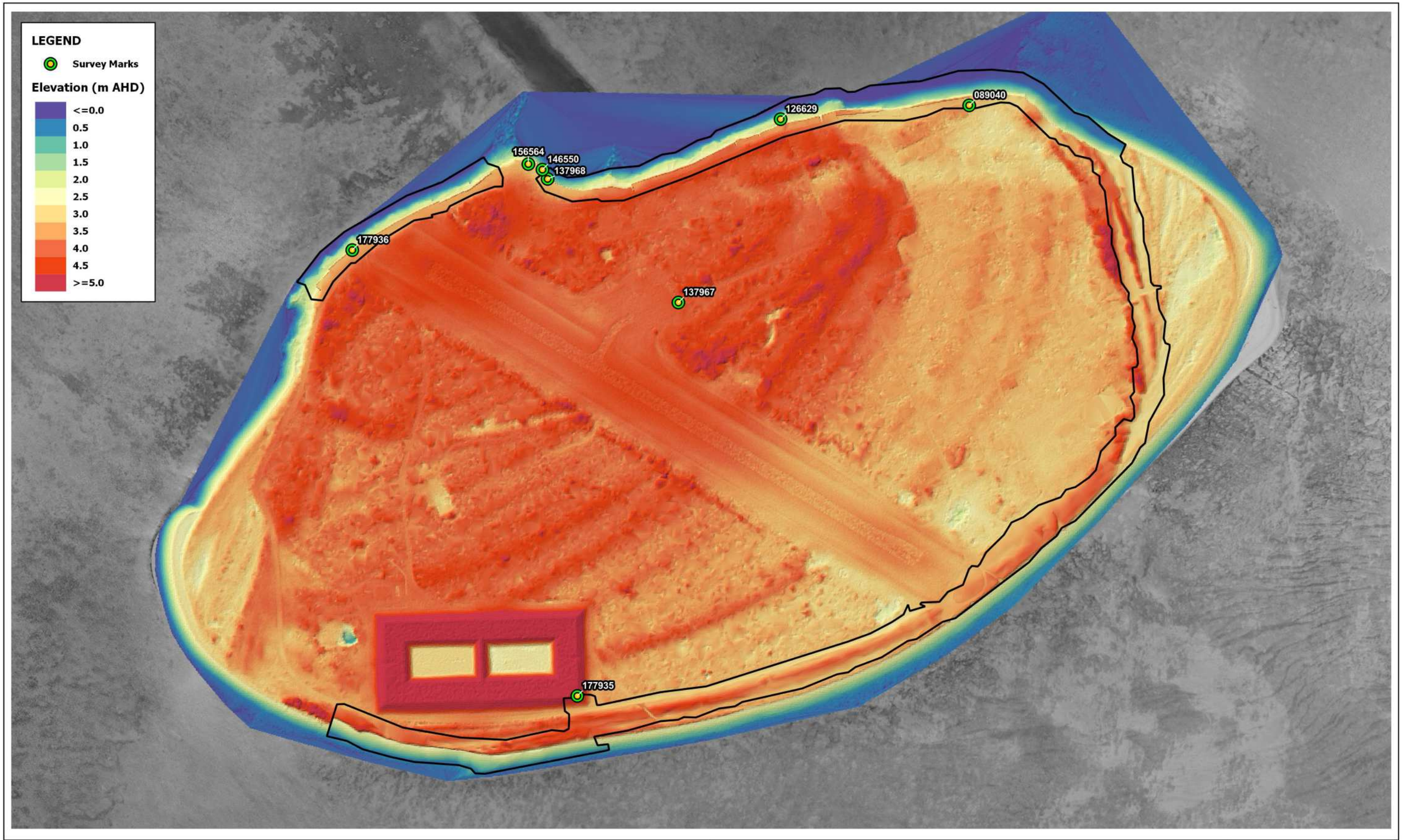

Note :

Extent of Ground Survey (March 2021)

Survey Datasets:

1. Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset
2. PR148460-1_2d.dwg

Title:
Warraber Digital Elevation Model and Location of AHD Survey Control Marks

Drawing: 3-5

Rev: A

N

0 100 200 m

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3.6 Mapping of extreme sea level flooding relative to the Digital Elevation Model

The extreme sea level flood mapping is presented in Section 4. The mapping approach involves extrapolating the peak water level (m AHD) conditions across the adjacent coastal land, with ground elevations defined by the DEMs presented in Figure 3.2 (Boigu), Figure 3.3 (Saibai), Figure 3.4 (Poruma) and Figure 3.5 (Warraber). This approach is commonly known as a 'bathtub' or 'bucket fill' mapping. It is noted that the mapped inundation levels and extents do not explicitly account for the dynamic action of waves or wind shear stresses over land. These processes can influence inundation levels and extents under certain conditions which may lead to the inundation of areas beyond those shown in the mapping.

Effort has been made to only map inundation in areas with a hydraulic connection to the sea. The mapping also assumes that there is sufficient time and water available from the overtopping of coastal barriers to fill potential holding basins up to the given water level. In this respect, the mapped inundation areas may be over predicted in certain areas.

Any benefit of seawalls or other structures designed to limit the extent of overtopping and inundation by removing a hydraulic connection to the sea are only resolved if the structure has been captured by the ground survey datasets. The benefit of seawalls or other structures not included in the ground survey datasets will not be represented in the mapping.

More detailed modelling and mapping to simulate overtopping of the coastal barriers and overland flow requires accurate and reliable datasets, such as up-to-date and high-resolution topographic and bathymetric datasets. This information is not currently available at the locations of interest.

4 Extreme sea level inundation mapping

The extreme sea level inundation mapping is presented in this Section of the report. A table summarising the maps is also provided for each island. To assist with interpretation of the mapping the following is noted:

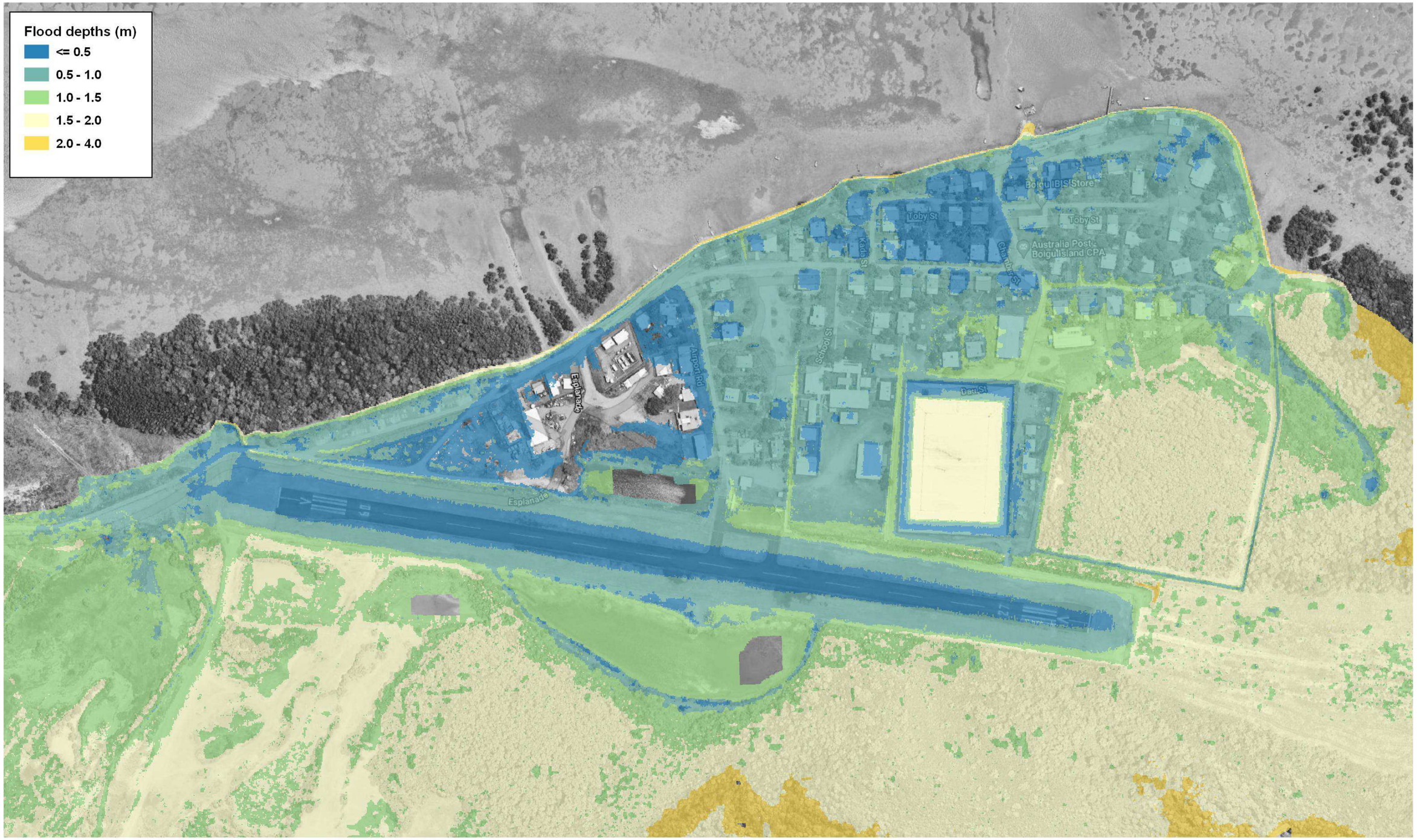
- Each map provides details of the inundation depth and extent relative to the extreme sea level (water level). The difference between the DEM and water level provides the variation in inundation depth.
- Greyscale aerial imagery is used in the background of each map. Land areas where the greyscale imagery is visible indicates no coastal inundation.
- For each island, the same DEM based on the available topographic datasets is used for all sea level scenarios. No adjustments to the DEM have been made to represent historical or future topographic conditions.
- The mapping is based on the data presented in this report. Validation of the results to historical inundation events has not been completed.

Boigu

Table 4.1 provides a summary of maps that show the extent of inundation associated with extreme sea levels at Boigu. The maps are presented on the following pages.

Table 4.1 Boigu extreme sea level inundation map summary

Map number	AHD water level (m)	Map label
a.i	3.73	Boigu Baseline (1900) 100 year ARI Flood per Bettington Report Table 7
a.ii	2.48	Alternative Boigu Baseline (1900) 100 year ARI Flood
a.iii	3.94	Boigu Current (2023) 100 year ARI Flood per Bettington Report Table 8
a.iv	2.69	Alternative Boigu Current (2023) 100 year ARI Flood
a.v	3.40	Boigu Township Inundation Event per Bettington Report Table 9
a.vi	4.09	Boigu 2050 SSP 1-2.6 100 year ARI flood per Bettington Report Table 12
a.vii	2.84	Alternative Boigu 2050 SSP 1-2.6 100 year ARI flood
a.viii	4.07	Boigu 2050 SSP 1-1.9 100 year ARI flood per Bettington Report Table 11
a.ix	2.82	Alternative Boigu 2050 SSP 1-1.9 100 year ARI flood
a.x	4.35	Boigu 2100 SSP 1-2.6 100 year ARI flood per Bettington Report Table 16
a.xi	3.10	Alternative Boigu 2100 SSP 1-2.6 100 year ARI flood
a.xii	4.29	Boigu 2100 SSP 1-1.9 100 year ARI flood per Bettington Report Table 15
a.xiii	3.04	Alternative Boigu 2100 SSP 1-1.9 100 year ARI flood



Notes:

Water Level = 3.73 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:

Boigu Baseline (1900) 100 year ARI Flood per Bettington Report Table 7

Drawing: a.i

Rev: A

N

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Notes:

Water Level = 2.48 m AHD

Survey Datasets:

1. Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset
2. X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg

Title:
Alternative Boigu Baseline (1900) 100 year ARI Flood

Drawing: a.ii

Rev: A

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0 70 140 m

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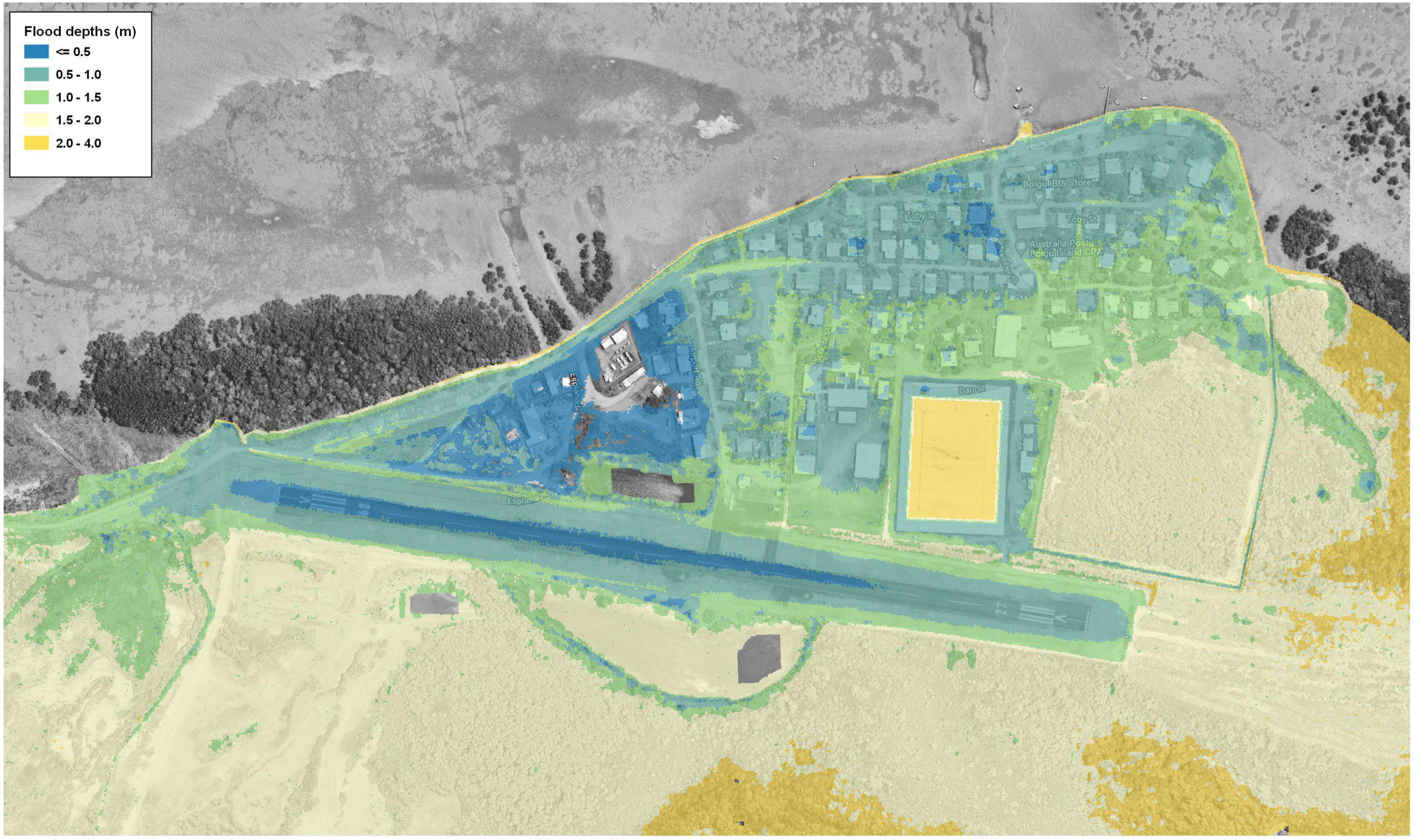
www.bmt.org

Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.94 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:
Boigu Current (2023) 100 year ARI Flood per Bettington Report Table 8

Drawing: a.iii

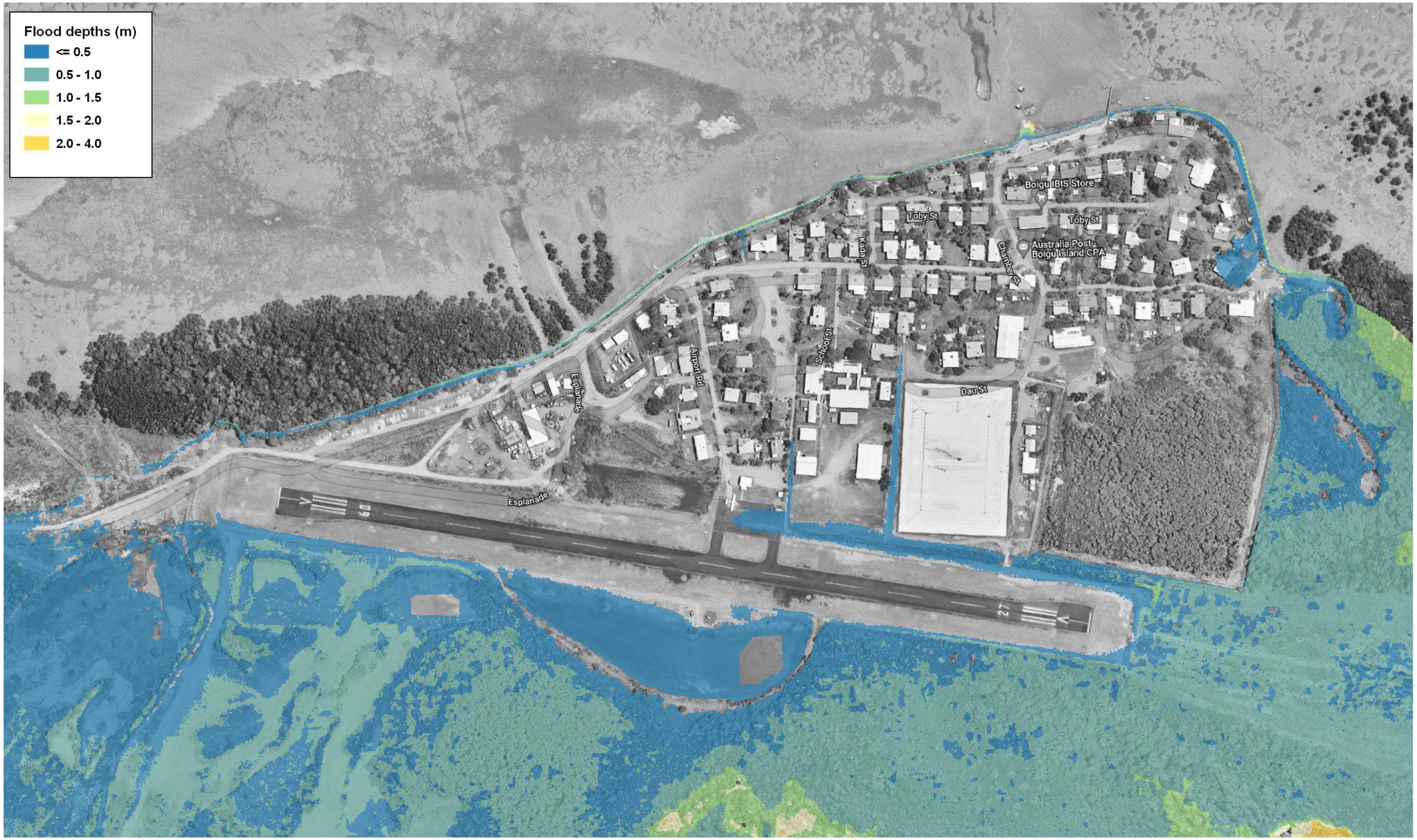
Rev.: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.69 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:
Alternative Boigu Current (2023) 100 year ARI Flood

Drawing: a.iv

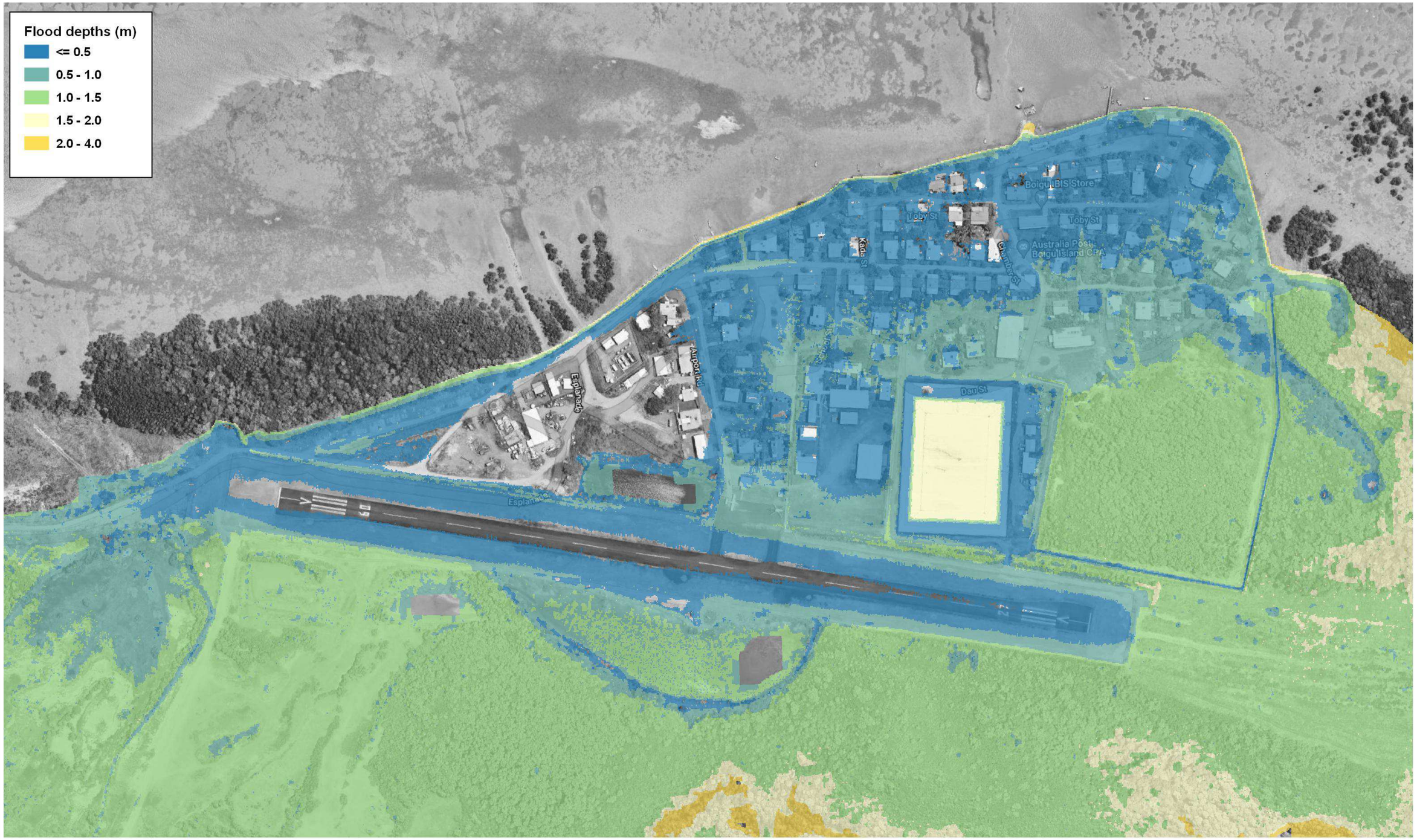
Rev: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.4 m AHD

Survey Datasets:

1. Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset
2. X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg

Title:
Boigu Township Inundation Event per Bettington Report Table 9

Drawing: a.v

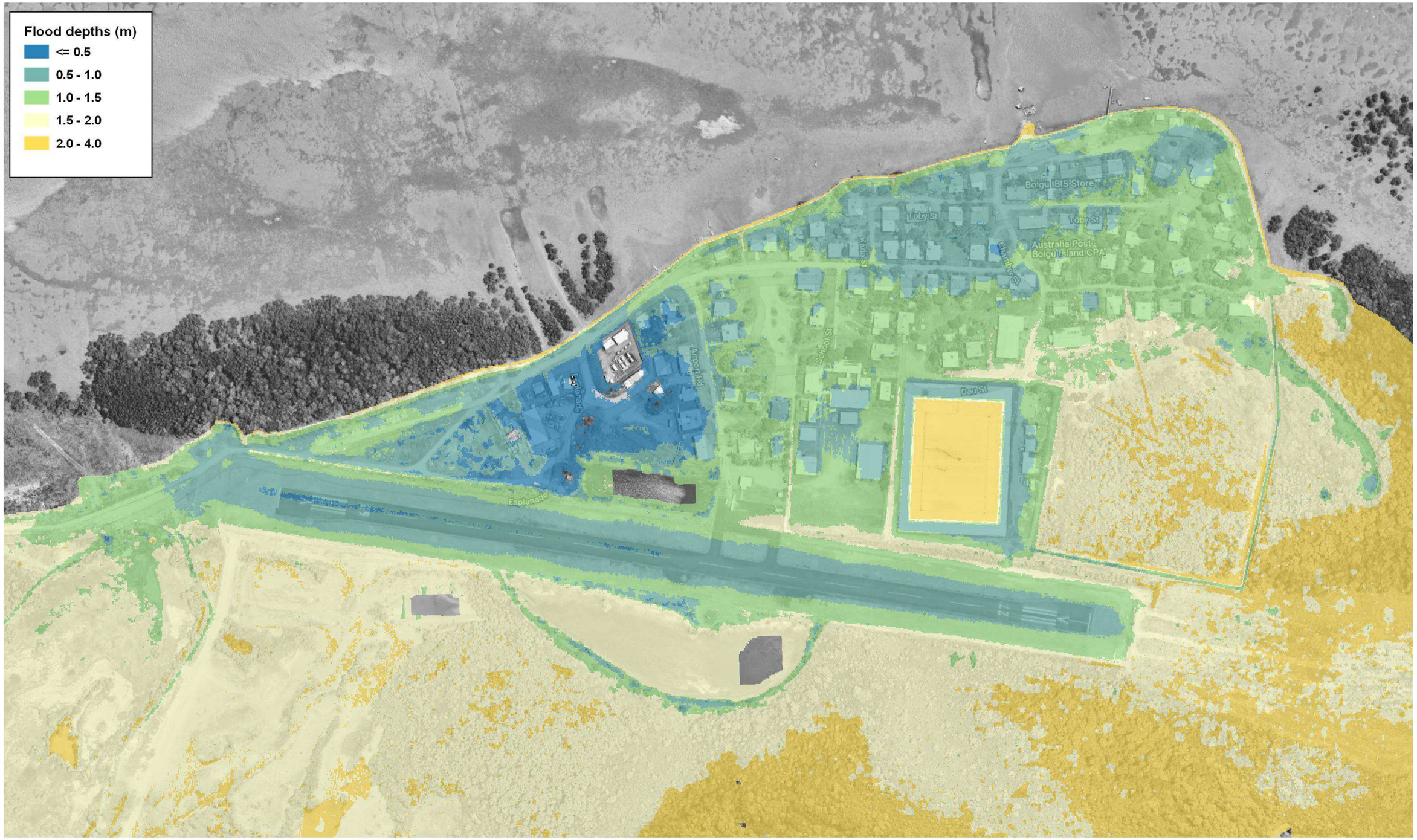
Rev.: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 4.09 m AHD

Survey Datasets:

1. Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset
2. X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg

Title:
Boigu 2050 SSP 1-2.6 100 year ARI Flood per Bettington Report Table 12

Drawing: a.vi

Rev: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz

Notes:

Water Level = 2.84 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:
Alternative Boigu 2050 SSP 1-2.6 100 year ARI Flood

Drawing: a.vii

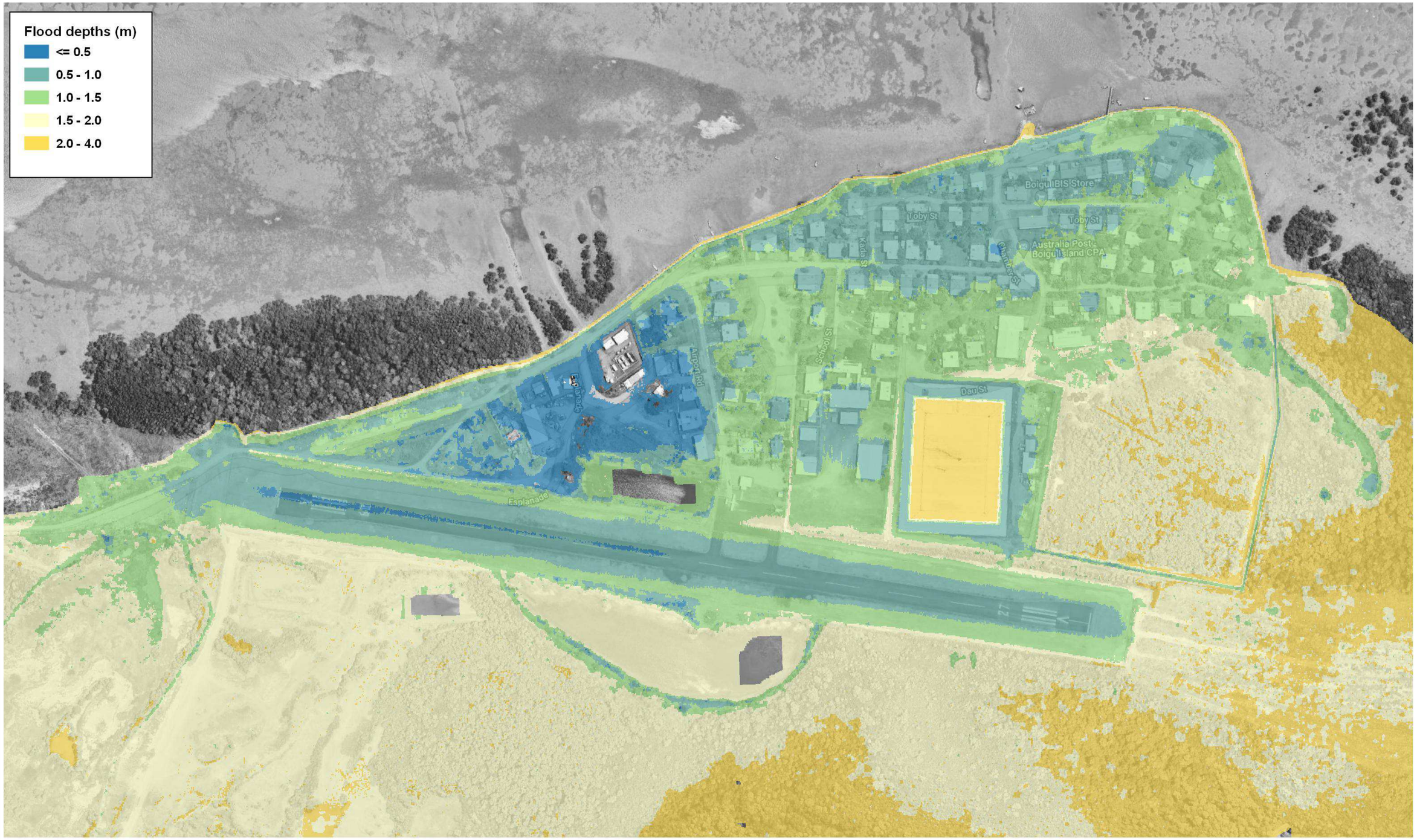
Rev: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 4.07 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:

Boigu 2050 SSP 1-1.9 100 year ARI Flood per Bettington Report Table 11

Drawing: a.viii

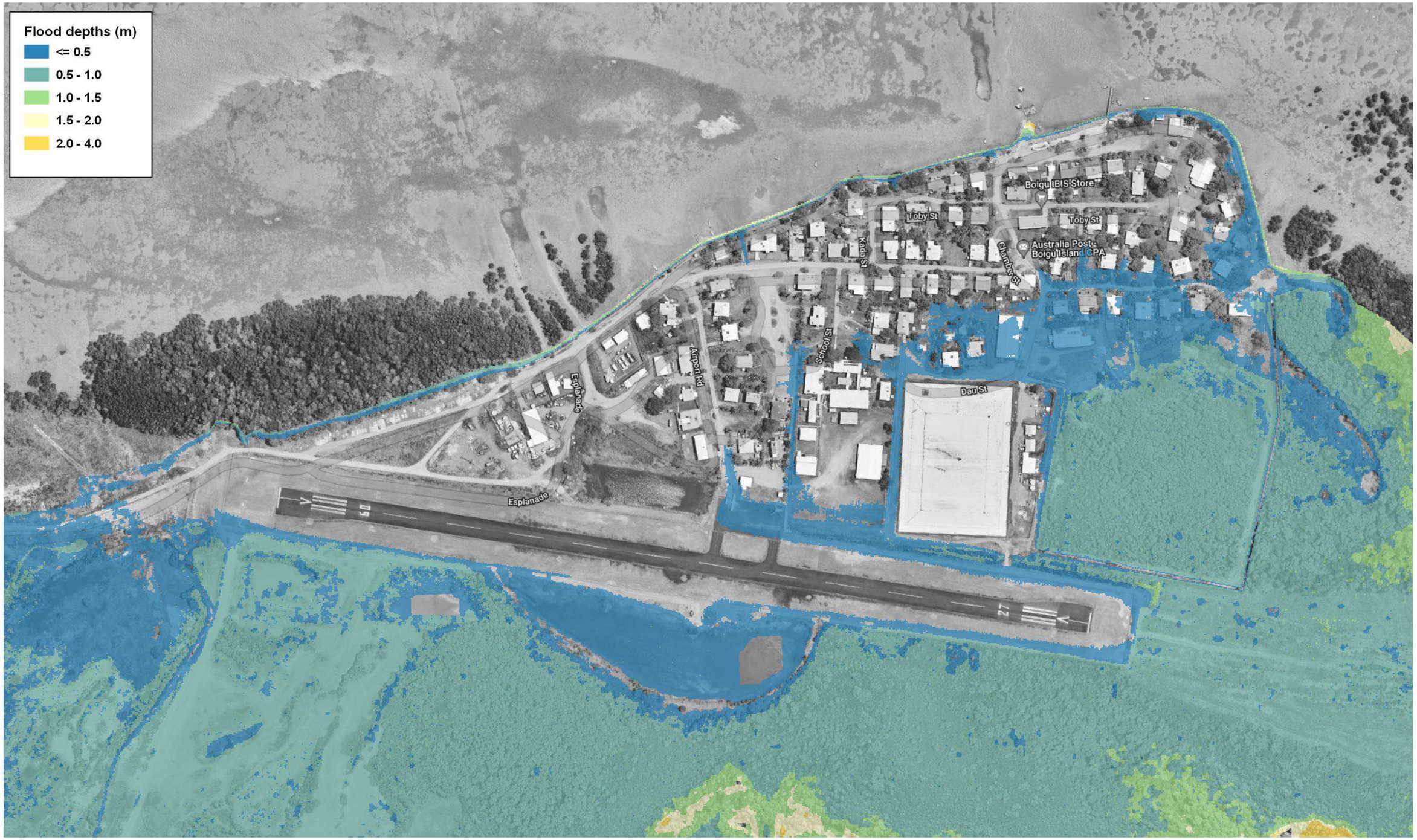
Rev.: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 2.82 m AHD

Survey Datasets:

1. Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset
2. X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg

Title:
Alternative Boigu 2050 SSP 1-1.9 100 year ARI Flood

Drawing: a.ix

Rev: A

N

0 70 140 m

BMT
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Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz

Notes:

Water Level = 4.35 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:
Boigu 2100 SSP 1-2.6 100 year ARI Flood per Bettington Report Table 16

Drawing: a.x

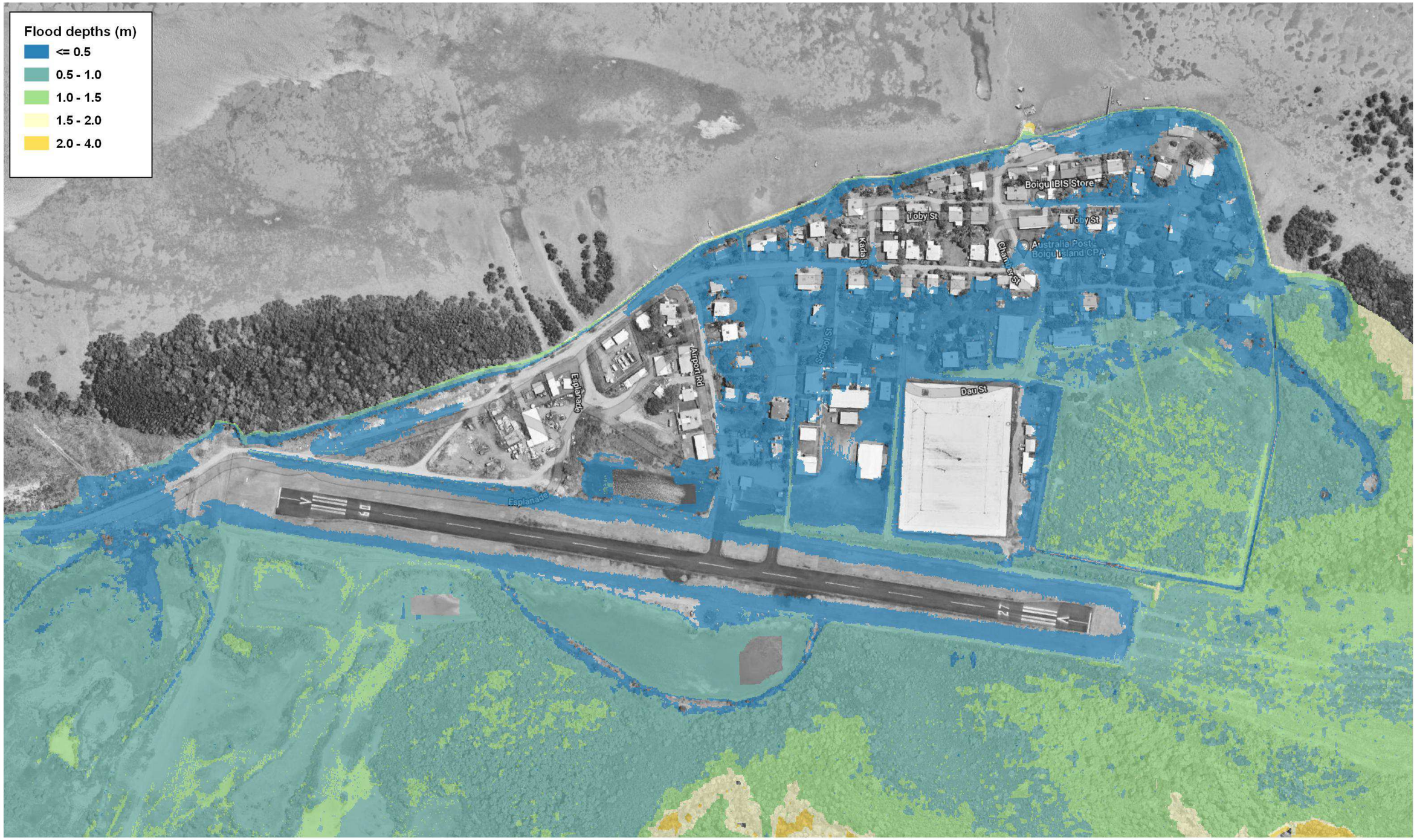
Rev: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 3.10 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:
Alternative Boigu 2100 SSP 1-2.6 100 year ARI Flood

Drawing: a.xi

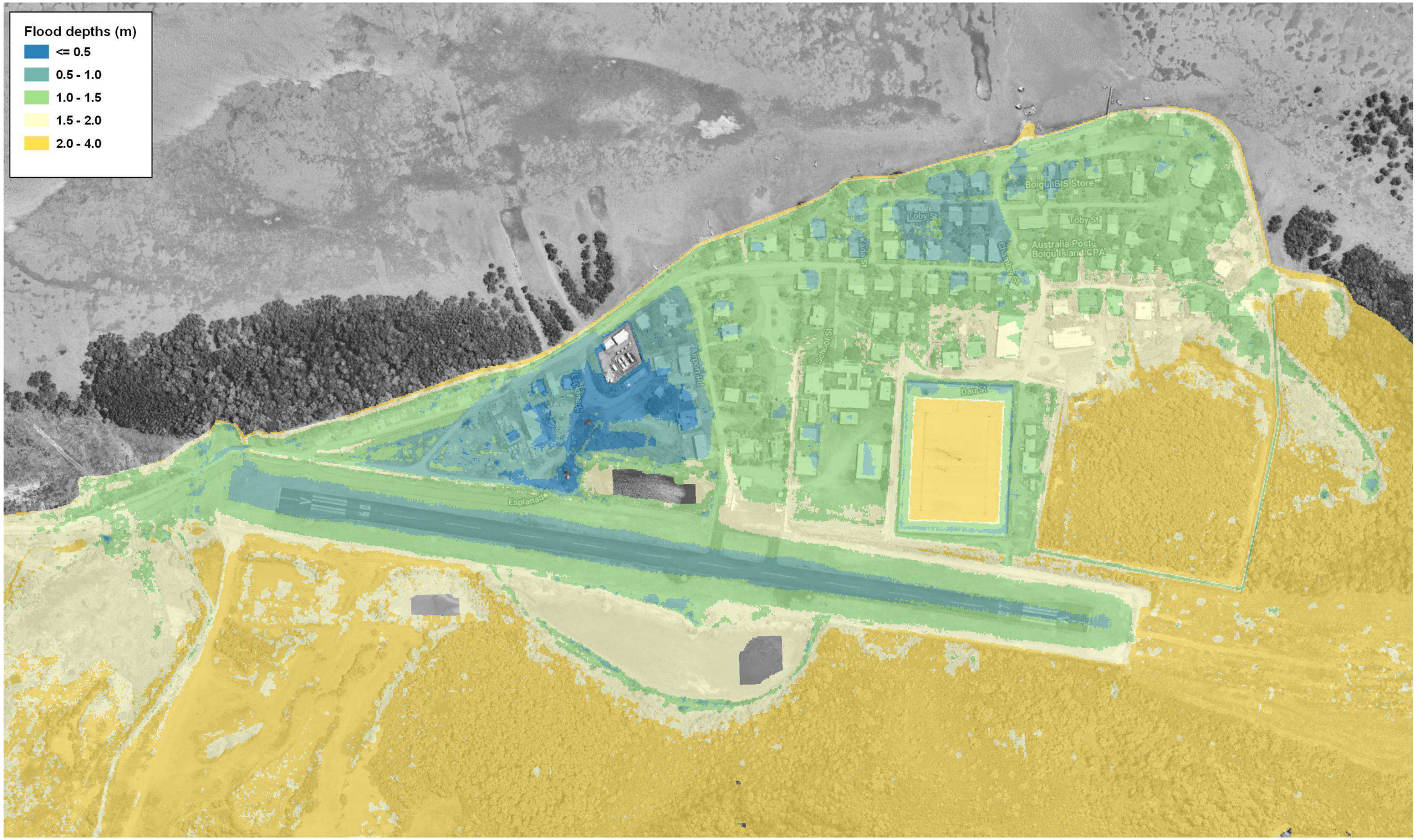
Rev: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 4.29 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:

Boigu 2100 SSP 1-1.9 100 year ARI Flood per Bettington Report Table 15

Drawing: a.xii

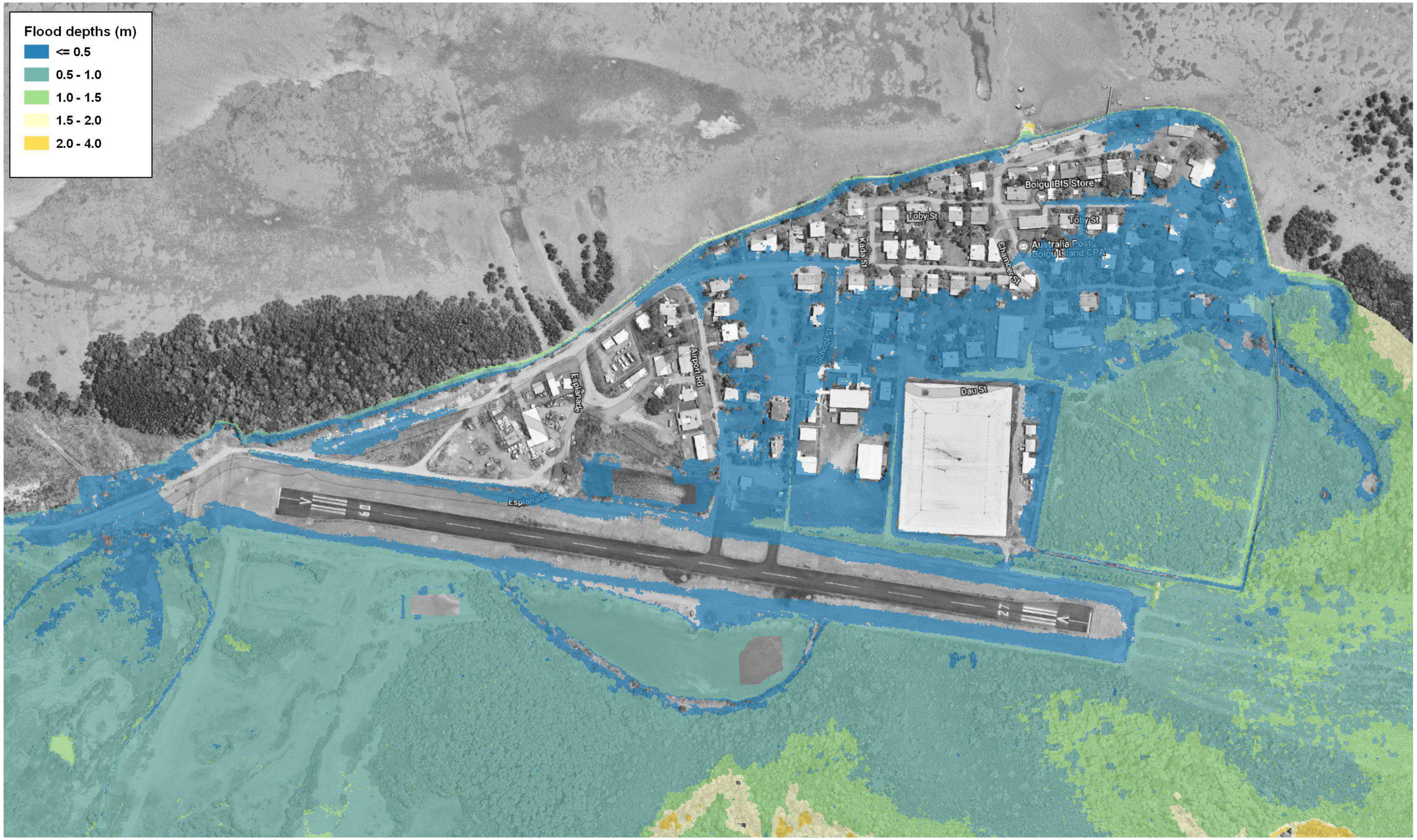
Rev.: A

N

0 70 140 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.04 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Boigu Island 2009) with +0.55 m offset**
2. **X_SV_CONTOURS.dwg ; X_SV_DETAIL SURVEY.dwg ; X_SV_PL_DETAILED_SURVEY_SEAWALL.dwg**

Title:

Alternative Boigu 2100 SSP 1-1.9 100 year ARI Flood

Drawing: a.xiii

Rev: A

N

0 70 140 m

BMT
www.bmt.org

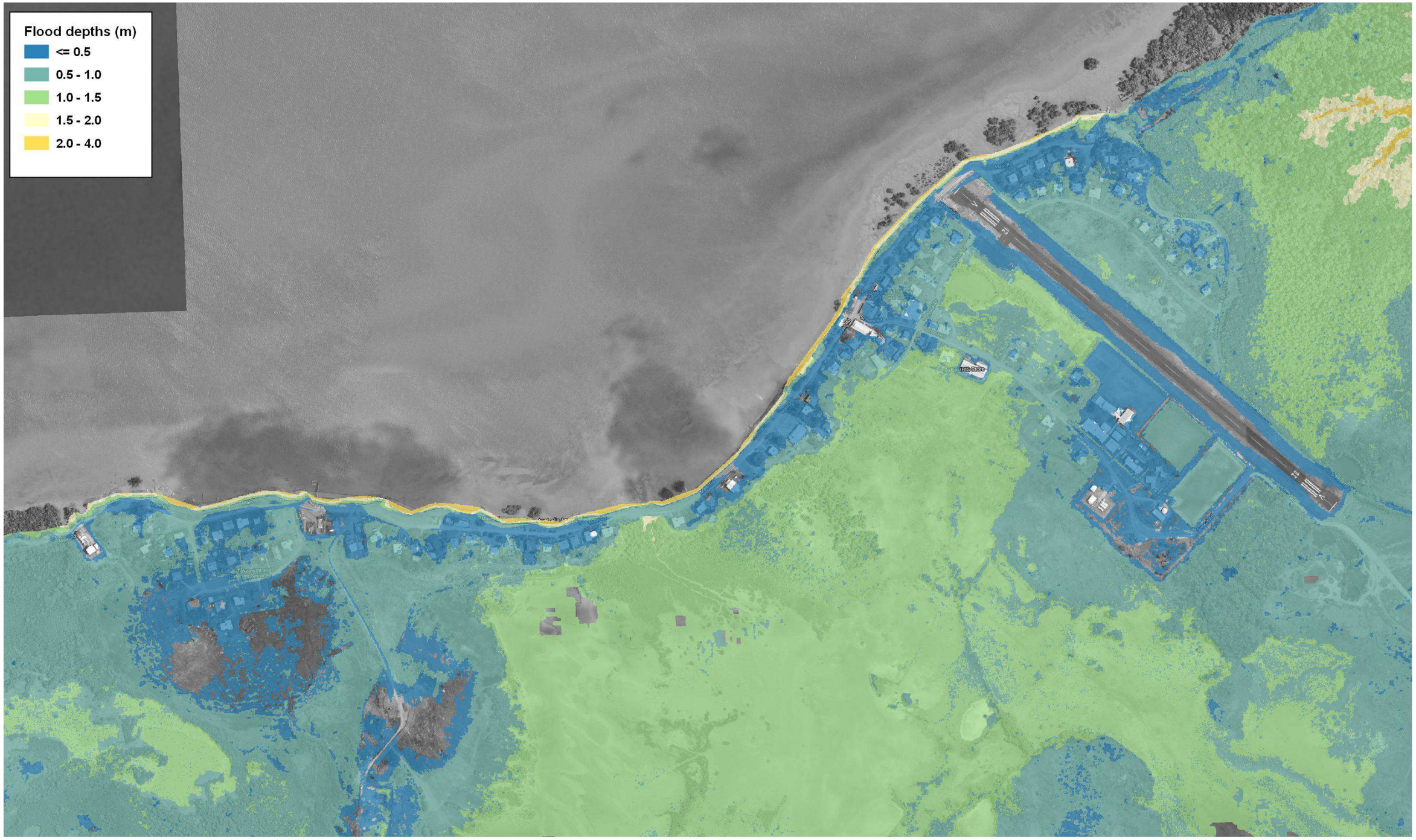
Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz

Saibai

Table 4.2 provides a summary of maps that show the extent of inundation associated with extreme sea levels at Saibai. The maps are presented on the following pages.

Table 4.2 Saibai extreme sea level inundation map summary

Map number	AHD water level (m)	Map label
b.i	3.11	Saibai Baseline (1900) 100 year ARI Flood per Bettington Report Table 7
b.ii	2.09	Alternative Saibai Baseline (1900) 100 year ARI Flood
b.iii	3.32	Saibai Current (2023) 100 year ARI Flood per Bettington Report Table 8
b.iv	2.30	Alternative Saibai Current (2023) 100 year ARI Flood
b.v	2.80	Saibai Township Inundation Event per Bettington Report Table 9
b.vi	3.47	Saibai 2050 SSP 1-2.6 100 year ARI flood per Bettington Report Table 12
b.vii	2.45	Alternative Saibai 2050 SSP 1-2.6 100 year ARI flood
b.viii	3.45	Saibai 2050 SSP 1-1.9 100 year ARI flood per Bettington Report Table 11
b.ix	2.43	Alternative Saibai 2050 SSP 1-1.9 100 year ARI flood
b.x	3.73	Saibai 2100 SSP 1-2.6 100 year ARI flood per Bettington Report Table 16
b.xi	2.71	Alternative Saibai 2100 SSP 1-2.6 100 year ARI flood
b.xii	3.67	Saibai 2100 SSP 1-1.9 100 year ARI flood per Bettington Report Table 15
b.xiii	2.65	Alternative Saibai 2100 SSP 1-1.9 100 year ARI flood



Notes:

Water Level = 3.11 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:

Saibai Baseline (1900) 100 year ARI Flood per Bettington Report Table 7

Drawing: **b.i**

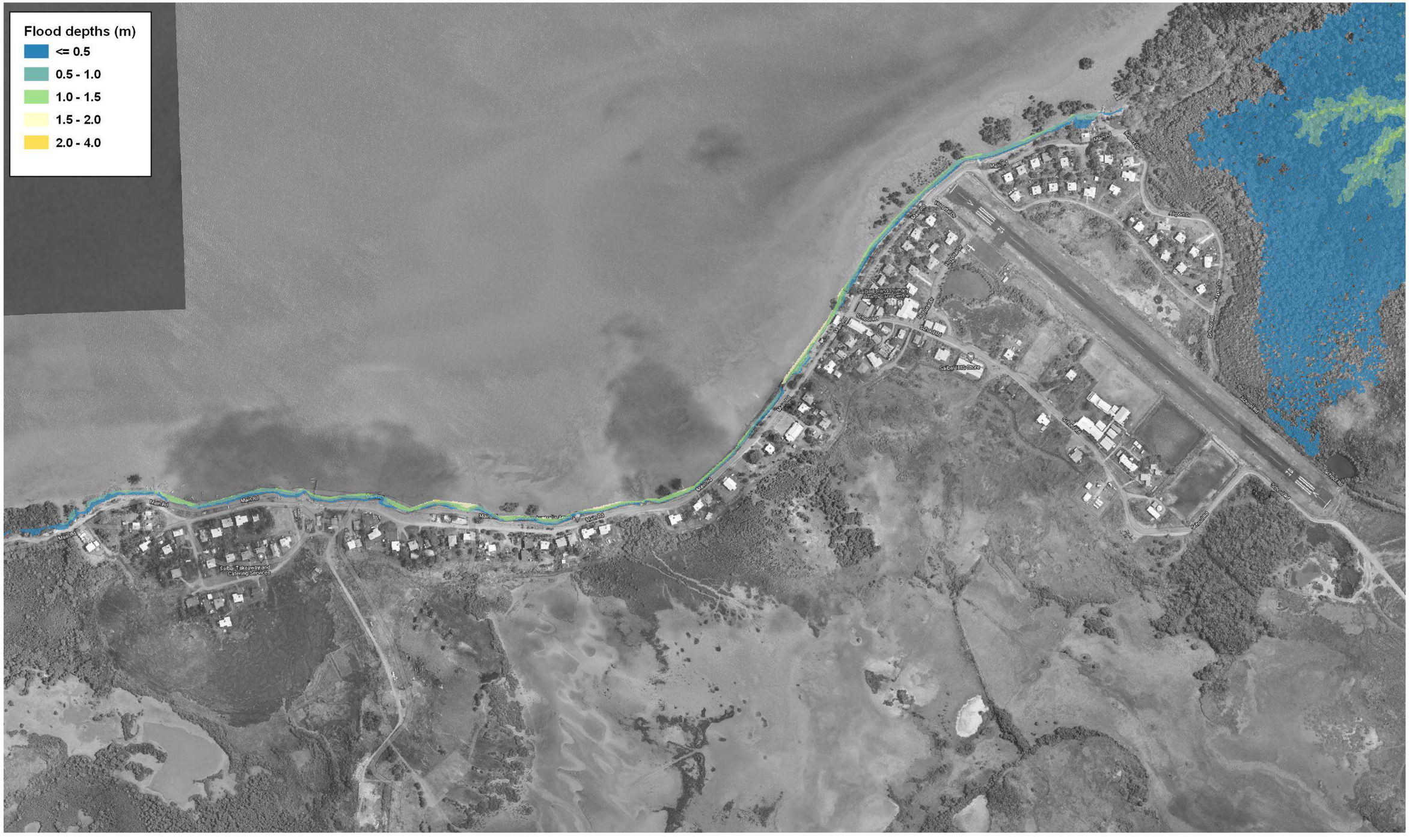
Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.09 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Alternative Saibai Baseline (1900) 100 year ARI Flood

Drawing: **b.ii**

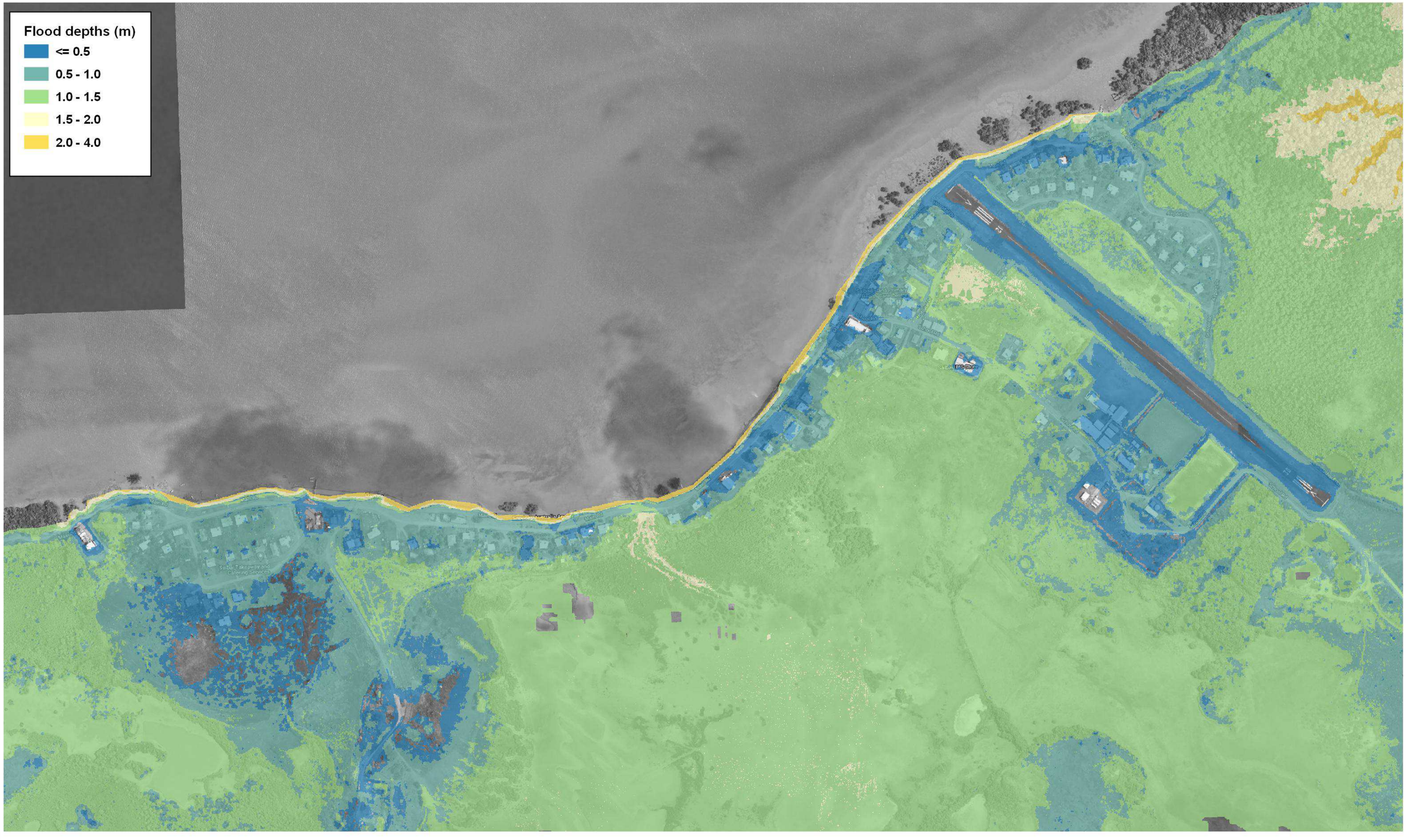
Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.32 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Saibai Current (2023) 100 year ARI Flood per Bettington Report Table 8

Drawing: b.iii

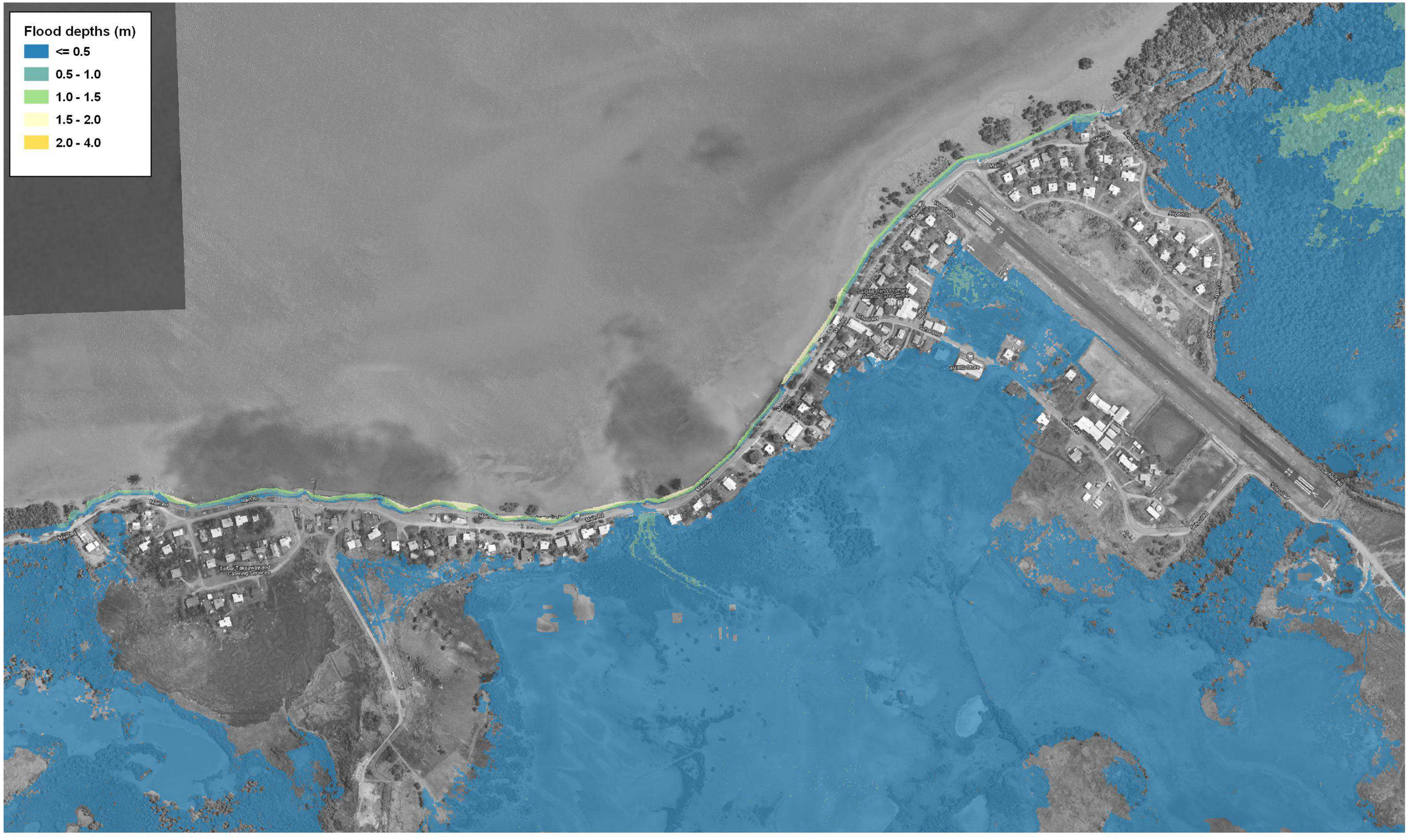
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.30 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Alternative Saibai Current (2023) 100 year ARI Flood

Drawing: b.iv

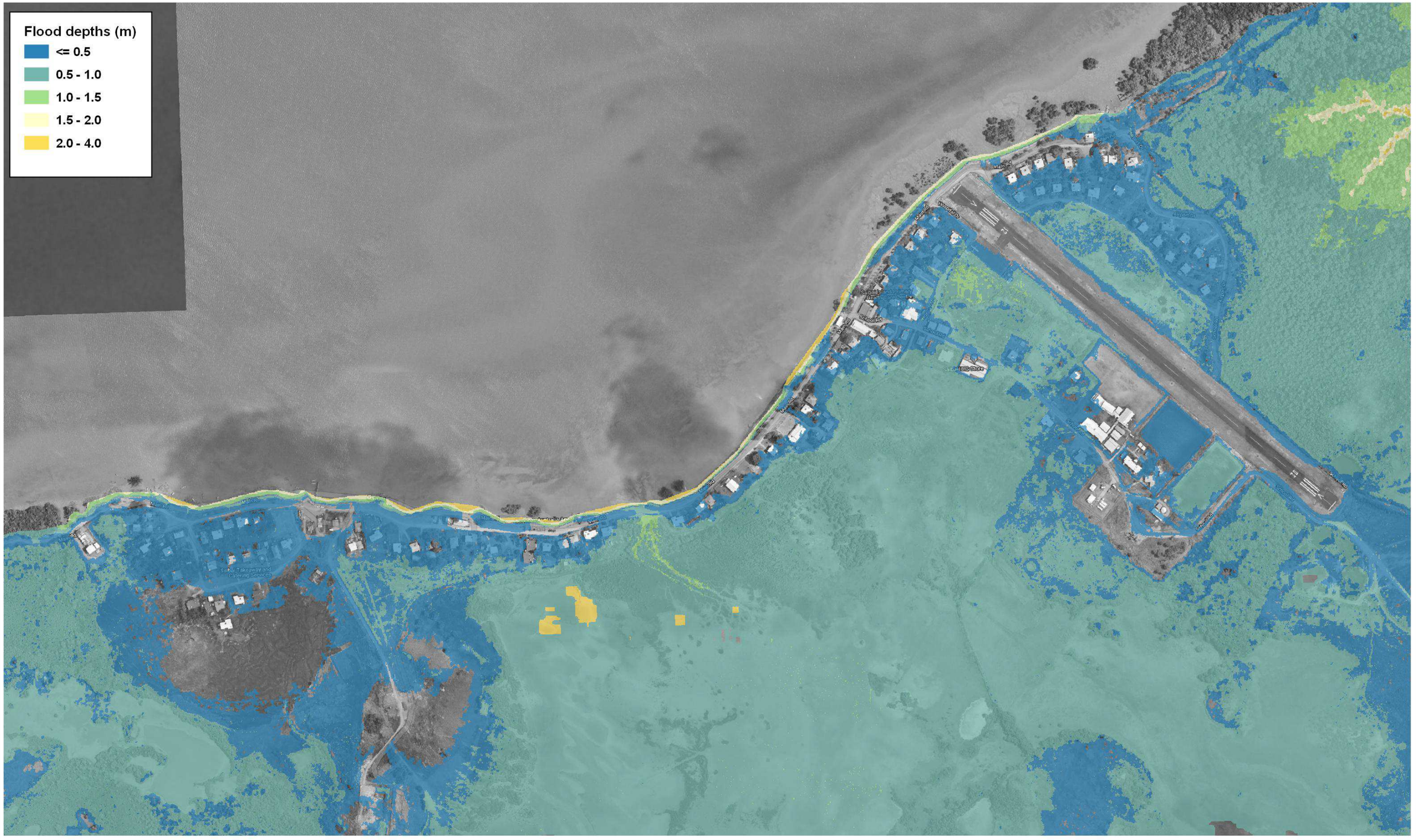
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 2.80 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:

Saibai Township Inundation Event per Bettington Report Table 9

Drawing: b.v

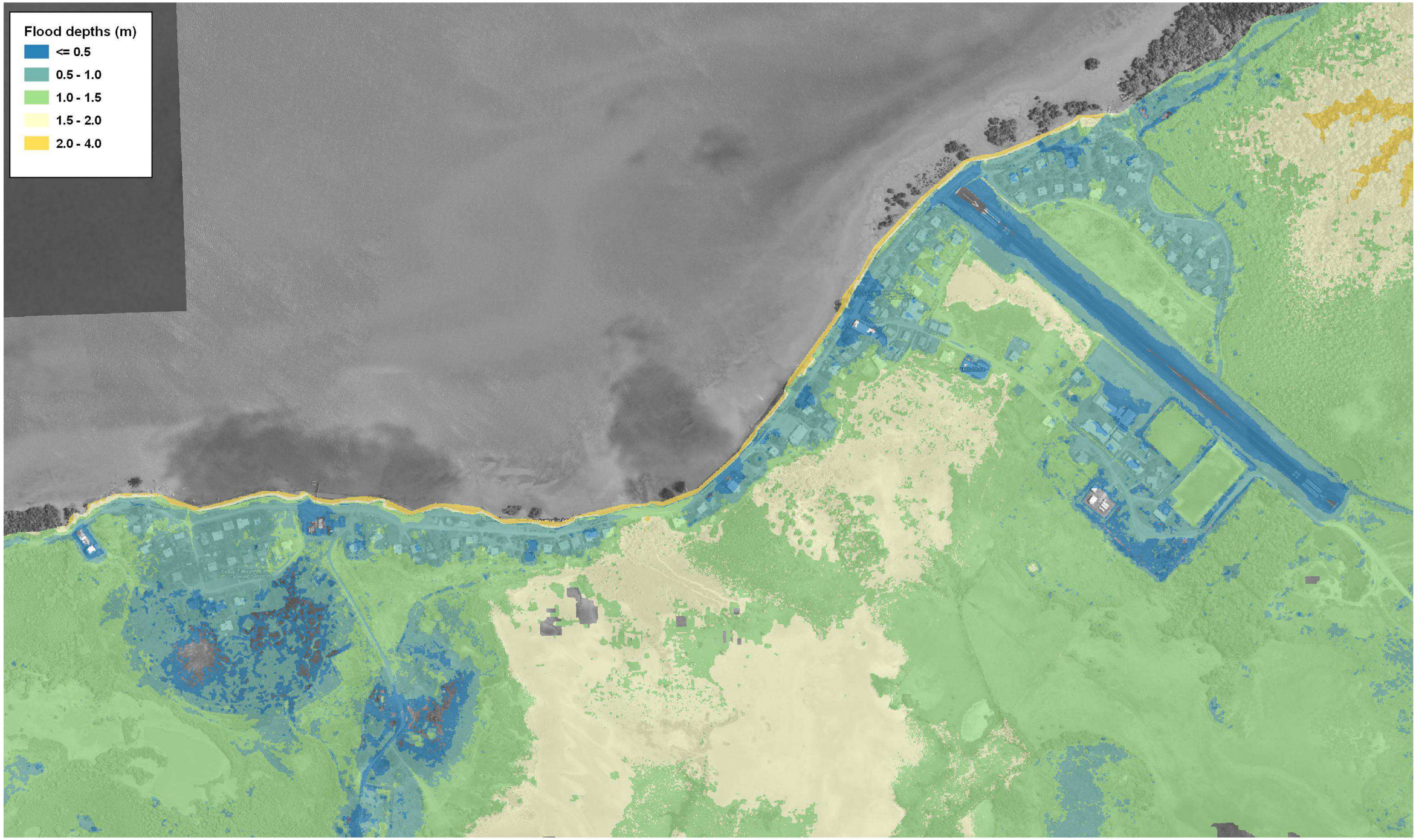
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 3.47 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Saibai 2050 SSP 1-2.6 100 year ARI Flood per Bettington Report Table 12

Drawing: b.vi

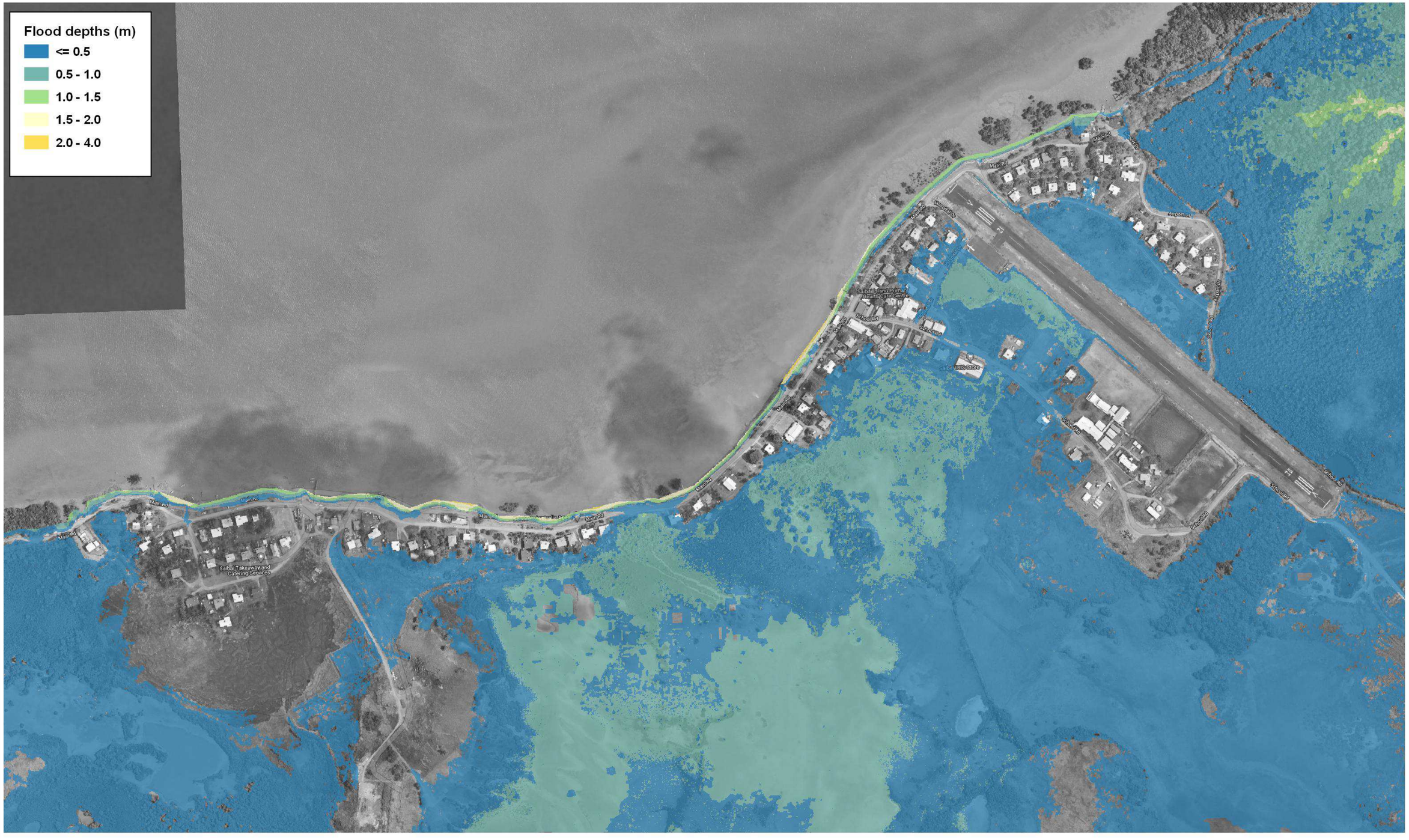
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.45 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Alternative Saibai 2050 SSP 1-2.6 100 year ARI Flood

Drawing: b.vii

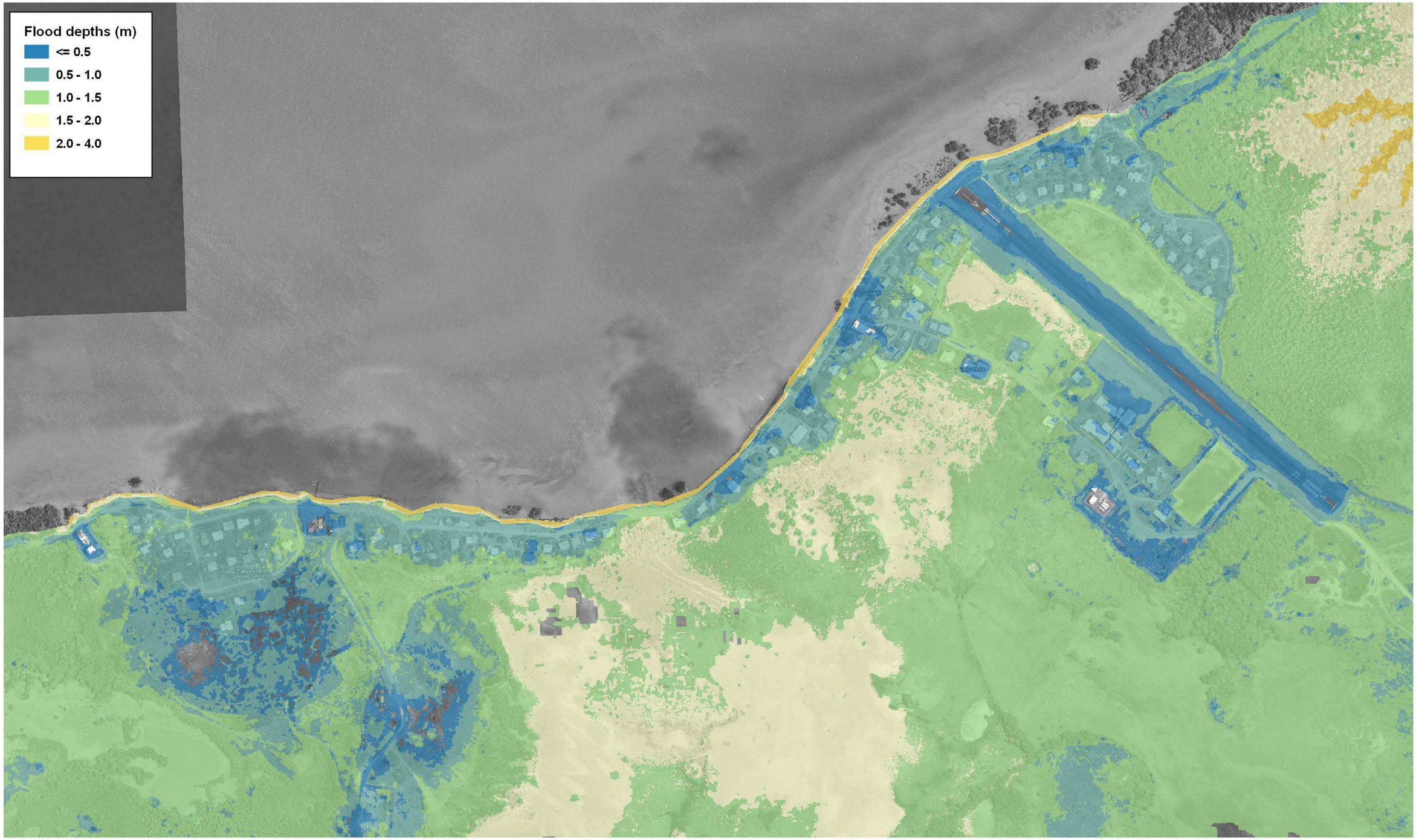
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.45 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Saibai 2050 SSP 1-1.9 100 year ARI Flood per Bettington Report Table 11

Drawing: **b.viii**

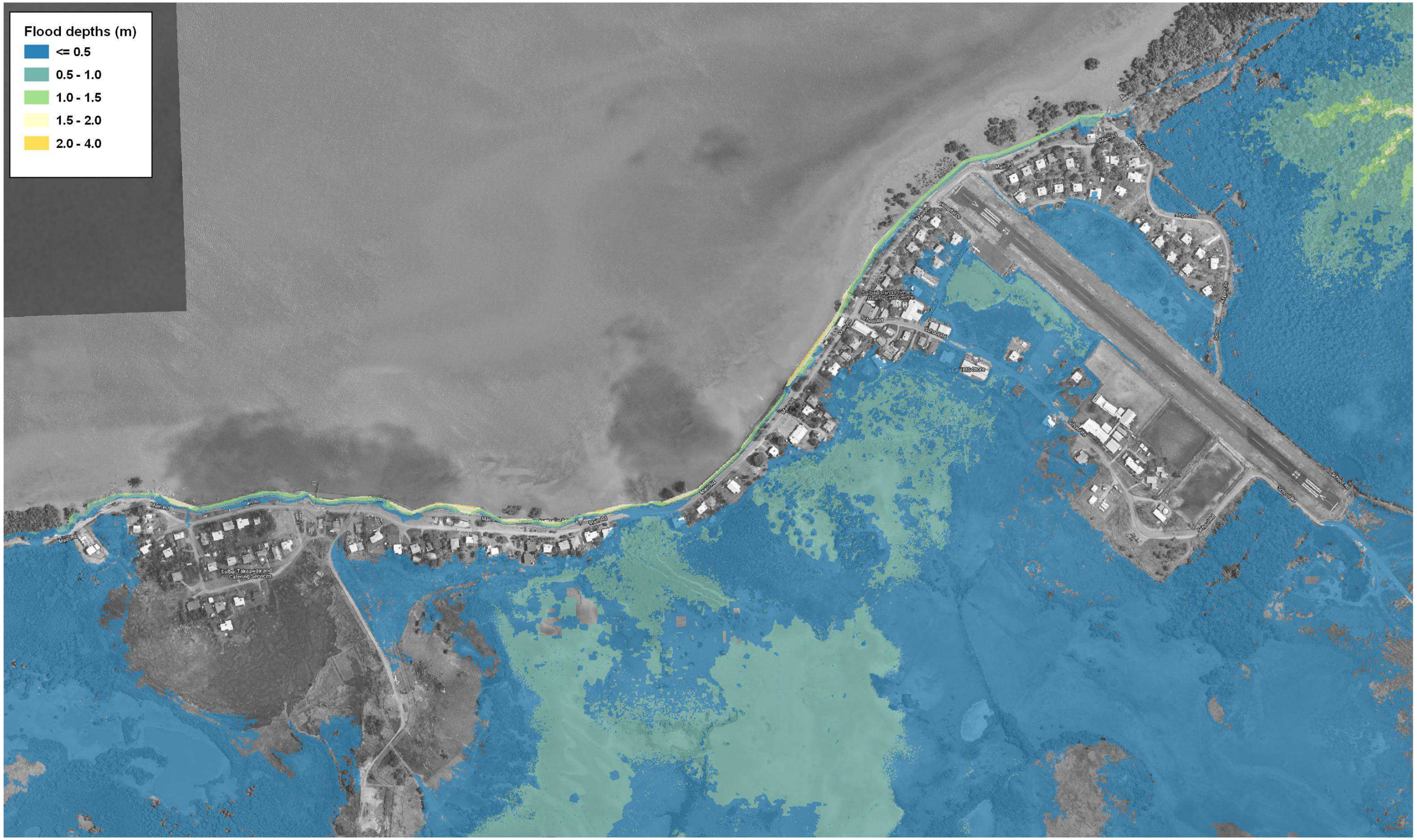
Rev: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 2.43 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:

Alternative Saibai 2050 SSP 1-1.9 100 year ARI Flood

Drawing: b.ix

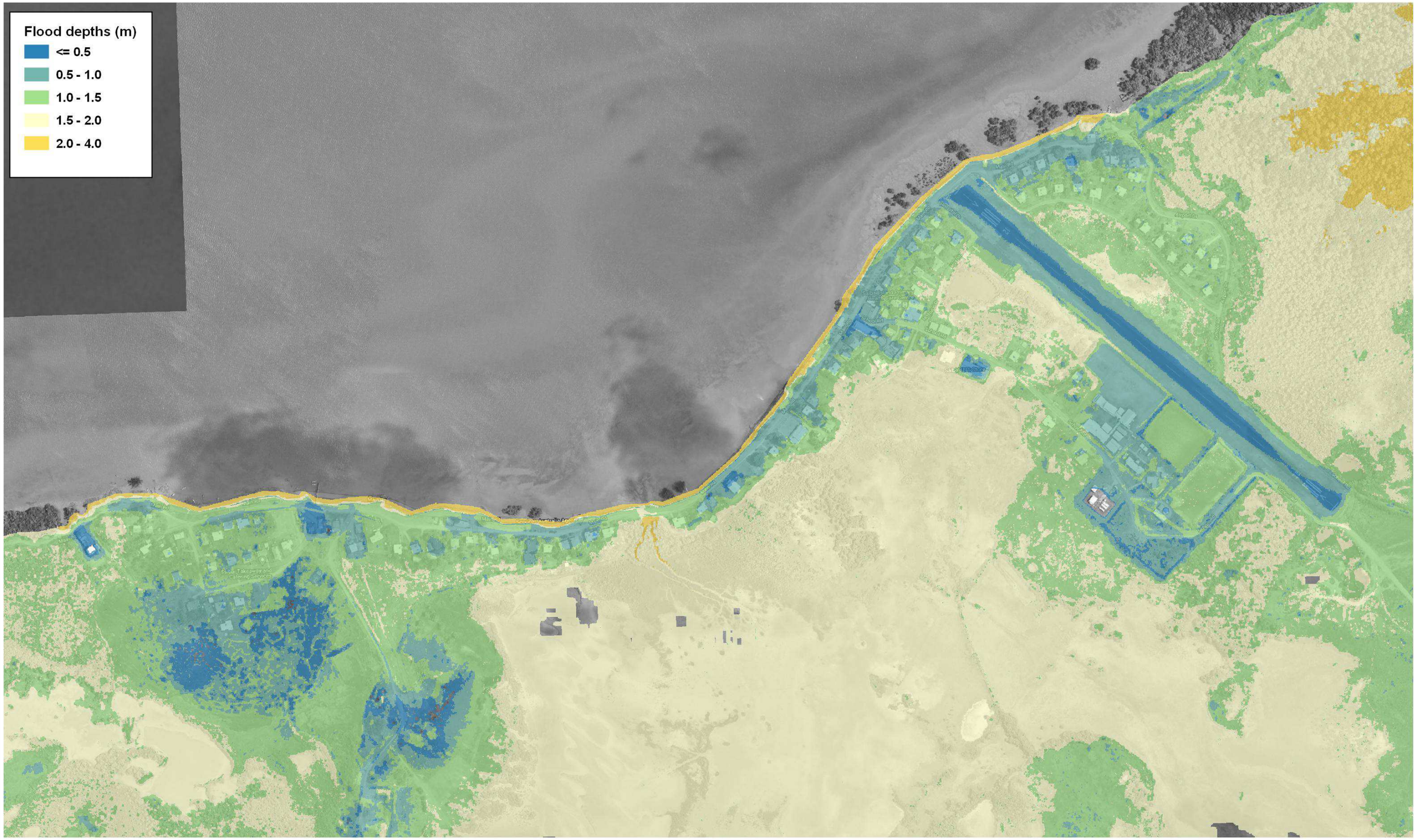
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.73 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Saibai 2100 SSP 1-2.6 100 year ARI Flood per Bettington Report Table 16

Drawing: **b.x**

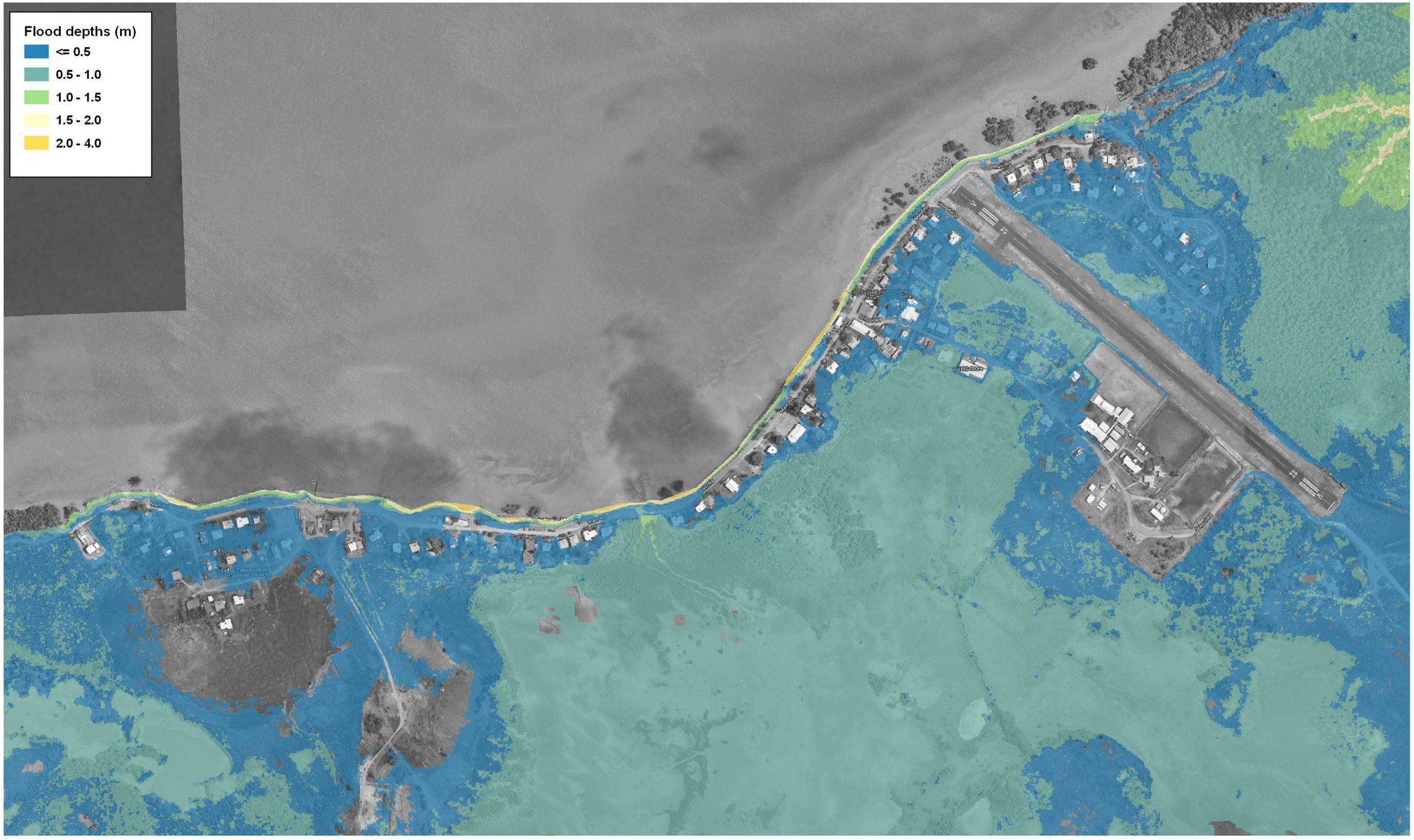
Rev: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.71 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Alternative Saibai 2100 SSP 1-2.6 100 year ARI Flood

Drawing: **b.xi**

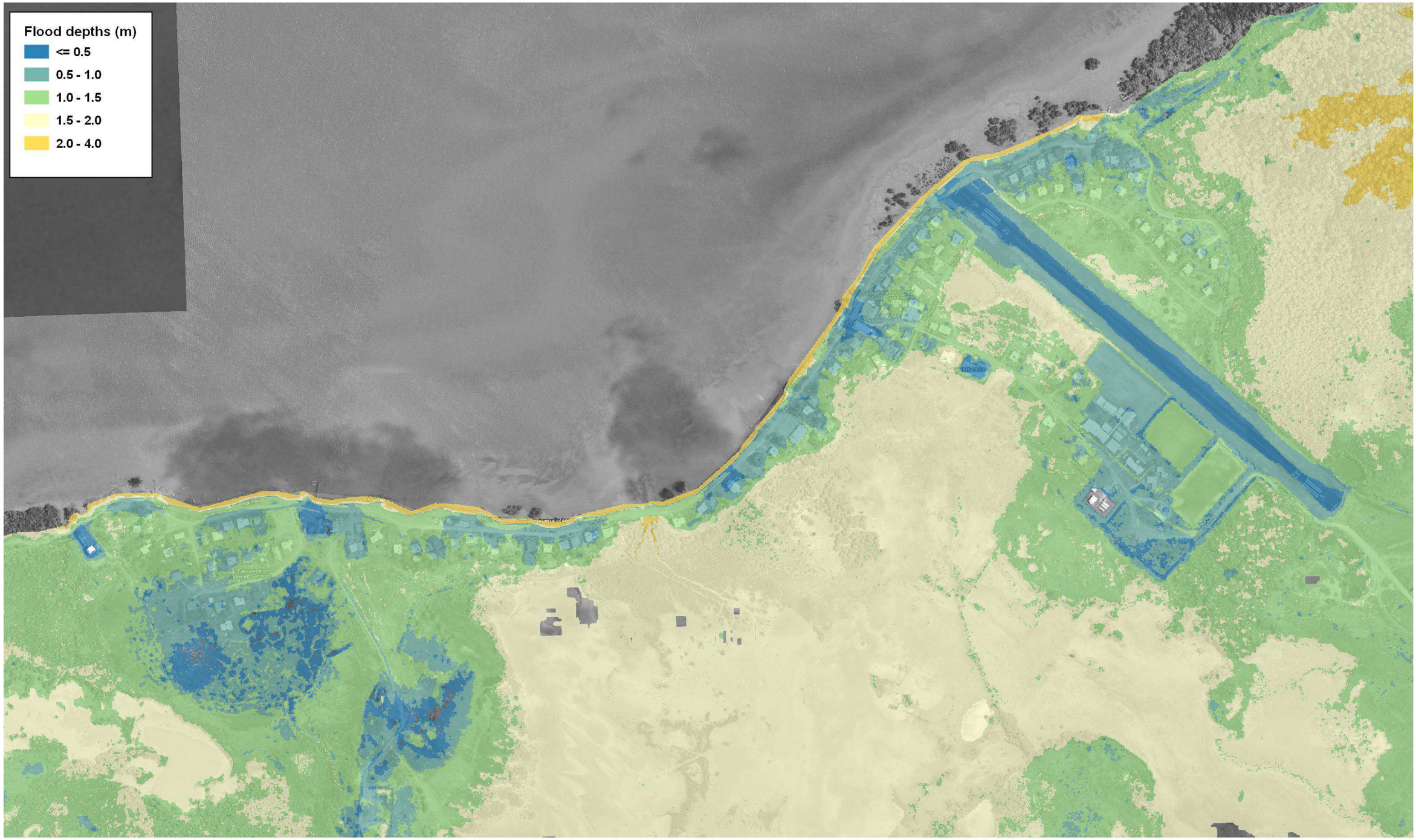
Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.67 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Saibai 2100 SSP 1-1.9 100 year ARI Flood per Bettington Report Table 15

Drawing: **b.xii**

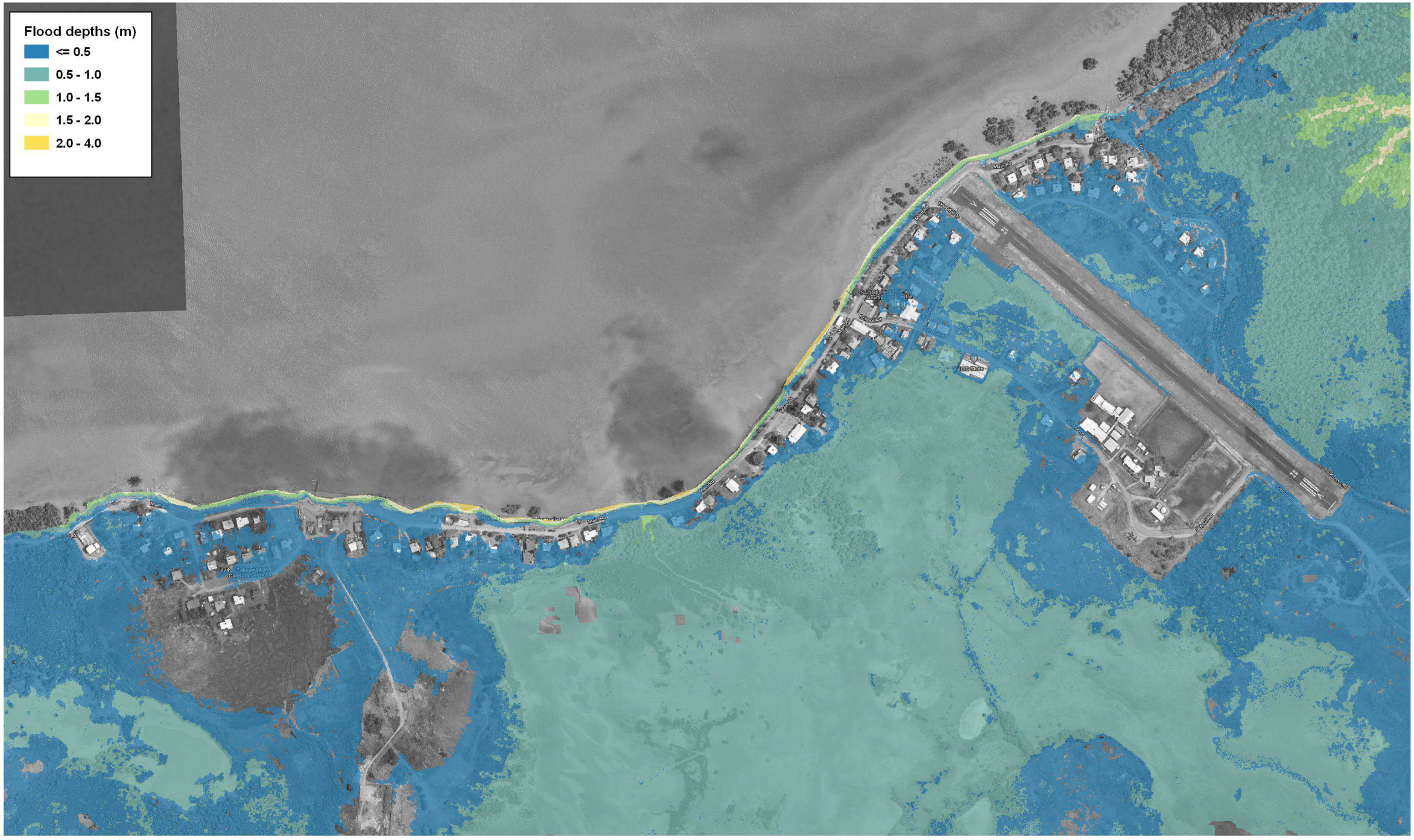
Rev: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.I.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 2.65 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Boigu and Saibai Island 2009 Project (Saibai Island 2009) with +0.75 m offset**
2. **X_60283674_SAIBAI_SURVEY.dwg**

Title:
Alternative Saibai 2100 SSP 1-1.9 100 year ARI Flood

Drawing: **b.xiii**

Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

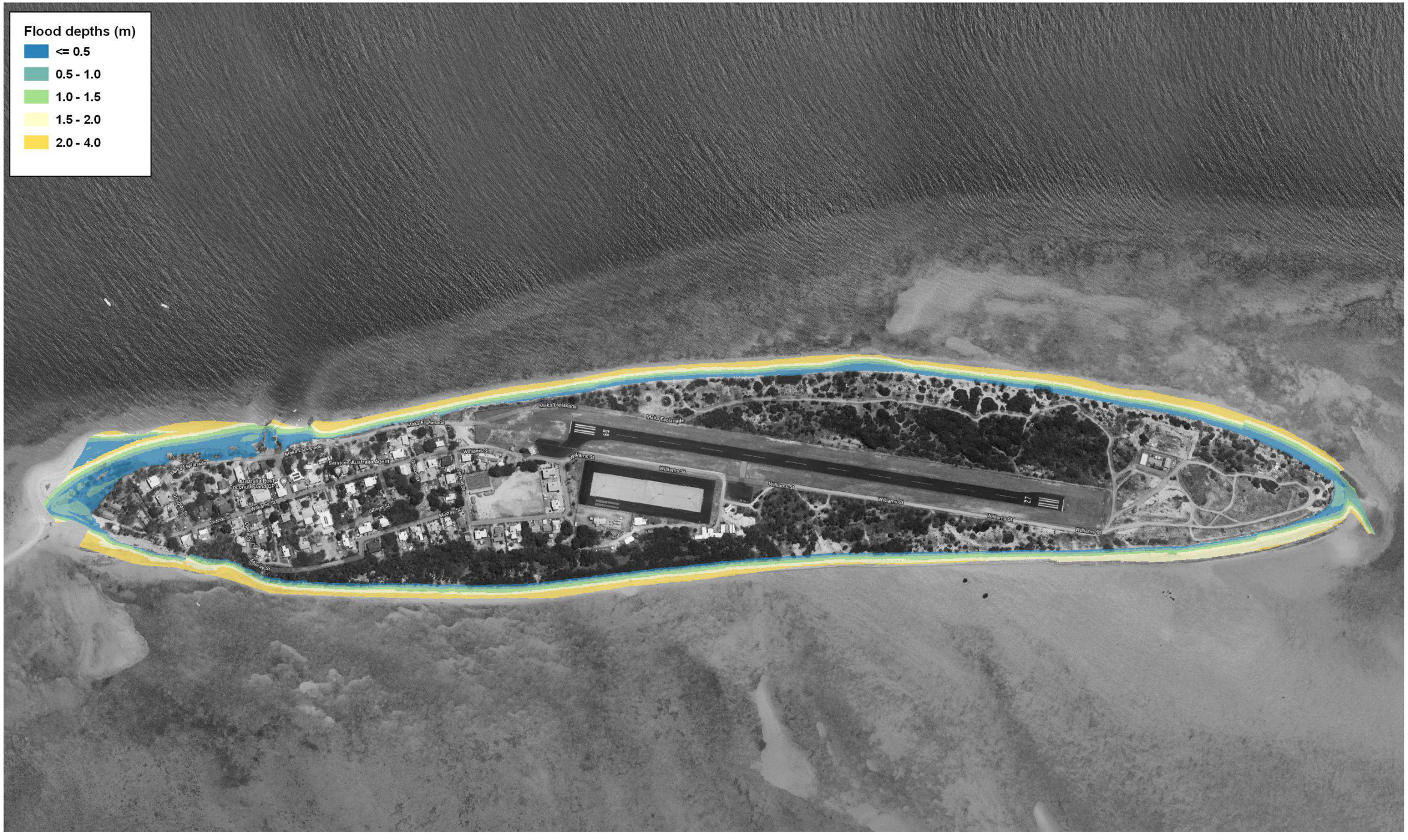
Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz

Poruma

Table 4.3 provides a summary of maps that show the extent of inundation associated with extreme sea levels at Poruma. The maps are presented on the following pages.

Table 4.3 Poruma extreme sea level inundation map summary

Map number	AHD water level (m)	Map label
c.i	3.05	Poruma Baseline (1900) 100 year ARI Flood per Bettington Report Table 7
c.ii	2.39	Alternative Poruma Baseline (1900) 100 year ARI Flood
c.iii	3.26	Poruma Current (2023) 100 year ARI Flood per Bettington Report Table 8
c.iv	2.60	Alternative Poruma Current (2023) 100 year ARI Flood
c.v	3.60	Poruma Township Inundation Event per Bettington Report Table 9
c.vi	3.41	Poruma 2050 SSP 1-2.6 100 year ARI flood per Bettington Report Table 12
c.vii	2.75	Alternative Poruma 2050 SSP 1-2.6 100 year ARI flood
c.viii	3.39	Poruma 2050 SSP 1-1.9 100 year ARI flood per Bettington Report Table 11
c.ix	2.73	Alternative Poruma 2050 SSP 1-1.9 100 year ARI flood
c.x	3.67	Poruma 2100 SSP 1-2.6 100 year ARI flood per Bettington Report Table 16
c.xi	3.01	Alternative Poruma 2100 SSP 1-2.6 100 year ARI flood
c.xii	3.61	Poruma 2100 SSP 1-1.9 100 year ARI flood per Bettington Report Table 15
c.xiii	2.95	Alternative Poruma 2100 SSP 1-1.9 100 year ARI flood



Notes:

Water Level = 3.05 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg ; PR142018-3.dwg**

Title:

Poruma Baseline (1900) 100 year ARI Flood per Bettington Report Table 7

Drawing: **c.i**

Rev: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz

Notes:

Water Level = 2.39 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg ; PR142018-3.dwg**

Title:
Alternative Poruma Baseline (1900) 100 year ARI Flood

Drawing: c.ii

Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz

Notes:

Water Level = 3.26 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg; PR142018-3.dwg**

Title:
Poruma Current (2023) 100 year ARI Flood per Bettington Report Table 8

Drawing: **c.iii**

Rev: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz

Notes:

Water Level = 2.60 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg ; PR142018-3.dwg**

Title:
Alternative Poruma Current (2023) 100 year ARI Flood

Drawing: c.iv

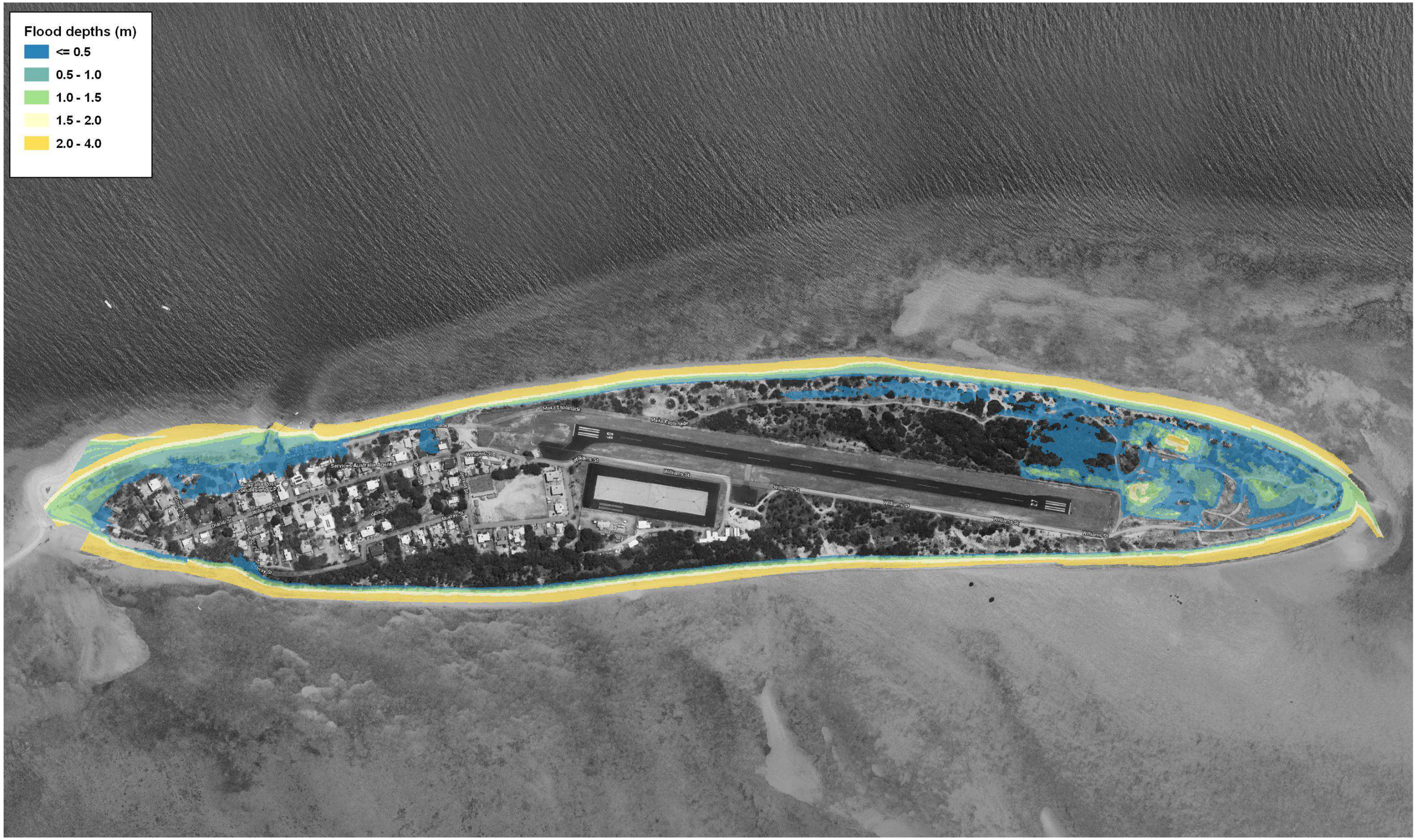
Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.60 m AHD

Survey Datasets:

1. Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset
2. PR142018-2.dwg ; PR142018-3.dwg

Title:
Poruma Township Inundation Event per Bettington Report Table 9

Drawing: C.V

Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz

Notes:

Water Level = 3.41 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg ; PR142018-3.dwg**

Title:

Poruma 2050 SSP 1-2.6 100 year ARI Flood per Bettington Report Table 12

Drawing: c.vi

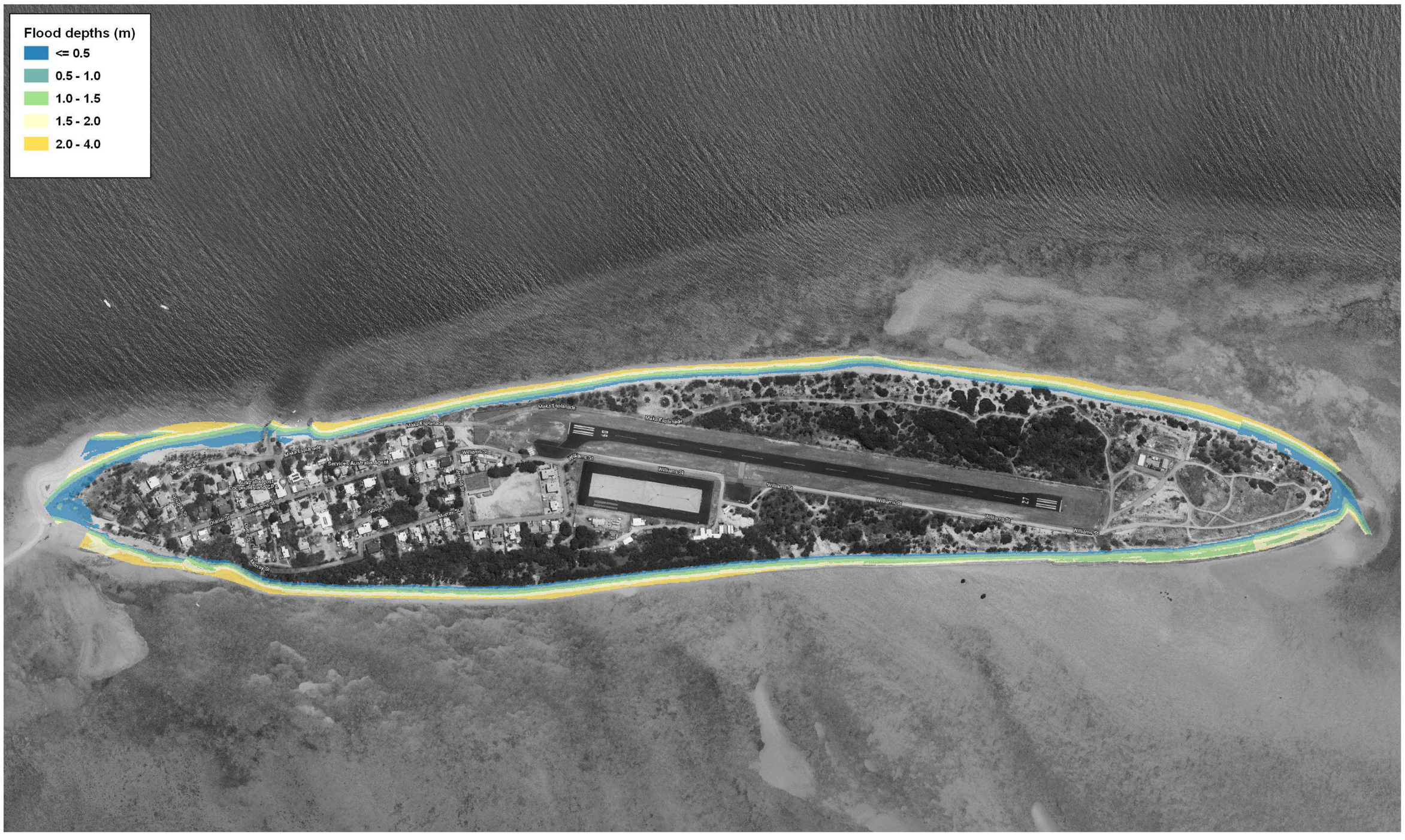
Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.75 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg; PR142018-3.dwg**

Title:
Alternative Poruma 2050 SSP 1-2.6 100 year ARI Flood

Drawing: c.vii

Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz

Notes:

Water Level = 3.39 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg ; PR142018-3.dwg**

Title:
Poruma 2050 SSP 1-1.9 100 year ARI Flood per Bettington Report Table 11

Drawing: c.viii

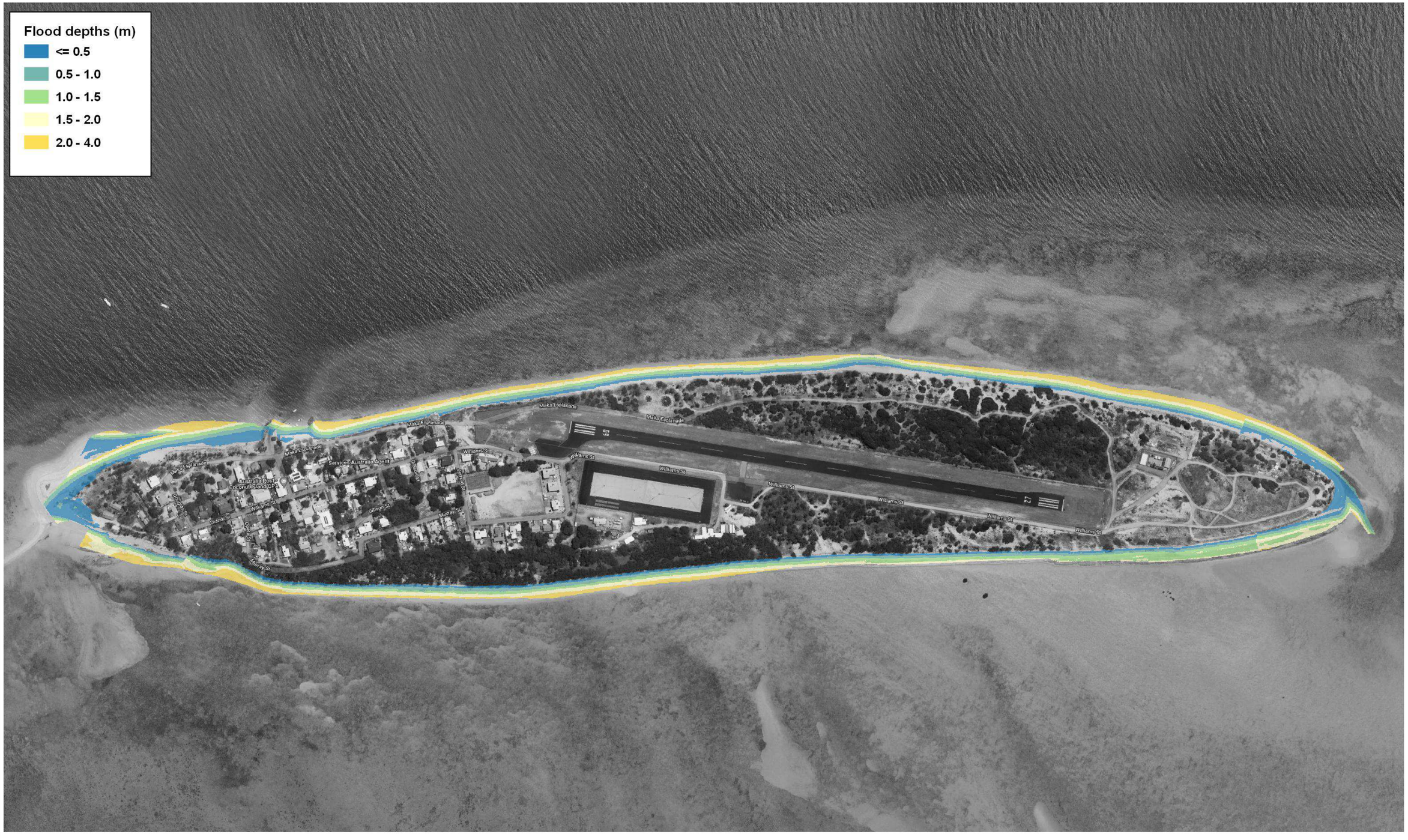
Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 2.73 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg ; PR142018-3.dwg**

Title:
Alternative Poruma 2050 SSP 1-1.9 100 year ARI Flood

Drawing: c.ix

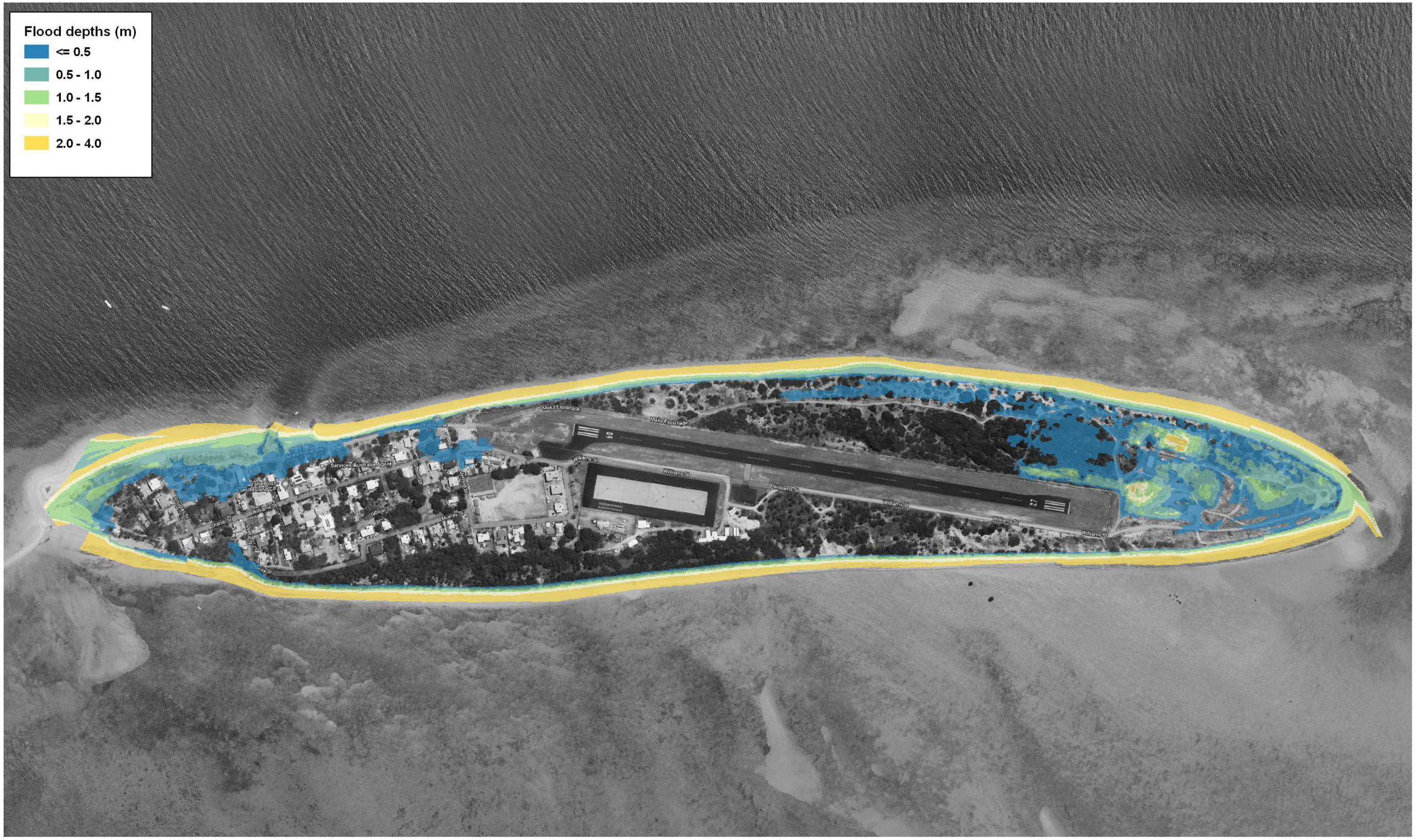
Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.67 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg; PR142018-3.dwg**

Title:

Poruma 2100 SSP 1-2.6 100 year ARI Flood per Bettington Report Table 16

Drawing: **c.x**

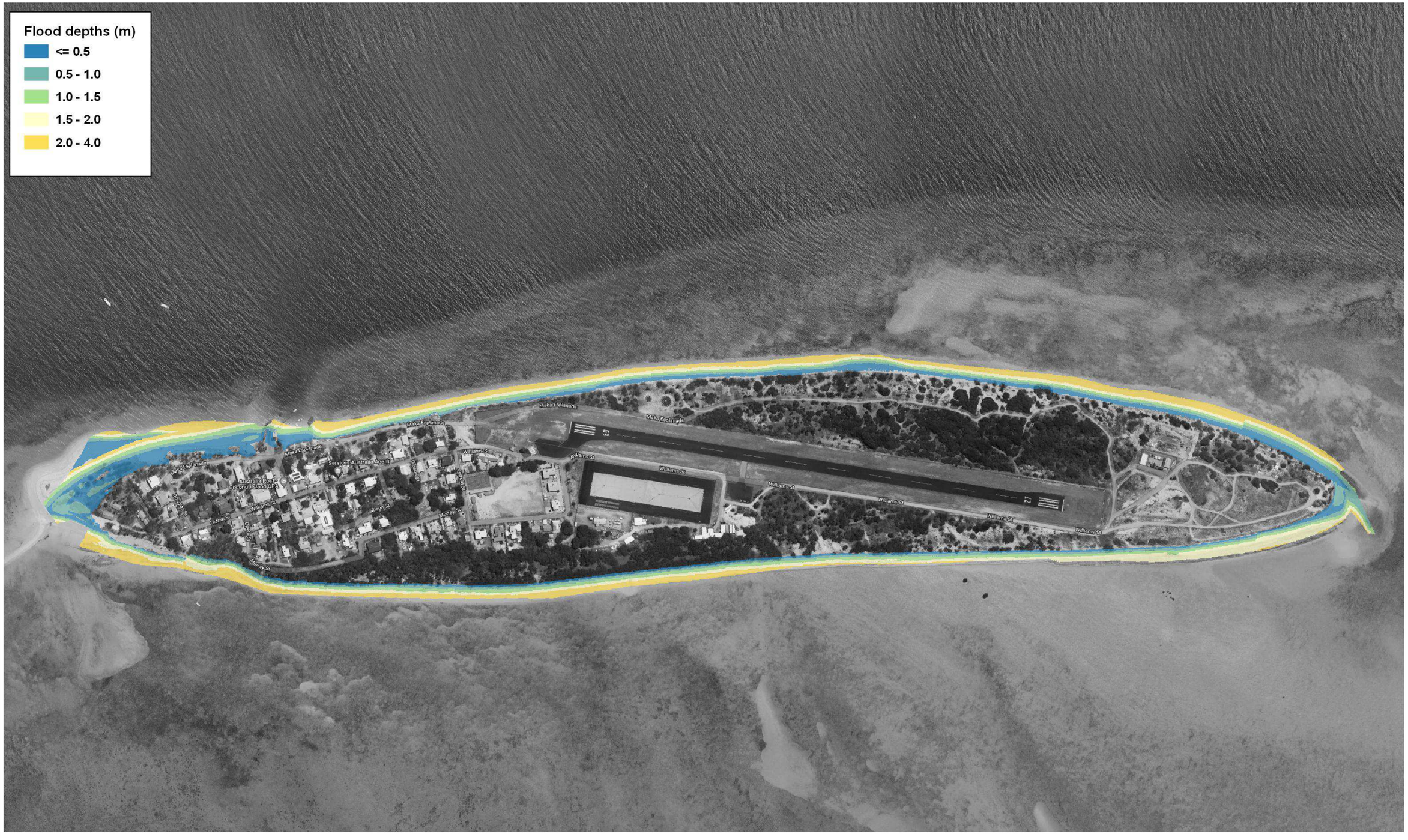
Rev: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 3.01 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg; PR142018-3.dwg**

Title:
Alternative Poruma 2100 SSP 1-2.6 100 year ARI Flood

Drawing: **c.xi**

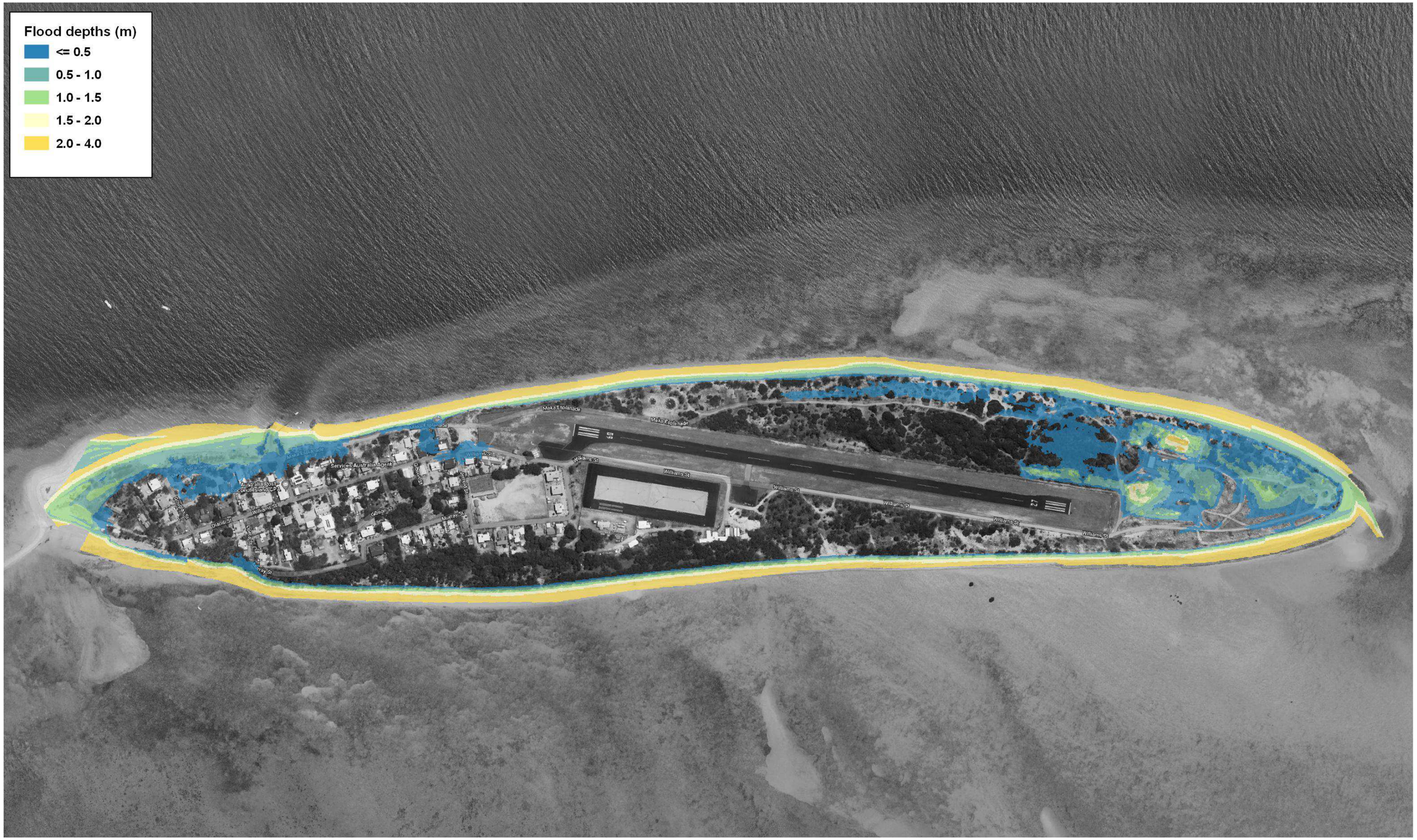
Rev: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.61 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg; PR142018-3.dwg**

Title:

Poruma 2100 SSP 1-1.9 100 year ARI Flood per Bettington Report Table 15

Drawing: c.xii

Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz

Notes:

Water Level = 2.95 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Coconut Island 2011) with +0.52 m offset**
2. **PR142018-2.dwg; PR142018-3.dwg**

Title:
Alternative Poruma 2100 SSP 1-1.9 100 year ARI Flood

Drawing: c.xiii

Rev: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz

Warraber

Table 4.4 provides a summary of maps that show the extent of inundation associated with extreme sea levels at Warraber. The maps are presented on the following pages.

Table 4.4 Warraber extreme sea level inundation map summary

Map number	AHD water level (m)	Map label
d.i	3.27	Warraber Baseline (1900) 100 year ARI Flood per Bettington Report Table 7
d.ii	2.50	Alternative Warraber Baseline (1900) 100 year ARI Flood
d.iii	3.48	Warraber Current (2023) 100 year ARI Flood per Bettington Report Table 8
d.iv	2.71	Alternative Warraber Current (2023) 100 year ARI Flood
d.v	3.50	Warraber Township Inundation Event per Bettington Report Table 9
d.vi	3.63	Warraber 2050 SSP 1-2.6 100 year ARI flood per Bettington Report Table 12
d.vii	2.86	Alternative Warraber 2050 SSP 1-2.6 100 year ARI flood
d.viii	3.61	Warraber 2050 SSP 1-1.9 100 year ARI flood per Bettington Report Table 11
d.ix	2.84	Alternative Warraber 2050 SSP 1-1.9 100 year ARI flood
d.x	3.89	Warraber 2100 SSP 1-2.6 100 year ARI flood per Bettington Report Table 16
d.xi	3.12	Alternative Warraber 2100 SSP 1-2.6 100 year ARI flood
d.xii	3.83	Warraber 2100 SSP 1-1.9 100 year ARI flood per Bettington Report Table 15
d.xiii	3.06	Alternative Warraber 2100 SSP 1-1.9 100 year ARI flood

Notes:

Water Level = 3.27 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:

Warraber Baseline (1900) 100 year ARI Flood per Bettington Report Table 7

Drawing: **d.i**

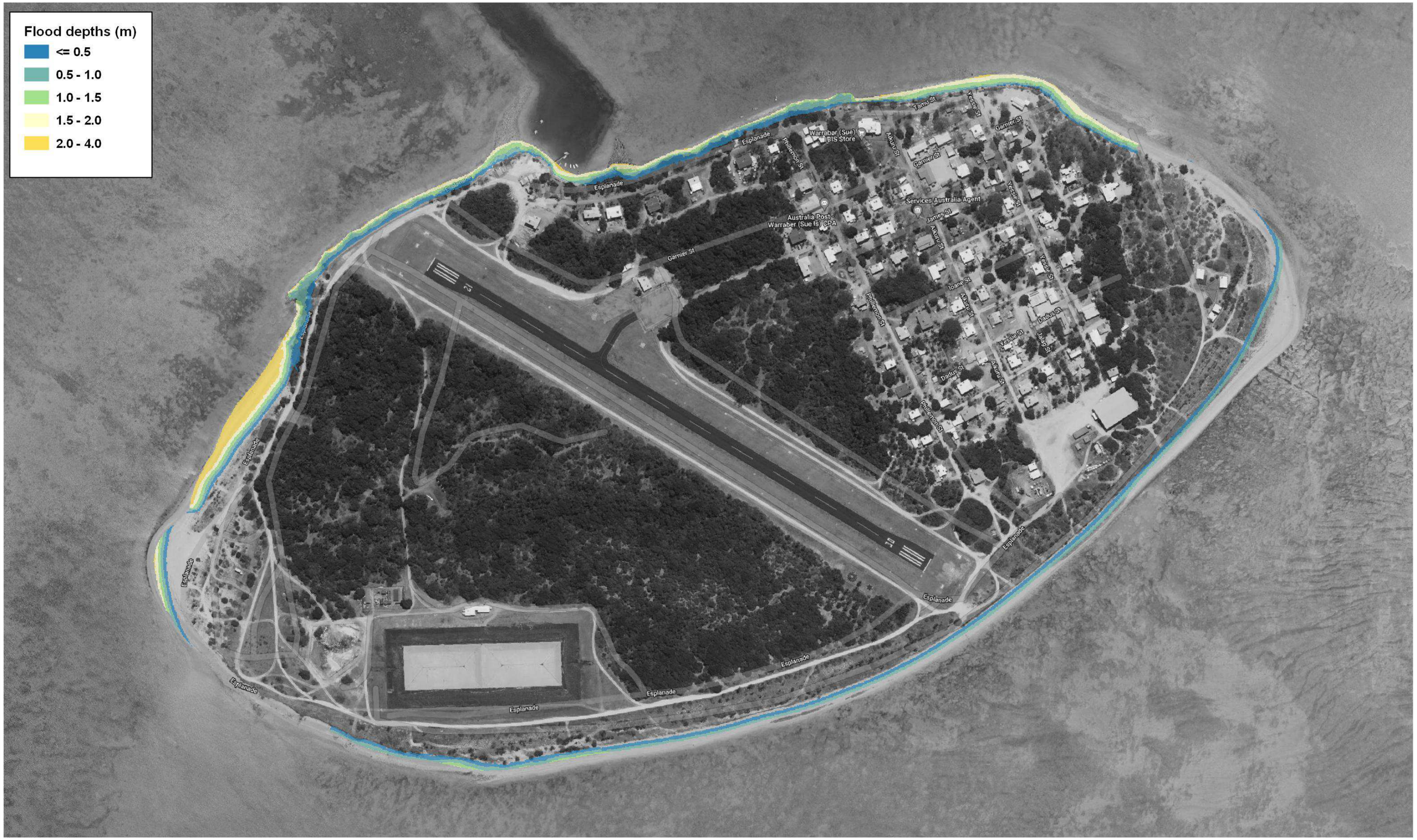
Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.5 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Alternative Warraber Baseline (1900) 100 year ARI Flood

Drawing: **d.ii**

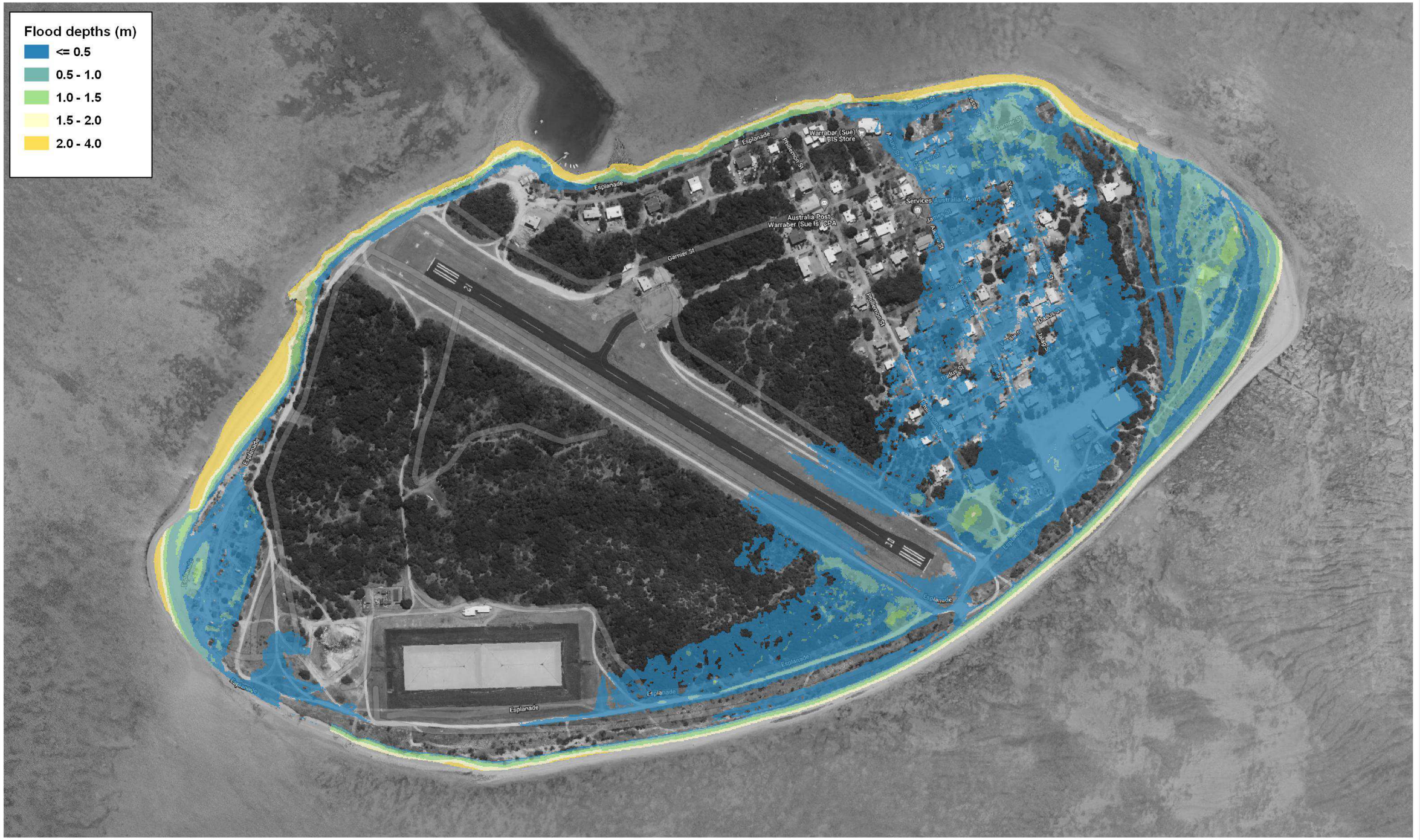
Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.48 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Warraber Current (2023) 100 year ARI Flood per Bettington Report Table 8

Drawing: **d.iii**

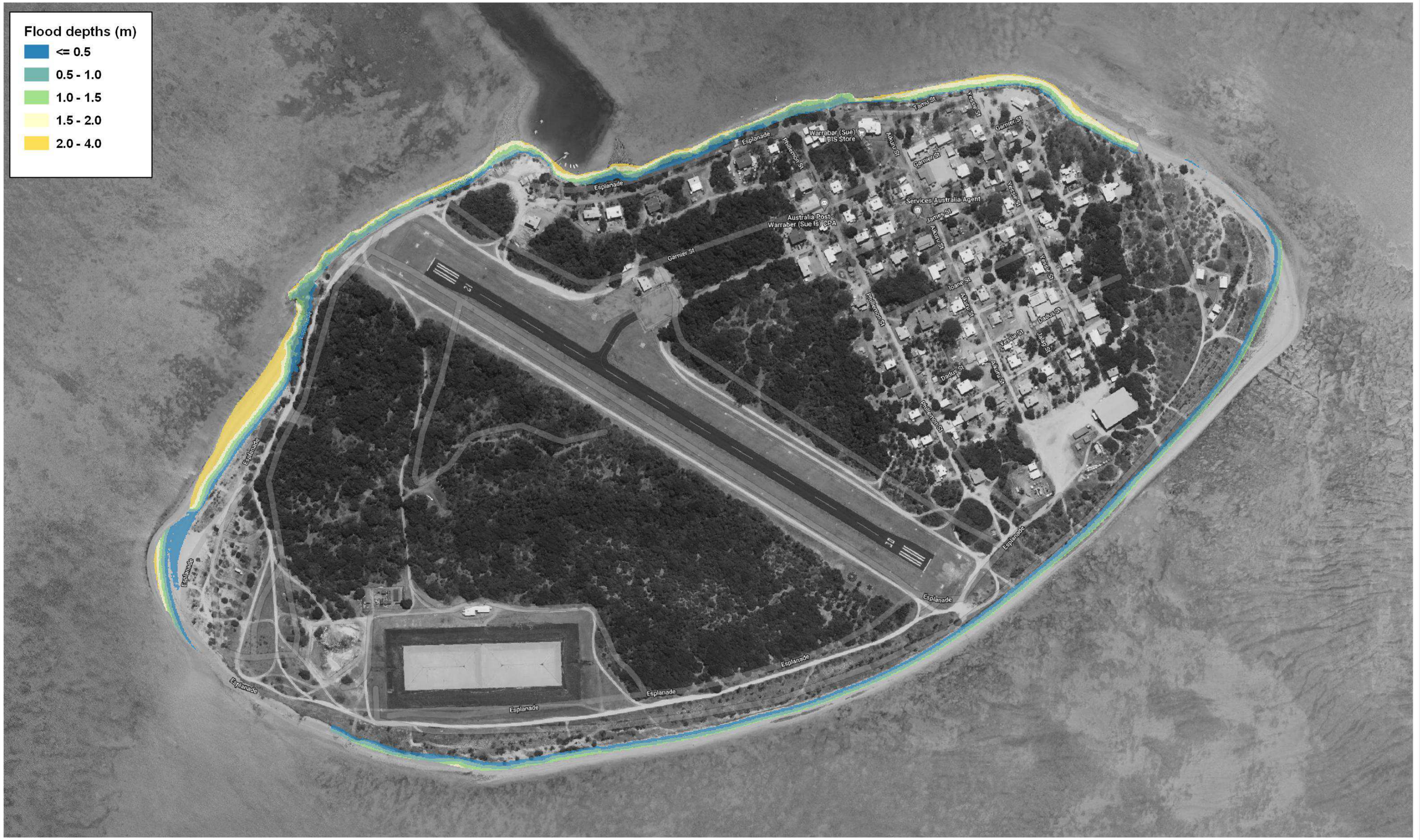
Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.71 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Alternative Warraber Current (2023) 100 year ARI Flood

Drawing: d.iv

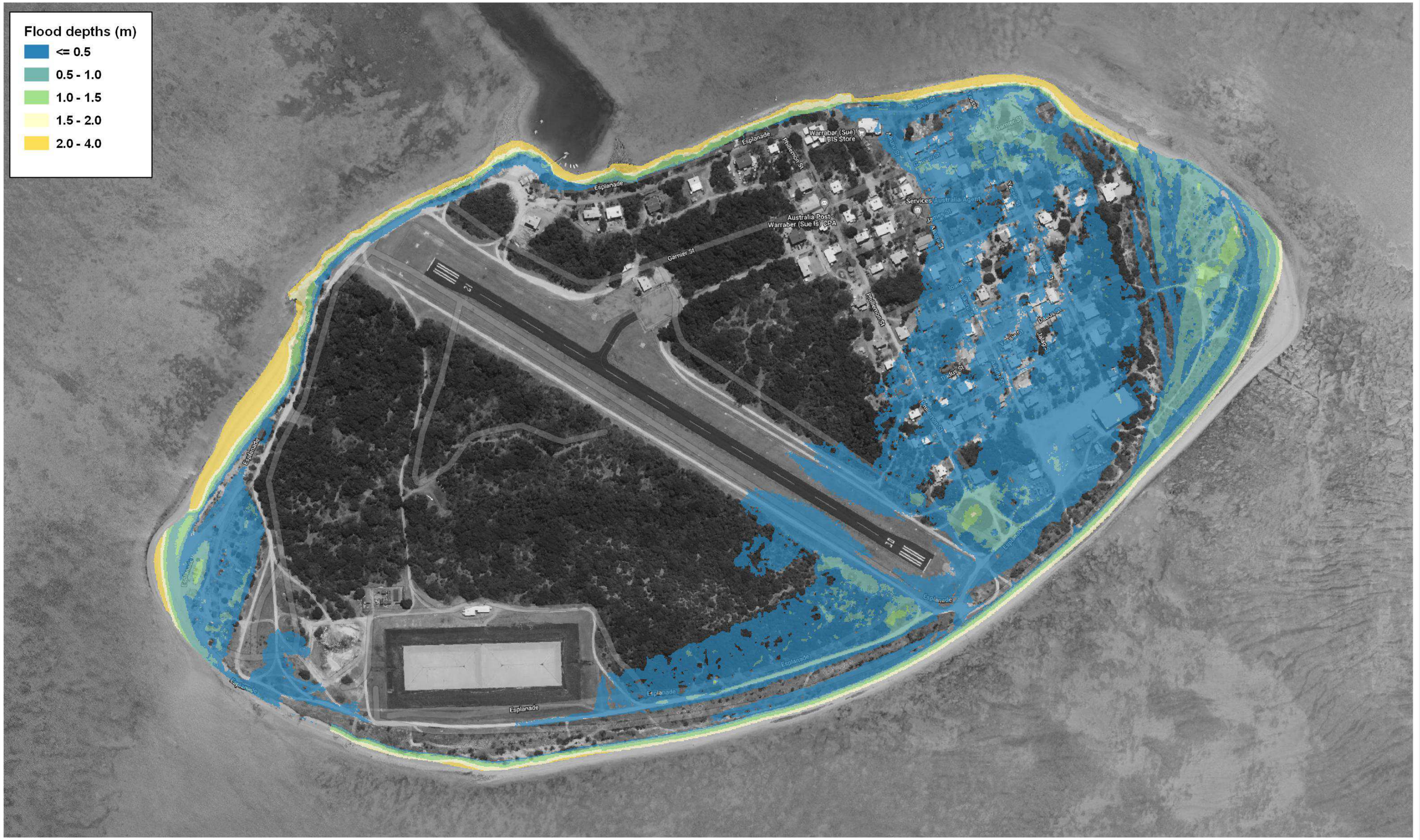
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.50 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Warraber Township Inundation Event per Bettington Report Table 9

Drawing: d.v

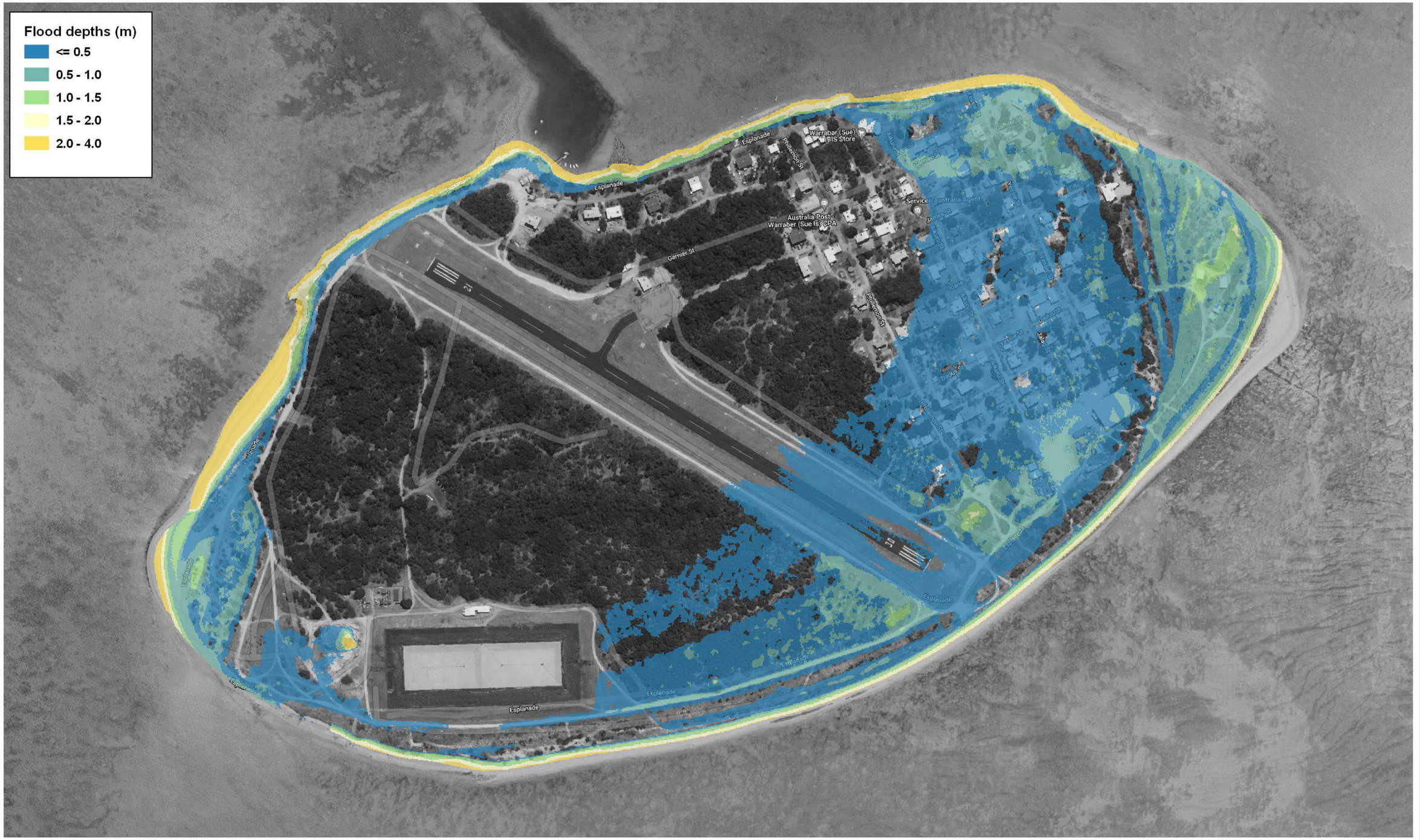
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 3.63 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Warraber 2050 SSP 1-2.6 100 year ARI Flood per Bettington Report Table 12

Drawing: d.vi

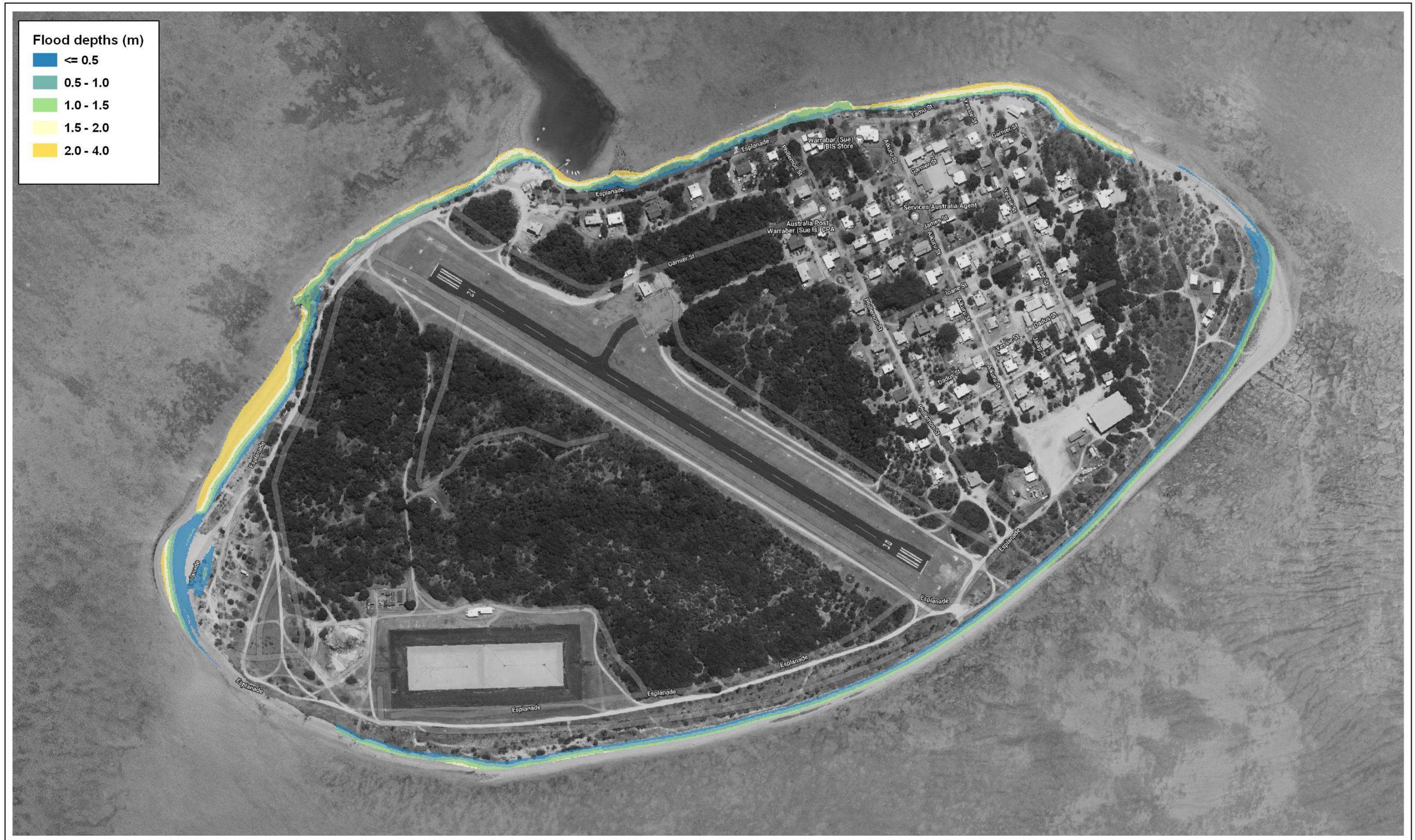
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz



Notes:

Water Level = 2.86 m AHD

Survey Datasets:

1. Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset
2. PR148460-1_2d.dwg

Title:
Alternative Warraber 2050 SSP 1-2.6 100 year ARI Flood

Drawing: d.vii

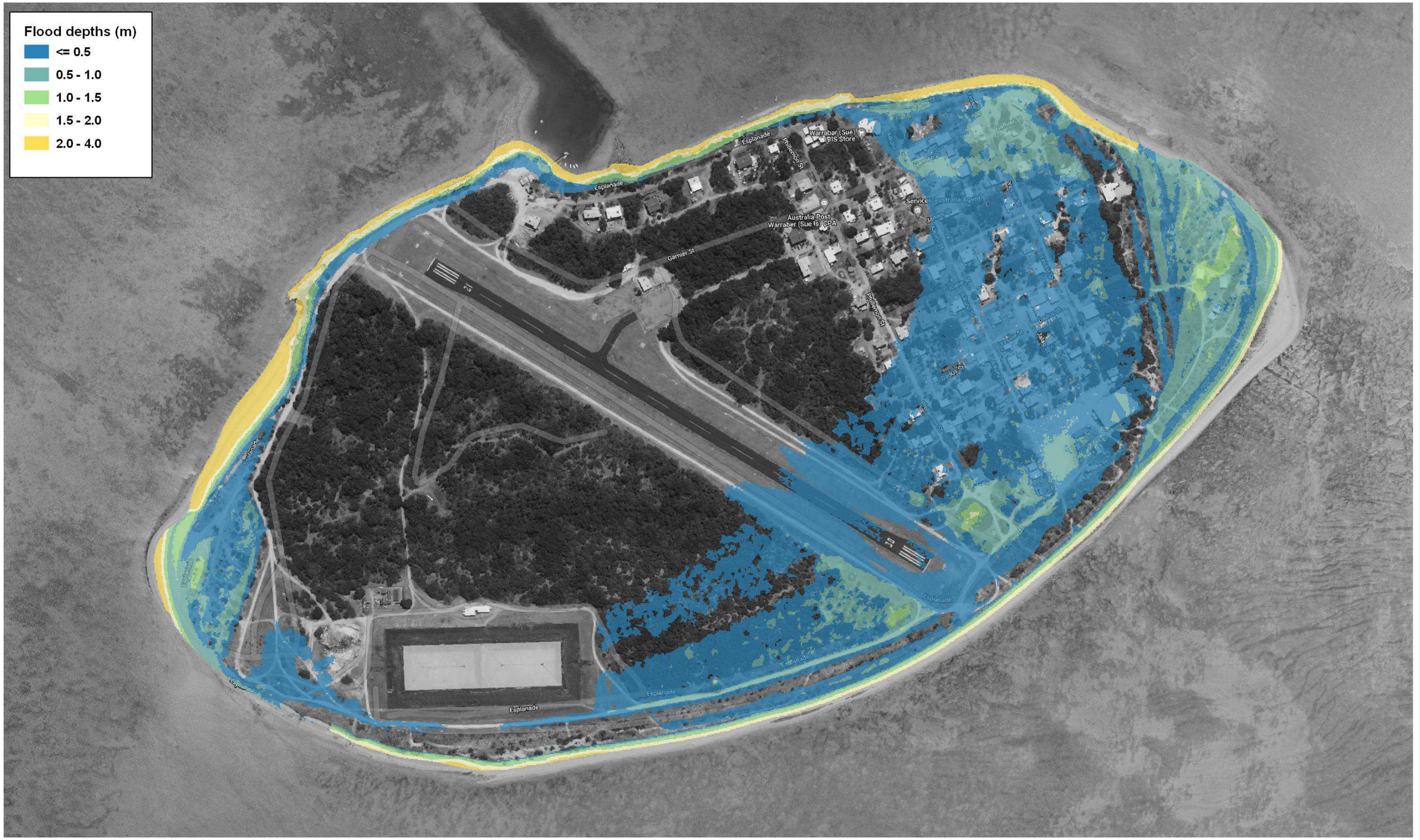
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.61 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Warraber 2050 SSP 1-1.9 100 year ARI Flood per Bettington Report Table 11

Drawing: **d.viii**

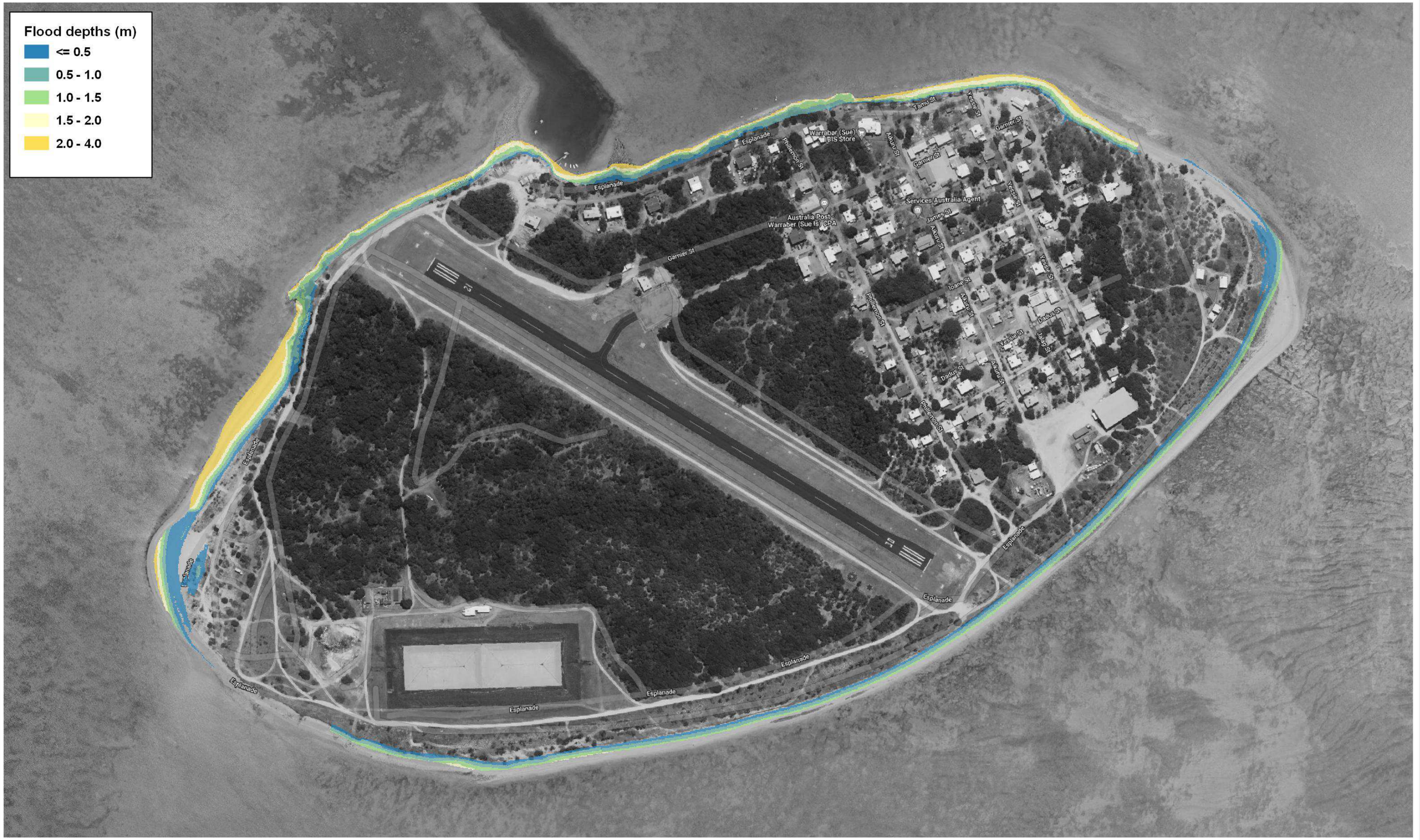
Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 2.84 m AHD

Survey Datasets:

1. Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset
2. PR148460-1_2d.dwg

Title:
Alternative Warraber 2050 SSP 1-1.9 100 year ARI Flood

Drawing: d.ix

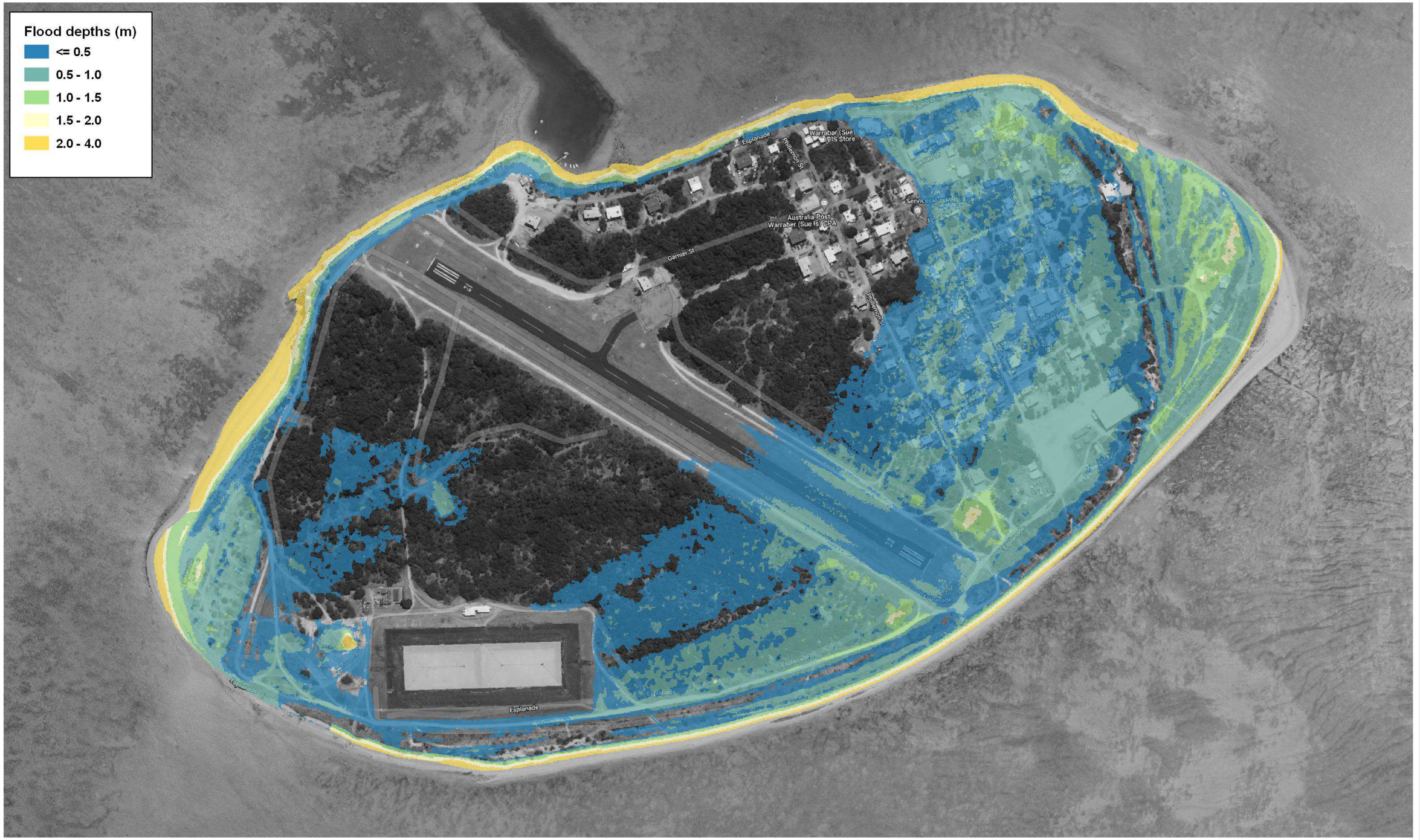
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.89 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:

Warraber 2100 SSP 1-2.6 100 year ARI Flood per Bettington Report Table 16

Drawing: **d.x**

Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_Old update.qgz

Notes:

Water Level = 3.12 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Alternative Warraber 2100 SSP 1-2.6 100 year ARI Flood

Drawing: d.xi

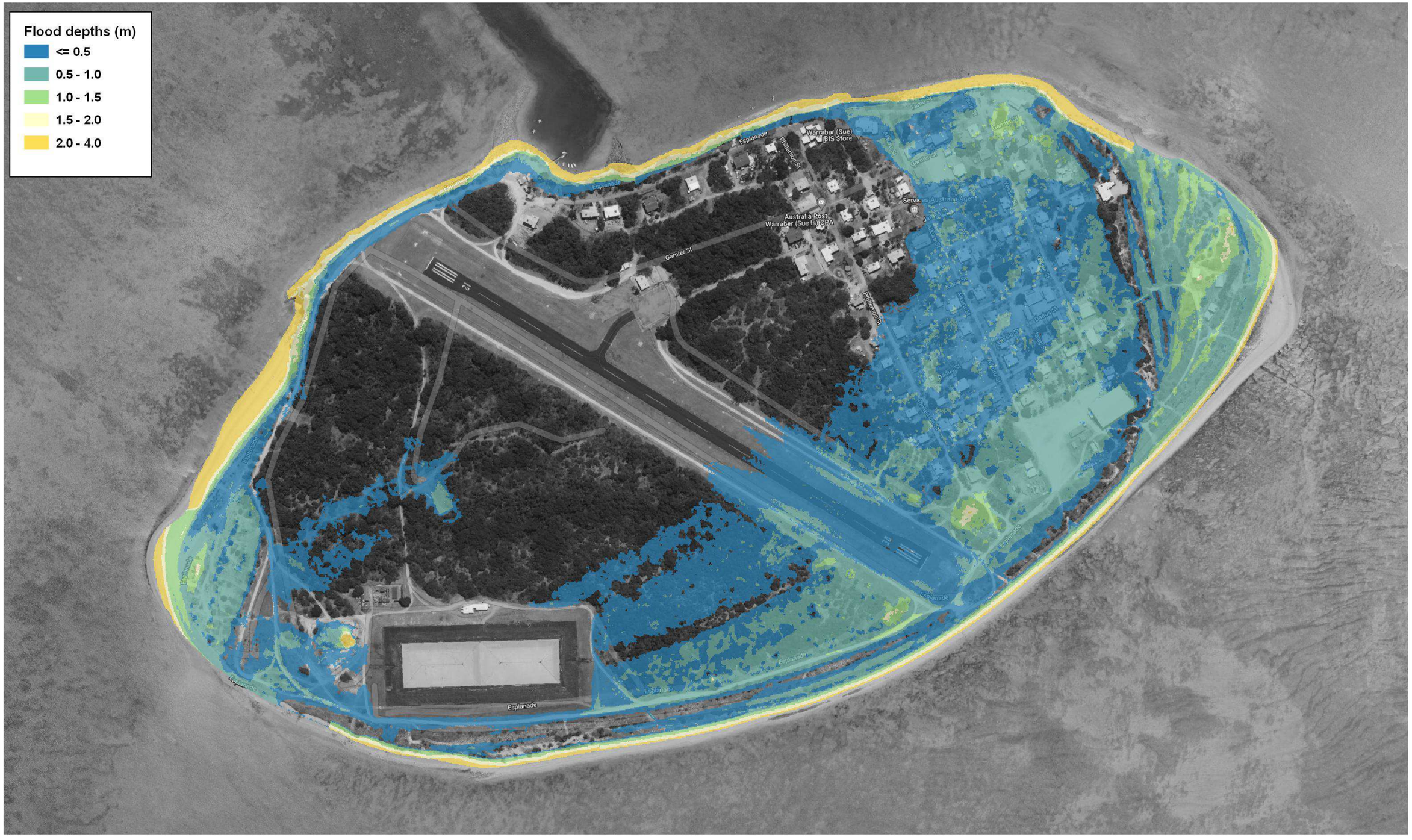
Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.83 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Warraber 2100 SSP 1-1.9 100 year ARI Flood per Bettington Report Table 15

Drawing: **d.xii**

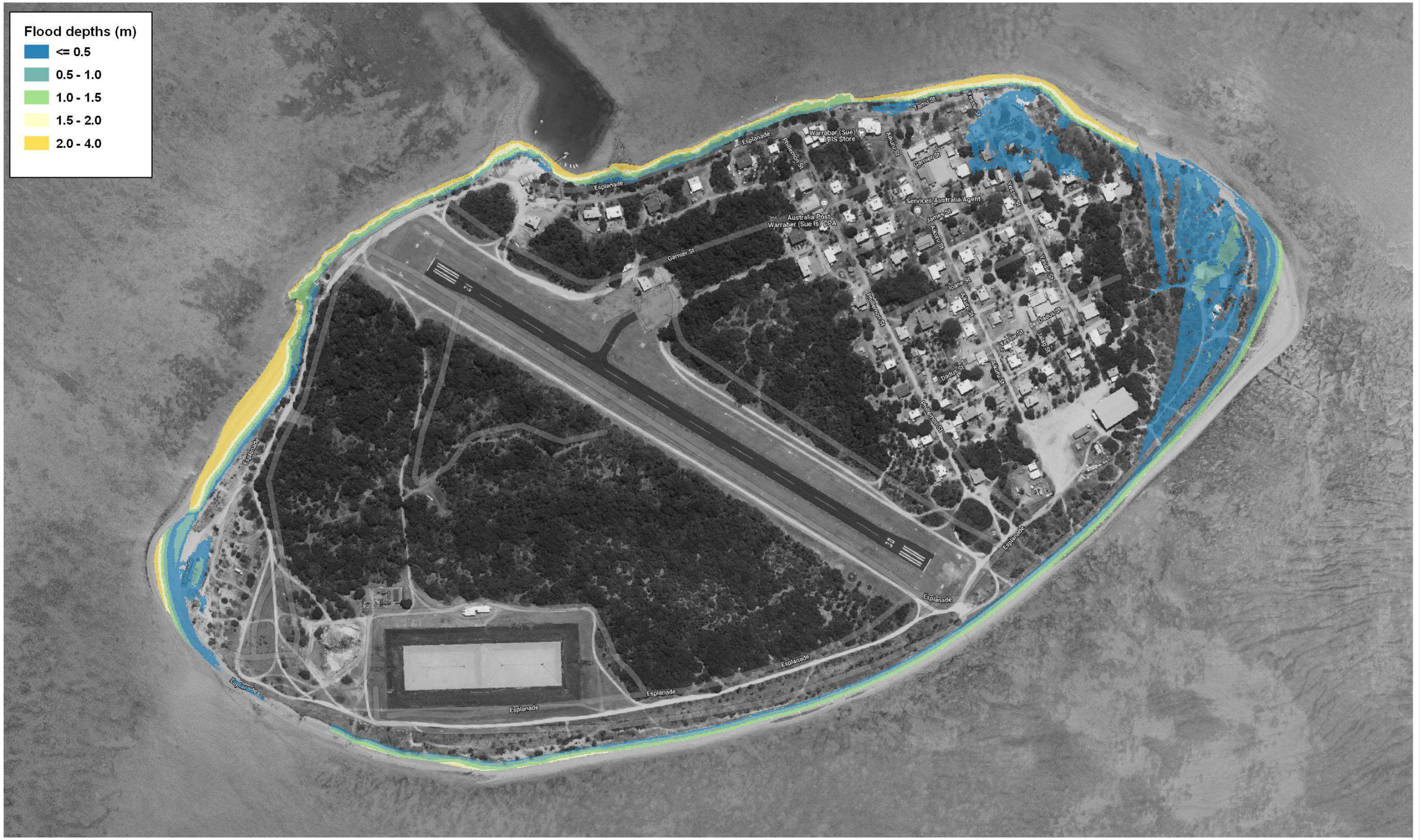
Rev.: **A**

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz



Notes:

Water Level = 3.06 m AHD

Survey Datasets:

1. **Queensland LiDAR Data – Torres Strait Islands 2011 Project (Sue Island 2010) with +0.55 m offset**
2. **PR148460-1_2d.dwg**

Title:
Alternative Warraber 2100 SSP 1-1.9 100 year ARI Flood

Drawing: d.xiii

Rev.: A

N

0 100 200 m

BMT
www.bmt.org

Filepath: I:\002972.l.mpb.ConfidentialProject\QGIS\AnnexC\002972_Flood Extent_AnnexC_new.qgz

5 Interpretation of mapping provided in the Bettington Report

The Bettington Report includes inundation extent mapping based on the derived extreme sea levels. The mapping methodology is not described in the Bettington Report but the following assumptions and observations have been made:

- There is no description of the ground survey or LiDAR datasets or how they have been adjusted and applied to estimate a consistent datum and develop a DEM. This is a critical aspect of any inundation modelling and mapping exercise, but particularly when combining datasets with datum uncertainties (as examined throughout this report).
- There is no description or presentation of the DEMs that underpin the inundation extent mapping presented in the Bettington Report.
- The Bettington Report mapping appears to follow a 'bathtub' or 'bucket fill' approach that involves extrapolation of the extreme water level over ground elevations defined by a DEM. A similar mapping approach is presented in this report.
- The Bettington Report mapping appears to show all areas of land with an elevation below the water level, including areas where there is no hydraulic connection to the sea. Evidence of this is in Figure 14 (Poruma Baseline) where inundation is shown along the airstrip, and Figure 15 (Warraber Baseline) where inundation is shown to the west of the airstrip and within the bunded water storage area. Survey control mark 177935 shows the water storage bund crest elevation at 6.605 m AHD which is well above the extreme sea levels considered in the Bettington Report.
- Any benefit of seawalls or other structures designed to limit the extent of overtopping and inundation by removing a hydraulic connection to the sea will not be resolved by the Bettington Report mapping approach.

Due to the absence of key information regarding the application of topographic survey datasets and the development of the DEM for each island, it is not possible to comment on the validity of the Bettington Report mapping approach.

6 References

Maritime Safety Queensland (2023, October 5) Diurnal tidal planes. Queensland Government. https://www.msq.qld.gov.au/tides/tidal-planes/diurnal-tidal-planes

Metters, D.R. and Petterson, R.I. (2011). A coherent tidal datum for the Torres Strait. The International Hydrographic Review, 5 (2011): 33-42.

SEA (2011) Torres Strait Extreme Water Level Study. Prepared for Torres Strait Regional Authority by Systems Engineering Australia Pty Ltd, Jul, 387pp.

Annex A Letters of engagement and questions for report

Our ref. 21008585

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Canberra
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Melbourne
Brisbane
Perth
Adelaide
Hobart
Darwin

31 August 2023

Matthew Barnes
Programme Manager Coastal / Team Leader Coastal QLD
BMT

By email: Redactions for public file

PRIVILEGED & CONFIDENTIAL

Dear Mr Barnes

Pabai & Anor v Commonwealth of Australia (VID622/2021) | Provisional engagement letter

PROVISIONAL ENGAGEMENT

1. We confirm we act for the Commonwealth of Australia (the **Commonwealth**) in the above class action before the Federal Court of Australia.

2. The applicants (Pabai Pabai and others) commenced this class action on 26 October 2021 on their own behalf and on behalf of all persons who at any time during the period from about 1985 and continuing, are of Torres Strait Islander descent and suffered loss and damage as a result of the alleged acts and omissions of the Commonwealth (**Group Members**).

3. The proceeding relates to the impacts of climate change in the Torres Strait. In summary, the applicants allege that the Commonwealth:

    a) owes a legal duty to Torres Strait Islanders to take reasonable steps to protect Torres Strait Islanders, their traditional way of life and the marine environment in and around the Torres Strait from the current and projected impacts of climate change, and breached that duty by (amongst other things) failing to identify a GHG emissions reduction target consistent with the 'best available science'; or

    b) further or alternatively, owes a legal duty to Torres Strait Islanders to take reasonable steps to avoid causing property damage, loss of fulfilment of *Ailan Kastom* and other damage arising from a failure to implement or adequately implement adaptation measures to prevent or minimise the impacts of climate change in the Torres Strait, and breached that duty.

4. The Commonwealth (amongst other things) denies that it owes the pleaded duties of care, and denies that it breached any such duties of care.

5. We are instructed to engage you, on a provisional basis, as an expert in this matter.

6. The provisional engagement will consist of an initial conference between you and the Commonwealth's legal team. The purpose of this conference will be to determine the capacity, if any, in which you may be able to act as an independent expert retained by the Commonwealth in this proceeding.

7. Following that conference, the Commonwealth may offer you an ongoing engagement as an independent expert in this proceeding.

8. We confirm that any engagement would be with you as an individual independent expert. Any opinions expressed by you should be your own.

9. We enclose the following documents by way of general reading for you before the conference with us:

    a. The Federal Court's Expert Evidence Practice Note (GPN-EXPT). This Practice Note sets out guidelines for expert witnesses to follow in proceedings before the Court. Please read these guidelines carefully. You are requested to follow this Practice Note in your dealings with us.

    b. The expert report of Stuart Bettington, filed by the applicants in these proceedings.

OTHER MATTERS

10. Your communications with us are confidential and subject to the Commonwealth's legal professional privilege.

11. To ensure that the Commonwealth retains legal professional privilege in relation to your work, we request that you comply with the following communication and information management protocol during the course of this engagement:

    a. Unless instructed otherwise, communications (written or oral) should be with Dejan Lukic, Grace Ng and Jacqueline Yates of the Australian Government Solicitor.

    b. This letter, any other materials provided to you, and any working notes prepared by you, should also be maintained in a file clearly marked 'Confidential and subject to legal professional privilege – for the Commonwealth of Australia'.

12. Subject to any orders of any court, our instructions, and any information obtained and working notes prepared by you in relation to this matter (including this engagement) must not be disclosed to any other person.

13. If you have any questions please contact us.

Yours sincerely

Grace Ng
Senior Lawyer
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Hobart
Darwin

Our ref. 21008585

8 September 2023

Dr Matthew Barnes
APAC Coastal Programme Manager
BMT Commercial Australia Pty Ltd
Level 5, 348 Edward Street
BRISBANE QLD 4000

By email: [redacted]

PRIVILEGED & CONFIDENTIAL

Dear Dr Barnes

Pabai & Anor v Commonwealth of Australia (VID622/2021) | Engagement as independent expert

1. We refer to our provisional engagement letter dated 31 August 2023. We confirm we are instructed to engage you as an independent expert in the above class action before the Federal Court of Australia.

BRIEFING MATERIALS AND INSTRUCTIONS

2. **Annexure A** contains a list of documents briefed to you.

3. At this stage, you are required to undertake a review of the documents briefed at Annexure A.

4. We will in due course send you a letter with specific questions for you to address in a written expert report. We anticipate those questions will relate to the modelling of flooding and inundation on the Torres Strait Islands.

5. Any expert evidence to be relied on by the Commonwealth is due to be filed by **6 October 2023**. Please let us know if you consider it will not be possible to meet that date and we will consider what arrangements can be made.

6. You may also be required to give oral evidence before the Court. The hearing is listed from 6 to 27 November 2023, in Melbourne. We will advise you closer to the date if you will be required to give oral evidence and, if so, on which dates.

YOUR ROLE AS AN EXPERT

7. We enclose in Annexure A the Federal Court of Australia Expert Evidence Practice Note (GPN-EXPT) (Practice Note) and Part 23 of the *Federal Court Rules 2011* (Cth). These documents set out guideline for expert witnesses to follow in proceedings before the Court. Please read these guidelines carefully. You are

requested to follow these guidelines in your dealings with us, and in preparing your report.

8. We draw your attention to the following sections of the Practice Note:

   a. Section 4 'Role and Duties of the Expert Witness': Paragraph 4.1 provides that your role is to provide relevant and impartial evidence in your area of expertise. You should never mislead the Court or become an advocate for the Commonwealth (as the retaining party).

   b. Section 4 'Role and Duties of the Expert Witness': Paragraph 4.4 provides that every expert witness giving evidence must read and agree to be bound by the Expert Witness Code of Conduct. You are required to strictly comply with the terms of the Expert Witness Code of Conduct. Please ensure your report/s contains an acknowledgment that you have read and agree to be bound by the Expert Witness Code of Conduct.

   c. Section 5 'Contents of an Expert's Report and Related Material': Paragraph 5.2 sets out the requirements for the contents of any report, in addition to those requirements set out in the Expert Witness Code of Conduct.

CONFIDENTIALITY AND LEGAL PROFESSIONAL PRIVILEGE

9. Your communications with us are confidential and subject to the Commonwealth's legal professional privilege.

10. To ensure that the Commonwealth retains legal professional privilege in relation to your work, we request that you comply with the following communication and information management protocol during the course of this engagement:

    a. Unless instructed otherwise, communications (written or oral) should be with Dejan Lukic, Grace Ng, Emily Nance, Zoe Maxwell and Jacqueline Yates of the Australian Government Solicitor.

    b. This letter, any other materials provided to you, and any working notes prepared by you, should also be maintained in a file clearly marked 'Confidential and subject to legal professional privilege – for the Commonwealth of Australia'.

    c. Include on the front page of any draft report and any other document produced in the course of this engagement the following wording: 'Confidential and subject to legal professional privilege – for the Commonwealth of Australia'.

11. Subject to any orders of any court, our instructions, and any information obtained and working notes prepared by you in relation to this matter (including this engagement) must not be disclosed to any other person.

ANY ASSISTANCE IN PREPARING YOUR REPORT

12. The opinions which you provide must be your own opinions. In the event that you require assistance from others in preparing your report it will be necessary for you to identify those individuals and the assistance provided to you.

NEXT STEPS

13. Please begin considering the materials in your brief. As noted above, we will in due course provide you with some specific questions to answer.

14. If you have any questions please contact us.

Yours sincerely

Grace Ng
Senior Lawyer
T 02 9581 7320
grace.ng@ags.gov.au

ANNEXURE A – BRIEFED DOCUMENTS

TAB	DOCUMENT	DATE
1.	Provisional engagement letter, enclosing:	31 August 2023
	a. Federal Court's Expert Evidence Practice Note (GPN-EXPT)	25 October 2016
	b. Applicants' second further amended statement of claim (**SFASOC**)	11 April 2023
	c. Respondent's defence to the SFASOC	9 May 2023
	d. Applicants' amended concise statement	15 May 2023
	e. Respondent's amended concise statement in response	29 May 2023
2.	Part 23 of the *Federal Court Rules 2011*	13 January 2023
3.	Expert report of Stuart Bettington (sealed)	3 August 2023
4.	Survey data produced by the Torres Strait Island Regional Council (pursuant to the subpoena dated 20 April 2023 requiring production of "electronic copies of all topographic and hydrographic survey data captured or prepared for the seawall and flood mitigation works on the islands of Saibai, Boigu, Poruma, Warraber, Iama, and Masig (in AutoCAD or equivalent format).")	26 May 2023

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Our ref. 21008585

27 September 2023

Dr Matthew Barnes
APAC Coastal Programme Manager
BMT Commercial Australia Pty Ltd
Level 5, 348 Edward Street
BRISBANE QLD 4000

By email: [redacted] Redactions for public file

PRIVILEGED & CONFIDENTIAL

Dear Dr Barnes

Pabai & Anor v Commonwealth of Australia (VID622/2021) | Engagement as independent expert

1. We refer to our engagement letter dated 8 September 2023 (**engagement letter**).
2. We confirm we would like you to prepare an expert report for the purpose of the above class action that answers the questions set out in **Annexure B** to this letter.
3. In answering those questions, please consider, as you consider relevant, the materials provided in Tabs 1(b)-1(e), 3 and 4 of **Annexure A** to the Engagement Letter.
4. Again, we refer you to the Federal Court of Australia Expert Evidence Practice Note (GPN-EXPT) and Part 23 of the *Federal Court Rules 2011* (Cth), provided at Tab 1(a) of **Annexure A** to the Engagement Letter. We reiterate that you are required to follow these guidelines in your dealings with us, and in preparing your expert report.

NEXT STEPS

5. Please proceed to prepare your written report.
6. As noted previously, any expert evidence to be relied on by the Commonwealth is due to be filed by **6 October 2023**. Please let us know if you consider it will not be possible to meet that date and we will consider what arrangements can be made.
7. If you consider there are further materials or information you require in order to answer those questions, please let us know.

8. If you have any questions please contact us.

Yours sincerely

Jacqueline Yates
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ANNEXURE B – QUESTIONS FOR REPORT

Basis of expertise

1. Please describe your academic qualifications, professional background and experience that is relevant to your answering the questions in the letter of instruction. You may wish to do so by reference to a current curriculum vitae.

Flood mapping

2. Please produce maps showing the extent of inundation that would occur on the following islands at the following extreme sea levels. Please also explain how the flood mapping process is undertaken, any assumptions that underpin the flood mapping process, and any uncertainties that should be noted in using flood maps to determine the likely extent of flooding at a given extreme sea level. To the extent possible, please also explain any assumptions and uncertainties that should be noted in relation to the flood maps produced in Mr Bettington's report dated 3 August 2023 (**the Bettington Report**).

   a. Boigu

      i. 3.73m AHD (please label as follows: Boigu Baseline (1900) 100 year ARI Flood per Bettington Report Table 7);

      ii. 2.48m AHD (please label as follows: Alternative Boigu Baseline (1900) 100 year ARI Flood);

      iii. 3.94m AHD (please label as follows: Boigu Current (2023) 100 year ARI Flood per Bettington Report Table 8);

      iv. 2.69m AHD (please label as follows: Alternative Boigu Current (2023) 100 year ARI Flood);

      v. 3.4m AHD (please label as follows: Boigu Township Inundation Event per Bettington Report Table 9);

      vi. 4.09m AHD (please label as follows: Boigu 2050 SSP 1-2.6 100 year ARI flood per Bettington Report Table 12);

      vii. 2.84m AHD (please label as follows: Alternative Boigu 2050 SSP 1-2.6 100 year ARI flood);

      viii. 4.07m AHD (please label as follows: Boigu 2050 SSP 1-1.9 100 year ARI flood per Bettington Report Table 11);

      ix. 2.82m AHD (please label as follows: Alternative Boigu 2050 SSP 1-1.9 100 year ARI flood);

      x. 4.35m AHD (please label as follows: Boigu 2100 SSP 1-2.6 100 year ARI flood per Bettington Report Table 16);

      xi. 3.10m AHD (please label as follows: Alternative Boigu 2100 SSP 1-2.6 100 year ARI flood);

xii. 4.29m AHD (please label as follows: Boigu 2100 SSP 1-1.9 100 year ARI flood per Bettington Report Table 15);

xiii. 3.04m AHD (please label as follows: Alternative Boigu 2100 SSP 1-1.9 100 year ARI flood);

b. Saibai

i. 3.11m AHD (please label as follows: Saibai Baseline (1900) 100 year ARI Flood per Bettington Report Table 7);

ii. 2.09m AHD (please label as follows: Alternative Saibai Baseline (1900) 100 year ARI Flood);

iii. 3.32m AHD (please label as follows: Saibai Current (2023) 100 year ARI Flood per Bettington Report Table 8);

iv. 2.30m AHD (please label as follows: Alternative Saibai Current (2023) 100 year ARI Flood);

v. 2.80m AHD (please label as follows: Saibai Township Inundation Event per Bettington Report Table 9);

vi. 3.47m AHD (please label as follows: Saibai 2050 SSP 1-2.6 100 year ARI flood per Bettington Report Table 12);

vii. 2.45m AHD (please label as follows: Alternative Saibai 2050 SSP 1-2.6 100 year ARI flood);

viii. 3.45m AHD (please label as follows: Saibai 2050 SSP 1-1.9 100 year ARI flood per Bettington Report Table 11);

ix. 2.43m AHD (please label as follows: Alternative Saibai 2050 SSP 1-1.9 100 year ARI flood);

x. 3.73m AHD (please label as follows: Saibai 2100 SSP 1-2.6 100 year ARI flood per Bettington Report Table 16);

xi. 2.71m AHD (please label as follows: Alternative Saibai 2100 SSP 1-2.6 100 year ARI flood);

xii. 3.67m AHD (please label as follows: Saibai 2100 SSP 1-1.9 100 year ARI flood per Bettington Report Table 15);

xiii. 2.65m AHD (please label as follows: Alternative Saibai 2100 SSP 1-1.9 100 year ARI flood);

c. Poruma

i. 3.05m AHD (please label as follows: Poruma Baseline (1900) 100 year ARI Flood per Bettington Report Table 7);

ii. 2.39m AHD (please label as follows: Alternative Poruma Baseline (1900) 100 year ARI Flood);

iii. 3.26m AHD (please label as follows: Poruma Current (2023) 100 year ARI Flood per Bettington Report Table 8);

iv. 2.60m AHD (please label as follows: Alternative Poruma Current (2023) 100 year ARI Flood);

v. 3.60m AHD (please label as follows: Poruma Township Inundation Event per Bettington Report Table 9);

vi. 3.41m AHD (please label as follows: Poruma 2050 SSP 1-2.6 100 year ARI flood per Bettington Report Table 12);

vii. 2.75m AHD (please label as follows: Alternative Poruma 2050 SSP 1-2.6 100 year ARI flood);

viii. 3.39m AHD (please label as follows: Poruma 2050 SSP 1-1.9 100 year ARI flood per Bettington Report Table 11);

ix. 2.73m AHD (please label as follows: Alternative Poruma 2050 SSP 1-1.9 100 year ARI flood);

x. 3.67m AHD (please label as follows: Poruma 2100 SSP 1-2.6 100 year ARI flood per Bettington Report Table 16);

xi. 3.01m AHD (please label as follows: Alternative Poruma 2100 SSP 1-2.6 100 year ARI flood);

xii. 3.61m AHD (please label as follows: Poruma 2100 SSP 1-1.9 100 year ARI flood per Bettington Report Table 15);

xiii. 2.95m AHD (please label as follows: Alternative Poruma 2100 SSP 1-1.9 100 year ARI flood);

d. Warraber

i. 3.27m AHD (please label as follows: Warraber Baseline (1900) 100 year ARI Flood per Bettington Report Table 7);

ii. 2.50m AHD (please label as follows: Alternative Warraber Baseline (1900) 100 year ARI Flood);

iii. 3.48m AHD (please label as follows: Warraber Current (2023) 100 year ARI Flood per Bettington Report Table 8);

iv. 2.71m AHD (please label as follows: Alternative Warraber Current (2023) 100 year ARI Flood);

v. 3.5m AHD (please label as follows: Warraber Township Inundation Event per Bettington Report Table 9);

vi. 3.63m AHD (please label as follows: Warraber 2050 SSP 1-2.6 100 year ARI flood per Bettington Report Table 12);

vii. 2.86m AHD (please label as follows: Alternative Warraber 2050 SSP 1-2.6 100 year ARI flood);

viii. 3.61m AHD (please label as follows: Warraber 2050 SSP 1-1.9 100 year ARI flood per Bettington Report Table 11);

ix. 2.84m AHD (please label as follows: Alternative Warraber 2050 SSP 1-1.9 100 year ARI flood);

x. 3.89m AHD (please label as follows: Warraber 2100 SSP 1-2.6 100 year ARI flood per Bettington Report Table 16);

xi. 3.12m AHD (please label as follows: Alternative Warraber 2100 SSP 1-2.6 100 year ARI flood);

xii. 3.83m AHD (please label as follows: Warraber 2100 SSP 1-1.9 100 year ARI flood per Bettington Report Table 15); and

xiii. 3.06m AHD (please label as follows: Alternative Warraber 2100 SSP 1-1.9 100 year ARI flood).

Annex B Current curriculum vitae

Dr. Matthew Barnes

CAREER OVERVIEW

Matt has a strong coastal engineering and marine science background with 20 years' experience in research and environmental consulting. He has been recognised as one of Australia's Most Innovative Engineers for work related to the implementation of 'trigger-based' coastal management and adaptation strategies and embedding these concepts into planning approvals.

Matt is the APAC Coastal Programme Manager and oversees the delivery of projects within port and coastal areas in support of strategic planning and development. The technical assessments typically inform port expansion Environmental Impact Statements, Shoreline Erosion Management Plans, coastal hazard and climate change adaptation studies, and the design of coastal structures. Matt is solutions focused and is driven by supporting clients from initial scoping through to execution of approved plans.

POSITION

APAC Coastal Programme Manager

YEARS OF EXPERIENCE

20

ACADEMIC QUALIFICATIONS

PhD in Coastal Engineering from University of Queensland (2009)

MSc in Applied Marine Science from University of Plymouth, UK (2004)

BTech in Engineering (Coastal Resource Management) from Deakin University (2002)

EMPLOYMENT HISTORY

2010 to date **APAC Coastal Programme Manager, BMT**

2007 to 2010 **Coastal Engineer, WorleyParsons Services Pty Ltd**

2005 to 2009 **PhD Research, Coastal Engineering Research Centre, University of Queensland**

AREAS OF EXPERTISE

- Numerical Modelling of Coastal and Estuarine Processes
- Coastal Hazard Assessment and Mapping
- Climate Change Adaptation
- Coastal Protection Structures and Beach Nourishment
- Dredging Studies and Dredge Plume Modelling
- Coastal Zone Development Approval

CAREER HIGHLIGHTS

- Coordinating and providing technical input to several coastal hazard adaptation strategies throughout Australia.
- Technical input into major EIS studies for the Port of Cairns, Port Curtis and Sunshine Coast Airport Expansion Project.

SPECIFIC PROJECTS

Natural Hazards and Coastal Management

- Flinders Parade Cliff Projection and Beach Nourishment (2023)
- Charlish Park Seawall Revitalisation (2023)
- Hook Island Coastal Hazard Assessment (2022)
- Beachmere Shoreline Management Project (2021)
- City of Gold Coast Seawall Review (2021)
- Fraser Coast Region Coastal Hazard Adaptation Strategy - Phase 1 to 8 (2021)
- Cairns Region Shoreline Erosion Management Plan (2021)
- Noosa Shire Council Shoreline Erosion Management Plan (2020)
- Gold Coast Shoreline Erosion Forecast Model (2020)
- Gympie Region Coastal Hazard Adaptation Strategy - Phase 1, 2 & 3 (2018)
- Maroochydore Beach Management Economic Evaluation (2018)
- Lakes Entrance Growth and Adaptation Strategy (2018)
- Holloways Beach Coastal Management Options Assessment (2018)
- Bowen Water Hazards Study (2017)
- Noosa Shire Council Coastal Hazard Adaptation Plan – Phase 2 & 3 (2017)
- Torres Shire Council Coastal Hazard Adaptation Strategy – Phase 1 & 2 (2017)
- Cairns Regional Council Coastal Hazard Adaptation Strategy – Phase 1 & 2 (2017)
- Cairns Erosion Prone Area Hazard & Risk Assessment (2017)
- Turtle Sands Mixed Used Development Coastal Erosion Assessment and Management Plan (2017)
- Cassowary Coast Coastal Hazards Assessments (2016)
- Sunshine Coast Regional Sand Sourcing Study (2015)
- Golden Beach and Bribie Island Breakthrough Plan (2014)
- Northern Moreton Bay Shoreline Erosion Management Plan – Stage 1 (2014)
- Maroochydore Beach Nourishment Feasibility Study and Approval Application (2012)
- Sunshine Coast Shoreline Erosion Management Plan (2010–2013)
- Bundaberg, Mackay, Cairns Region Storm Tide Studies (2010-2013)

Port and Dredging Related Assessments

- Shute Harbour Marina Development Peer Review (2023)
- Osborne Naval Shipyard Dredge Volume and Dredge Plume Assessment (2023)
- Devonport Quaylink EIS Dredge Plume Assessment Peer Review (2022)
- Moreton Bay Sand Study (2021)
- Cairns Long Term Maintenance Dredging Management Plan (2020)
- Yorkeys Knob and Newell Beach Recreational Boating Facility Options Assessment (2018)
- Design Refinement Modelling for Lower Brisbane River Infrastructure (2018)
- Mooloolah River Breakwater Metocean Design Parameters (2018)
- 3D Hydrodynamic Modelling for Brisbane River Infrastructure Projects (2012 to 2023)
- Mooloolaba Foreshore Revitalisation Project (2017)
- Molongle Creek Boat Ramp Channel Alignment Assessment (2017)
- East Trinity Ecotourism Project (2017)
- Lower Yarra River Dredge Management Plan (2016)
- Sepik and Frieda River Ship Navigation Simulations (2015)
- Cairns Shipping Development Project EIS (2014)
- Investigations of Capital Works Options at Mooloolah River Entrance (2014)
- Sunshine Coast Airport Expansion EIS (2013)
- Burrum Heads Boat Ramp Coastal Processes Investigation (2012)
- SmartShip Australia Ship Navigation Simulations (2012)

KEY PAPERS/PUBLICATIONS

Couper, Z.S., Devlin, T., Chorley, J. and **Barnes, M.P** (2019). "Modelling Complex Flow Fields for Structural Design Refinement", Coasts and Ports, Auckland, Australia, September 2019.

Barnes, M.P., Visser, J. and Fisk, G. (2017). “Implementation of Trigger-Based Coastal Management Strategies”, Coasts and Ports, Cairns, Australia, June 2017.

Jovanovic, D., **Barnes, M.P.,** Teakle, I., Bruce, L. and McCarthy, D. (2015). “3D Hydrodynamics and Vertical Mixing in a Stratified Estuary”, MODSIM, Gold Coast, Australia.

Barnes M.P., Teakle, I., Voisey, C. and Wood, P. (2015). “Assessment of Capital Works Options to Mitigate Shoaling at the Mooloolaba Harbour Entrance”, Coasts and Ports, Auckland, New Zealand.

Barnes, M.P. and Baldock, T.E. (2009). "A Lagrangian model for boundary layer growth and bed shear stress in the swash zone", Coastal Engineering, 56(4).

Barnes, M.P., O'Donoghue, T., Alsina, J.M. and Baldock, T.E. (2009). "Direct shear stress measurements in bore-driven swash", Coastal Engineering, 56(8).

Annex C Boigu results of survey checks and survey control mark reports

Table C.1. Boigu ground survey checks with survey control mark

Control mark number	GDA94 Easting (m)	GDA94 Northing (m)	AHD height (m)	Ground survey height* (m)	Difference (m)
140483	634123.707	8979545.384	2.706	2.825	-0.119
177940	633808.192	8979445.797	3.085	2.862	0.223
177941	634116.104	8979543.481	3.163	3.166	-0.003
186491	634330.203	8979410.486	2.99	2.96	0.03

*taken from 1 m grid DEM created from: X_SV_DETAIL SURVEY.dwg

Table C.2. Boigu LiDAR survey checks with survey control mark

Control mark number	GDA94 Easting (m)	GDA94 Northing (m)	AHD height (m)	LiDAR survey height^ (m)	Difference (m)
186491	634330.203	8979410.486	2.99	2.464	0.526
133973	634119.901	8979407.811	3.29	2.659	0.631
119880	634145.292	8979486.659	3.201	2.687	0.514
189642	633986.444	8979444.731	3.081	2.567	0.514
189643	633900.803	8979214.811	2.468	1.892	0.576
186493	633405.709	8979238.187	2.646	2.133	0.513
Average difference (m)					0.546
Standard deviation (m)					0.048

^based on the average height of classified las points within 1 m radius of survey control mark

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**119880**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**BOIGU ISLAND**		
Related Information			
Mark Type	**OTHER METAL BOLT**		
Installed By	**ROWLANDS**	Last Visited	**04-Mar-2016**
Installed Date	**16-Aug-2000**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**7**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 13' 48.06599" S**	MGA2020 Easting	**634146.217m**
Longitude	**142º 13' 16.16999" E**	MGA2020 Northing	**8979488.155m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.082m**	MGA2020 Point Scale	**0.99982269**
Vrt Posn Uncertainty	**0.038m**	MGA2020 Grid Conv	**0º 11' 45"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 48.11480" S**	MGA94 Easting	**634145.292m**
Longitude	**142º 13' 16.13982" E**	MGA94 Northing	**8979486.659m**
Ellipsoidal Height	**77.196m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.201m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.418m		

SURVEY CONNECTIONS

SP273190	04-Mar-2016
SP258861	02-Apr-2014
SP267922	05-Feb-2014
SP241283	29-Oct-2010
SP151784	20-Jun-2002
SP135866	16-Aug-2000
SP116839	16-Aug-2000

QUEENSLAND – DEPARTMENT OF NATURAL RESOURCES

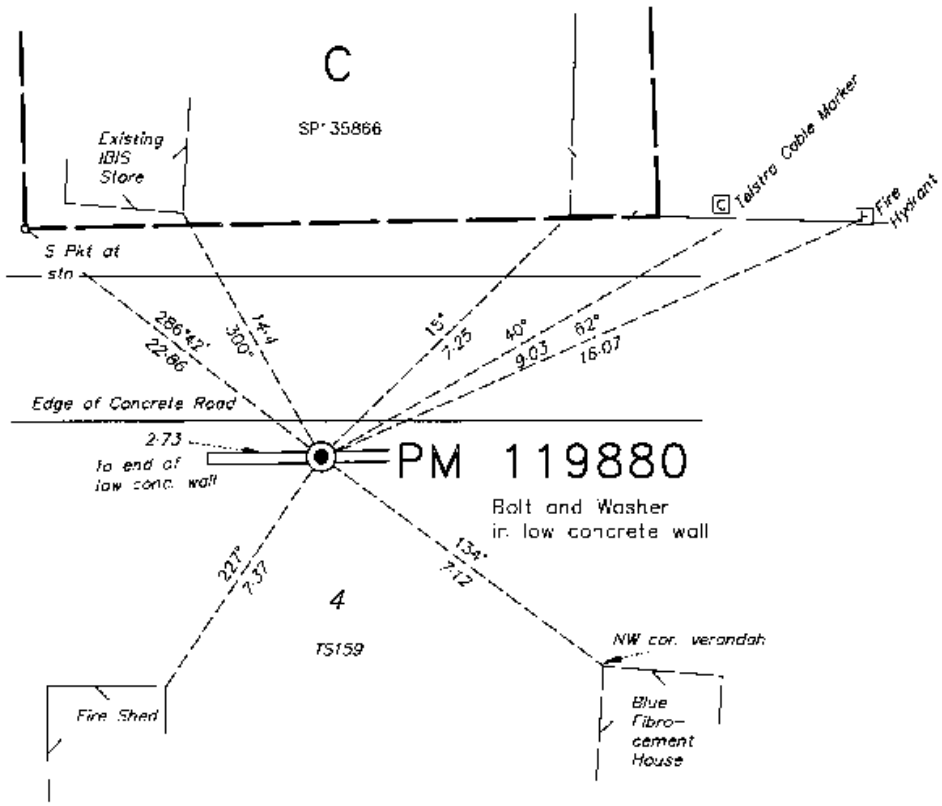
PERMANENT MARK SKETCH PLAN

NATURAL RESOURCES

Registered Number: . . . . . 119880. . . . .

Bearings are . Magnetic . . (Magnetic, AMG) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document; "Completion of Permanent Mark Sketch Plans"



Suited to GPS
Yes/No
Date 16/8/00

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the 'The Survey Co ordination Act of 1952–1989.'

Date . . 13/7/01. . . . . Signature . Dentlung

ROWLANDS SURVEYS PTY LTD (ACN 010 025 260)

The SCDB is the authoritative source for coordinate and height information
the Queensland Survey Control Register is the authoritative source for concrete and height information
The coordinate and height information on this sketch may not be the current. For more recent information regarding this mark

Department of Natural Resources

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 119880

Administrative Data

Alternative Name 1:
Alternative Name 2:
Alternative Name 3:
Mark type: Bolt and washer
Mark Condition: GOOD
Parish: ORMAN
Locality Authority: BOIGU ISLAND COUNCIL

Installed By: Rowlands Surveys Pty Ltd (ACN 010 025 260)
Date Installed: 16/8/2000
Date Last Visited:
PSA:
Locality Description: Boigu Island
City or Town:
Map Reference: 7379-42231

Vertical Control Data

Height: Datum: Vertical Accuracy–Order. Class.
Vertical Origin #1– Regd No: Height: Datum:
Vertical Origin #2– Regd No: Height: Datum:
Geo–Sphd N: Datum: Model:
Fixed By: Date:

Horizontal Control Data

Latitude: Longitude. Datum: GDA'94
Easting: 634 331.6 E Northing: 8 979 496.7 N Zone: 54
Horiz Origin: Scaled from BLINMAP
Latitude: Longitude. Datum:
Easting: Northing: Zone:
Horiz Origin:
Latitude: Longitude. Datum:
Easting: Northing: Zone:
Horizontal Adjustment:
Horizontal Accuracy – Order: Class: Fixed By: Scaled Date:

Cadastral Connection Data

Connected on Cadastral Plan No: SP135866

Comments

Details completed by: C. Scotchings
ROWLANDS SURVEYS PTY LTD (ACN 010 025 260)

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**133973**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**BOIGU ISLAND**		
Related Information			
Mark Type	**OTHER STEEL BOLT**		
Installed By	**C & B CONS**	Last Visited	**02-Apr-2014**
Installed Date	**17-Sep-2001**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**5**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 13' 50.63570" S**	MGA2020 Easting	**634120.826m**
Longitude	**142º 13' 15.34685" E**	MGA2020 Northing	**8979409.306m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.155m**	MGA2020 Point Scale	**0.99982260**
Vrt Posn Uncertainty	**0.036m**	MGA2020 Grid Conv	**0º 11' 45"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 50.68448" S**	MGA94 Easting	**634119.901m**
Longitude	**142º 13' 15.31668" E**	MGA94 Northing	**8979407.811m**
Ellipsoidal Height	**77.269m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.290m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.416m		

SURVEY CONNECTIONS

SP258861	02-Apr-2014
SP267922	05-Feb-2014
SP241283	29-Oct-2010
SP151783	20-Jun-2002
DP145573	04-Oct-2001

SCS133973 V1 Page 1 of 2 Not To Scale

Queensland Government
Natural Resources and Mines

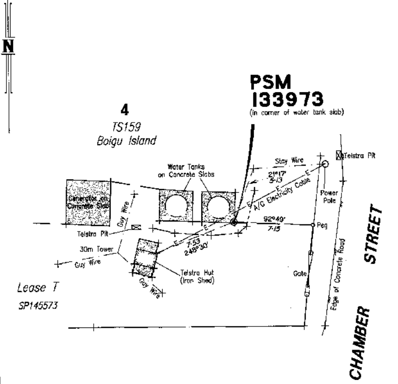
DEPARTMENT OF NATURAL RESOURCES & MINES

PERMANENT MARK SKETCH PLAN

REGD NO. 133973

Bearings are AMG (Magnetic, AMG) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document: "Compilation of Permanent Mark Sketch Plans"



Mark Type Stainless Steel Bolt Scale 1:200

Suited to GPS
Yes/No Yes
Date OCT 2001

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "The Survey Co-ordination Act of 1952–1989".

Date 22-10-01 Signature S. Rodgers

Registered Surveyor (Licensed) 26/4/01

The SCDB is the authoritative source for coordinate and height information
information regarding this mark.

Department of Natural Resources & Mines

Survey Control Database - Permanent Mark Data Sheet

Registered Number: 133973

Administrative Data

Alternative Name 1:
Alternative Name 2:
Alternative Name 3:
Mark Type: Stainless Steel Bolt
Mark Condition: Good
Parish: ORMAN
Local Authority: BOIGU COMMUNITY COUNCIL

Installed By: C&B CONSULTANTS PTY LTD ACN 055 931 096
Date Installed: 17/9/2001
Date Last Visited: 17/9/2001
PSA:
Locality Description: BOIGU ISLAND
City or Town:
Map Reference: 7379-31114

Vertical Control Data

Height: Datum: Vertical Accuracy - Order Class

Vertical Origin - Regd No: Height: Datum:

Geo-Sphd N: Datum: Model:
Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum: AGD 84
Easting: 633 992 Northing: 8 979 235 Zone: 54
Horiz Origin: Lat: Long: Datum:

Horizontal Adjustment:
Horizontal Accuracy - Order Class: PE Fixed By: Hand Held GPS

Cadastral Connection Data

Connected on Cadastral Plan No.: SP145573

Comments

SCDB
CHK
DATE

Details completed by: C&B CONSULTANTS PTY LTD **Phone:** (07)4031 1336

90044_20/MS

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**140483**		
Alternate Names	**ME079**	Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**BOIGU ISLAND RAMP**		
Related Information			
Mark Type	**STAND**		
Installed By	**RAN**	Last Visited	**02-Apr-2014**
Installed Date	**03-Feb-1988**	Sketch Available	**No**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 13' 46.15666" S**	MGA2020 Easting	**634124.632m**
Longitude	**142º 13' 15.45614" E**	MGA2020 Northing	**8979546.879m**
Hrz Posn Uncertainty	**0.016m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.556m**	MGA2020 Point Scale	**0.99982262**
Vrt Posn Uncertainty	**0.036m**	MGA2020 Grid Conv	**0º 11' 45"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 46.20544" S**	MGA94 Easting	**634123.707m**
Longitude	**142º 13' 15.42598" E**	MGA94 Northing	**8979545.384m**
Ellipsoidal Height	**76.670m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.706m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.419m		

SURVEY CONNECTIONS

SP258861	02-Apr-2014
SP123880	01-Dec-2007

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**177940**		
Alternate Names	**BOI1**	Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**BOIGU ISLAND**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**NRW NAMBOUR**	Last Visited	**04-Mar-2016**
Installed Date	**12-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**3**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 13' 49.43374" S**	MGA2020 Easting	**633809.116m**
Longitude	**142º 13' 05.12897" E**	MGA2020 Northing	**8979447.292m**
Hrz Posn Uncertainty	**0.016m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.931m**	MGA2020 Point Scale	**0.99982157**
Vrt Posn Uncertainty	**0.034m**	MGA2020 Grid Conv	**0º 11' 44"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 49.48252" S**	MGA94 Easting	**633808.192m**
Longitude	**142º 13' 05.09884" E**	MGA94 Northing	**8979445.797m**
Ellipsoidal Height	**77.045m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.085m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.411m		

SURVEY CONNECTIONS

SP273190	04-Mar-2016
SP258861	02-Apr-2014
SP241283	29-Oct-2010

Form 6 - Version 2
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

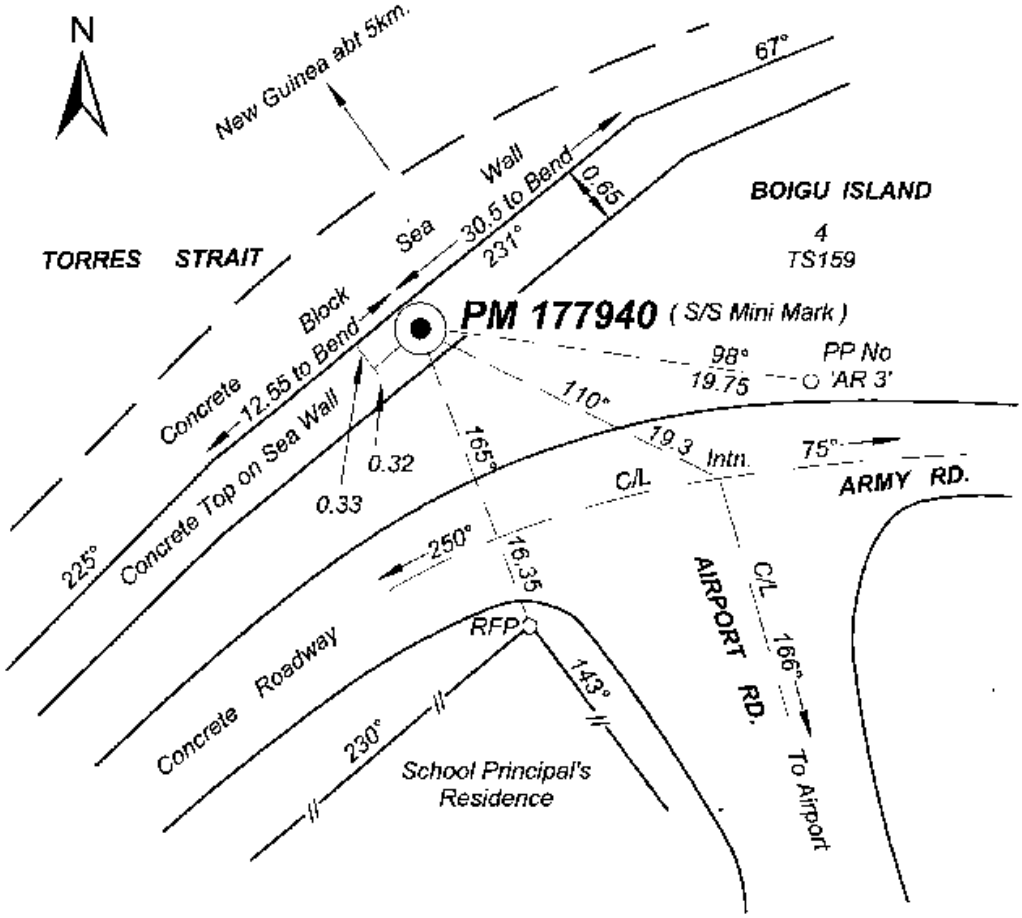
PERMANENT MARK SKETCH PLAN

REGD NO. 177940

Bearings are Magnetic (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Not to Scale

Mark Type S/S Mini Mark

Suited to GPS
Yes/No Yes
Date 12/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 11th July 08 Signature

The SCDB is the authoritative source for coordinate and point information
The Queensland Survey Control Register is the authorised source of control mark information
The coordinates and height information contained on this sketch may not be the current information regarding this mark. Contact information regarding this mark

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number: 177940

Administrative Data

Alternative Name 1:
Alternative Name 2:
Alternative Name 3:
Mark Type: Mini Mark
Mark Condition: Good
Parish: ORMAN
Local Authority: Torres Strait Island Regional

Installed By: NRW Nambour
Date Installed: 12/05/2008
Date Last Visited:
Local Description: Boigu Island
City or Town:
Map Reference: 7379 - 42224

Vertical Control Data

Height: Datum: Vertical Accuracy - Order: Class:

Vertical Origin - Regn No: Height: Datum:

Geo-Sphd N: Datum: Model:
Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum:
Easting: 633809 Northing: 8979446 Zone: 54
Horiz Origin: Lat: Long: Datum:

Horizontal Adjustment:
Horizontal Accuracy - Order: Class: Fixed By: H/Held GPS

Cadastral Connection Data

Connected on Cadastral Plan No:

Comments

Details completed by: NRW Nambour Phone:

SCDB ☑
Chkd. DGB
Date 11/8/2008

The Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinate and height information contained in this document may not be the current information regarding this mark

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**177941**		
Alternate Names	**BOI_**	Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**BOIGU ISLAND**		
Related Information	**Stem of mark remains vide SP258861**		
Mark Type	**MINI MARK**		
Installed By	**NRW NAMBOUR**	Last Visited	**04-Mar-2016**
Installed Date	**12-May-2008**	Sketch Available	**Yes**
Mark Condition	**DAMAGED**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 13' 46.21944" S**	MGA2020 Easting	**634117.030m**
Longitude	**142º 13' 15.20724" E**	MGA2020 Northing	**8979544.977m**
Hrz Posn Uncertainty	**0.016m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.012m**	MGA2020 Point Scale	**0.99982259**
Vrt Posn Uncertainty	**0.034m**	MGA2020 Grid Conv	**0º 11' 45"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 46.26822" S**	MGA94 Easting	**634116.104m**
Longitude	**142º 13' 15.17707" E**	MGA94 Northing	**8979543.481m**
Ellipsoidal Height	**77.126m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.163m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.419m		

SURVEY CONNECTIONS

SP273190	04-Mar-2016
SP258861	02-Apr-2014

Form 6 - Version 2

Survey and Mapping Infrastructure Act 2003

DEPARTMENT OF NATURAL RESOURCES & WATER

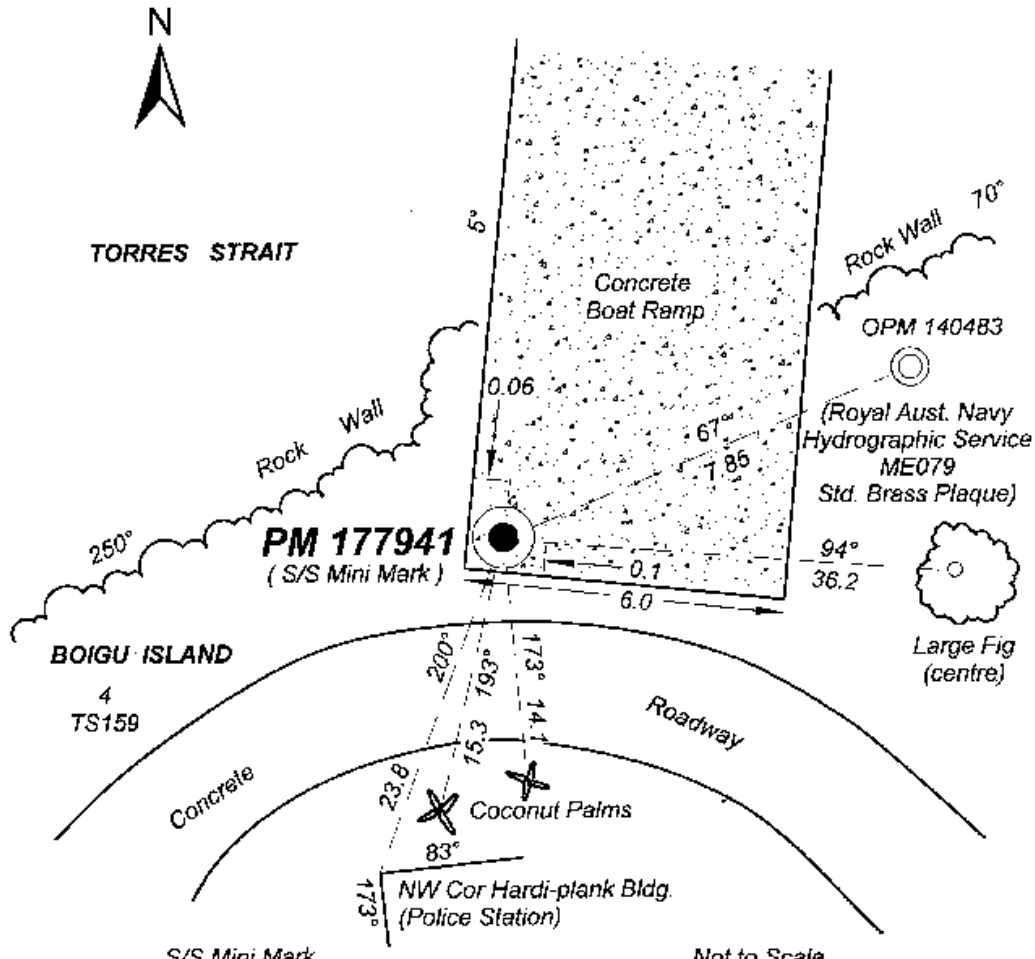
PERMANENT MARK SKETCH PLAN

REGD NO. 177941

Bearings are *Magnetic* (Magnetic, MGA) Distances are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Mark Type S/S Mini Mark

Not to Scale

Suitable for GPS
Yes/No
Yes
Date
12/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 14 Sept 08

Signature

The SCDB is the authoritative source for coordinate and point information
[illegible] information regarding this mark.
The coordinate information contained on this sketch may not be the current information regarding this mark.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 177941

Administrative Data

Alternative Name 1.....
Alternative Name 2.....
Alternative Name 3.....
Mark Type..... S/S Mini Mark
Mark Condition..... Good
Parish..... ORMAN
Local Authority Torres St. Island Regional

Installed By..... NRW Nambour
Date Installed..... 12/05/2008
Date Last Visited.....
Local Description... Boigu Island
City or Town.....
Map Reference..... 7379 - 42224

Vertical Control Data

Height..... Datum..... Vertical Accuracy - Order..... Class.....

Vertical Origin - Regn No..... Height..... Datum.....

Geo-Sphd N..... Datum..... Model.....
Fixed By..... Date.....

Horizontal Control Data

Latitude..... Longitude..... Datum.....
Easting..... 634117 Northing..... 8979546 Zone..... 54
Horiz Origin..... Lat..... Long..... Datum.....
....

Horizontal Adjustment.....
Horizontal Accuracy - Order..... Class..... Fixed By..... H/Held GPS

Cadastral Connection Data

Connected on Cadastral Plan No.....

Comments

.....
.....

Details completed by..... Phone.....

SCDB	☑
Chkd.	DGB
Date	11/8/2008

The Queensland Survey Control Register is the authority for coordinates in coordinate and height information.
The coordinate and height information contained on the control mark sheet is the current information at the time of supplying this report.

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**186491**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**BOIGU ISLAND**		
Related Information	**Suited to GNSS 10/07/2013**		
Mark Type	**STAND**		
Installed By	**AUSNORTH**	Last Visited	**04-Mar-2016**
Installed Date	**23-May-2013**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**3**

GDA2020 COORDINATES

Lineage	**Derived**		
Latitude	**9º 13' 50.52515" S**	MGA2020 Easting	**634331.127m**
Longitude	**142º 13' 22.23736" E**	MGA2020 Northing	**8979411.982m**
Hrz Posn Uncertainty	**0.070m**	MGA2020 Zone	**54**
Ellipsoidal Height		MGA2020 Point Scale	**0.99982330**
Vrt Posn Uncertainty		MGA2020 Grid Conv	**0º 11' 46"**
Published	**18-Jan-2020**	Fixed By	**GPS**
Adjustment	**TRANSFORMED TO GDA2020**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 50.57396" S**	MGA94 Easting	**634330.203m**
Longitude	**142º 13' 22.20722" E**	MGA94 Northing	**8979410.486m**
Ellipsoidal Height		MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.990m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**28-May-2013**	Fixed By	**GPS**
Origin Mark	**177940**	NLN Section	
Source			

SURVEY CONNECTIONS

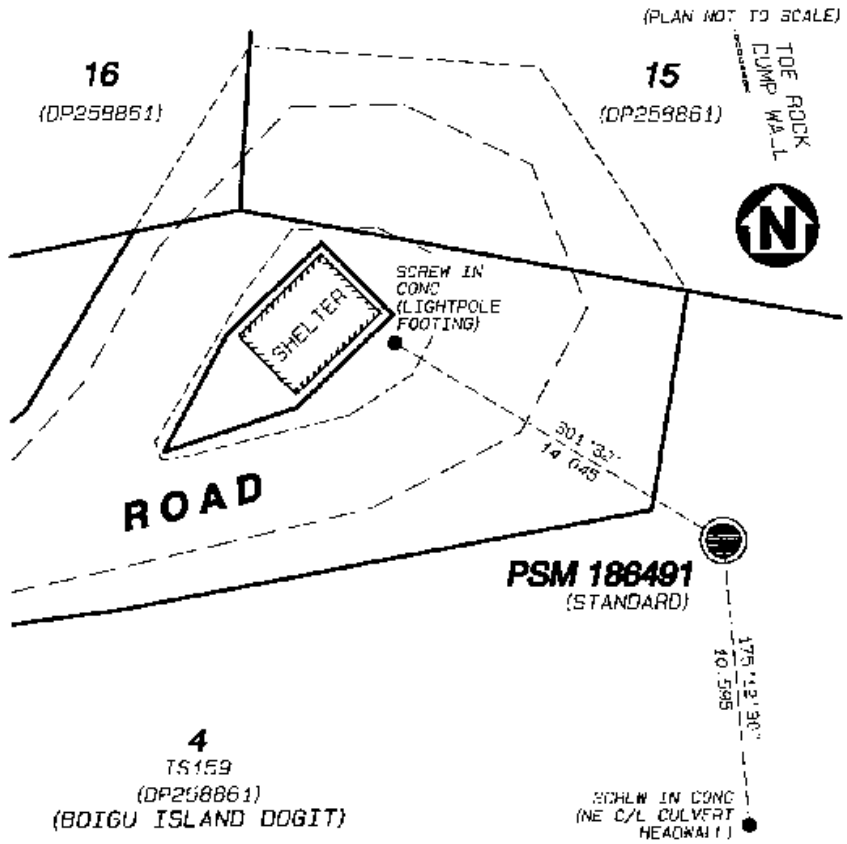
SP273190	04-Mar-2016
SP258861	02-Apr-2014
SP267922	05-Feb-2014

Form 6 – Version 4
Survey and Mapping Infrastructure Act 2003

PERMANENT SURVEY MARK PLAN

REGISTERED NO. .....186491.....

Bearings are ...MGA94 [ZONE 54]..... (Magnetic, MGA) Distances are metres



Mark Type ***...STANDARD...***

Suited to GNSS	DETAILS ON REVERSE ARE TO BE COMPLETED
Yes/No YES	Prepared by Brian Lane [AUSNORTH Consultants]..... Date 10/07/2013 ..... (registered person or public authority)

This form is to be completed in accordance with the Department's Specification *Completion of Permanent Survey Mark Plans*

Survey Control Register - Permanent Survey Mark Data Sheet

Registered Number: .....186491.....

Administrative Data

Alternative Name 1:		*Installed by:	AUSNORTH Consultants
Alternative Name 2:		*Date installed:	23/05/2013
Alternative Name 3:		Date last visited:	04/06/2013
*Mark type:	STANDARD BRASS PLAQUE	*Locality:	BOIGU ISLAND
*Mark condition:	EXCELLENT	City or Town:	BOIGU ISLAND
*Parish:	ORMAN	*Local government:	Torres Strait Island RC

Location description: TOWNSHIP EASTERN EXTENTS, NORTH OF CONC SEA WALL

Note: The Survey Control Register is the authoritative source for coordinate and height information. The vertical and horizontal data below **may not be** the current information regarding this mark.

Vertical Control Data

*Height: 2.990 *Datum: AHD Vertical Accuracy - *Order 4th *Class B

Vertical Origin - *Regd No: PSM 177940 *Height: 3.085 *Datum: AHD

Geo-Sphd N: Datum: Model: AUSGEOID98 (Interp).

*Fixed By: Averaged Long-Period RTK GPS Network Observations *Date: 28/05/2013

Horizontal Control Data

*Latitude: 9°13'50.5739" S *Longitude: 142°13'22.2073" E *Datum: GDA94

*Easting: 634 330.203 *Northing: 8979 410.487 *Zone: 54

*Horiz Origin: PSM 177940 *Lat: 9°13'49.4824 S *Long: 142°13'05.1008 E *Datum: GDA94

Horizontal Adjustment: Torres Strait Islands Control *Date:

Horizontal Accuracy - *Order 2nd *Class: B *Fixed By: Averaged Long-Period RTK GPS Network Observations

Cadastral Connection Data

*Connected on Cadastral Plan No.: SP258861 Boigu Island Land Boundary Framework Project

Comments

Details completed by: Name Brian Lane **Date** 10/07/2013

Organisation AUSNORTH Consultants PTY LTD

*Items marked thus are mandatory items for the section

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**186493**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**CNR S/W AERODROME RES**		
Related Information	**Suited to GNSS 10/07/2013**		
Mark Type	**STAND**		
Installed By	**AUSNORTH**	Last Visited	**04-Mar-2016**
Installed Date	**23-May-2013**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Derived**		
Latitude	**9º 13' 56.23702" S**	MGA2020 Easting	**633406.633m**
Longitude	**142º 12' 51.96416" E**	MGA2020 Northing	**8979239.682m**
Hrz Posn Uncertainty	**0.070m**	MGA2020 Zone	**54**
Ellipsoidal Height		MGA2020 Point Scale	**0.99982024**
Vrt Posn Uncertainty		MGA2020 Grid Conv	**0º 11' 42"**
Published	**18-Jan-2020**	Fixed By	**GPS**
Adjustment	**TRANSFORMED TO GDA2020**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 56.28580" S**	MGA94 Easting	**633405.709m**
Longitude	**142º 12' 51.93403" E**	MGA94 Northing	**8979238.187m**
Ellipsoidal Height		MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.646m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**28-May-2013**	Fixed By	**GPS**
Origin Mark	**177940**	NLN Section	
Source			

SURVEY CONNECTIONS

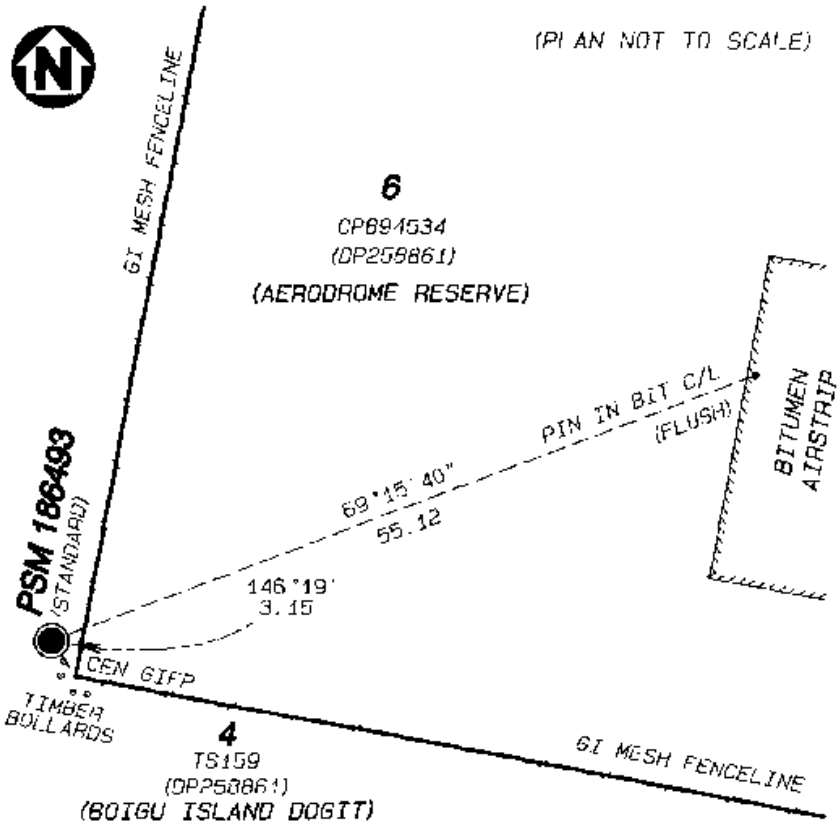
SP273190	04-Mar-2016
SP258861	02-Apr-2014

Form 6 – Version 4
Survey and Mapping Infrastructure Act 2003

PERMANENT SURVEY MARK PLAN

REGISTERED NO. .....186493.....

Bearings are ...MGA94 [ZONE 54]..... (Magnetic, MGA) Distances are metres



Mark Type ...*STANDARD*...

Started to GNSS	DETAILS ON REVERSE ARE TO BE COMPLETED
Yes/No YES	Prepared by Brian Laue [AUSNORTH Consultants]..... Date 10/07/2013 ..... (registered person or public authority)

This form is to be completed in accordance with the Department's Specification *Completion of Permanent Survey Mark Plans*

Survey Control Register - Permanent Survey Mark Data Sheet

Registered Number: 186493

Administrative Data

Alternative Name 1:		*Installed by:	AUSNORTH Consultants
Alternative Name 2:		*Date installed:	23/05/2013
Alternative Name 3:		Date last visited:	04/06/2013
*Mark type:	STANDARD BRASS PLAQUE	*Locality:	BOIGU ISLAND
*Mark condition:	EXCELLENT	City or Town:	BOIGU ISLAND
*Parish:	ORMAN	*Local government:	Torres Strait Island RC

Location description: SOUTHWEST CORNER OF AERODROME RESERVE

Note: The Survey Control Register is the authoritative source for coordinate and height information. The vertical and horizontal data below **may not be** the current information regarding this mark.

Vertical Control Data

*Height: 2.646 *Datum: AHD Vertical Accuracy - *Order 4th *Class B

Vertical Origin - *Regd No: PSM 177940 *Height: 3.085 *Datum: AHD

Geo-Sphd N: Datum: Model: AUSGEOID98 (Interp).

*Fixed By: Averaged Long-Period RTK GPS Network Observations *Date: 28/05/2013

Horizontal Control Data

*Latitude: 9°13'56.2858" S *Longitude: 142°12'51.9340" E *Datum: GDA94

*Easting: 633 405.708 *Northing: 8979 238.187 *Zone: 54

*Horiz Origin: PSM 177940 *Lat: 9°13'49.4824 S *Long: 142°13'05.1008 E *Datum: GDA94

Horizontal Adjustment: Torres Strait Islands Control *Date:

Horizontal Accuracy - *Order 2nd *Class: B *Fixed By: Averaged Long-Period RTK GPS Network Observations

Cadastral Connection Data

*Connected on Cadastral Plan No.: SP258861 Boigu Island Land Boundary Framework Project

Comments

Details completed by: Name Brian Lane **Date** 10/07/2013

Organisation AUSNORTH Consultants PTY LTD

*Items marked thus are mandatory items for the section

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**189642**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**ARMY/KADA ST BOIGU ISLAND**		
Related Information	**Suited to GNSS 10/07/2013**		
Mark Type	**MINI MARK**		
Installed By	**AUSNORTH**	Last Visited	**04-Mar-2016**
Installed Date	**23-May-2013**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Derived**		
Latitude	**9º 13' 49.44864" S**	MGA2020 Easting	**633987.369m**
Longitude	**142º 13' 10.96979" E**	MGA2020 Northing	**8979446.226m**
Hrz Posn Uncertainty	**0.070m**	MGA2020 Zone	**54**
Ellipsoidal Height		MGA2020 Point Scale	**0.99982216**
Vrt Posn Uncertainty		MGA2020 Grid Conv	**0º 11' 44"**
Published	**18-Jan-2020**	Fixed By	**GPS**
Adjustment	**TRANSFORMED TO GDA2020**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 49.49742" S**	MGA94 Easting	**633986.444m**
Longitude	**142º 13' 10.93966" E**	MGA94 Northing	**8979444.731m**
Ellipsoidal Height		MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.081m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**28-May-2013**	Fixed By	**GPS**
Origin Mark	**177940**	NLN Section	
Source			

SURVEY CONNECTIONS

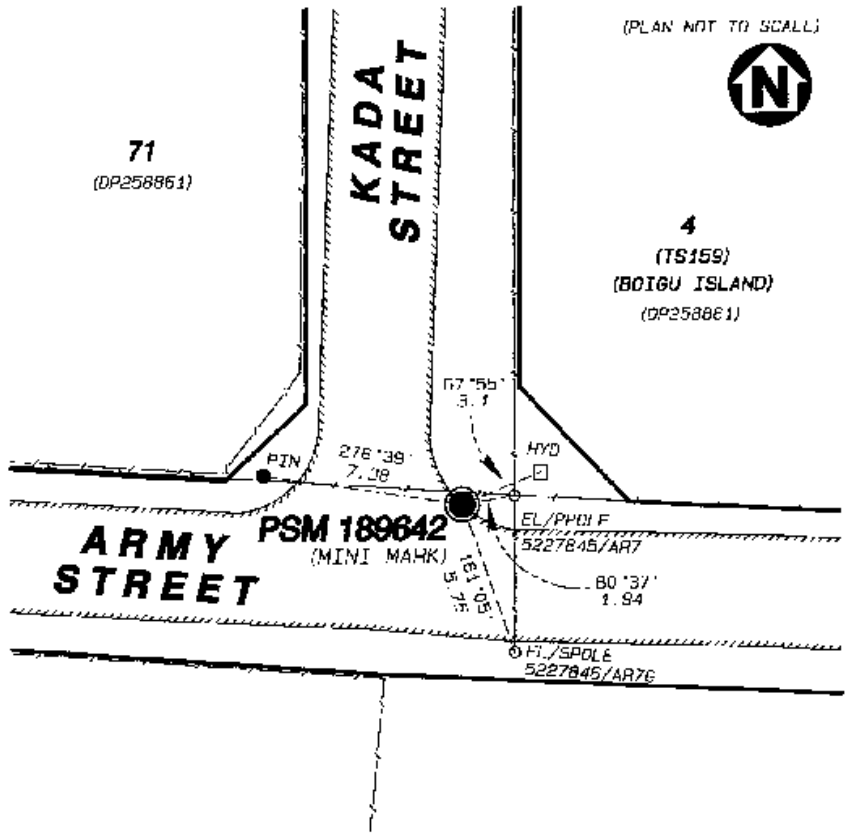
SP273190	04-Mar-2016
SP258861	02-Apr-2014

Form 6 – Version 4
Survey and Mapping Infrastructure Act 2003

PERMANENT SURVEY MARK PLAN

REGISTERED NO. ....189642.....

Bearings are ....MGA94 [ZONE 54]..... (Magnetic, MGA) Distances are metres



Mark Type ***...STANDARD...***

Suited to GNSS	DETAILS ON REVERSE ARE TO BE COMPLETED
Yes/No YES	Prepared by Brian Lane [AUSNORTH Consultants] ..... Date 10/07/2013 ..... (registered person or public authority)

This form is to be completed in accordance with the Department's Specification *Completion of Permanent Survey Mark Plans*

Survey Control Register - Permanent Survey Mark Data Sheet

Registered Number: .....189642.....

Administrative Data

Alternative Name 1: .....
Alternative Name 2: .....
Alternative Name 3: .....
*Mark type: MINI MARK (Steel Bolt/Washer)
*Mark condition: EXCELLENT .....
*Parish: ORMAN .....
*Installed by: AUSNORTH Consultants.....
*Date installed: 23/05/2013 .....
Date last visited: 04/06/2013 .....
*Locality: BOIGU ISLAND.....
City or Town: BOIGU ISLAND .....
*Local government: Torres Strait Island RC
Location description: NORTH EASTERN INTERSECTION (CONC PAVEMENT) KADA & ARMY ST

Note: The Survey Control Register is the authoritative source for coordinate and height information. The vertical and horizontal data below **may not be** the current information regarding this mark.

Vertical Control Data

*Height: 3.081 ..... *Datum: AHD..... Vertical Accuracy - *Order 4th ..... *Class B.....

Vertical Origin - *Regd No: PSM 177940..... *Height: 3.085 ..... *Datum: AHD .....

Geo-Sphd N: ..... Datum: ..... Model: AUSGEOID98 (Interp).

*Fixed By: Averaged Long-Period RTK GPS Network Observations *Date: 28/05/2013 .....

Horizontal Control Data

*Latitude: 9°13'49.4974" S..... *Longitude: 142°13'10.9397" E..... *Datum: GDA94 .....

*Easting: 633 986.444..... *Northing: 8979 444.731 ..... *Zone: 54 .....

*Horiz Origin: PSM 177940 *Lat: 9°13'49.4824 S ..... *Long: 142°13'05.1008 E *Datum: GDA94

Horizontal Adjustment: Torres Strait Islands Control ..... *Date: .....

Horizontal Accuracy - *Order 2nd ..... *Class: B ..... *Fixed By: Averaged Long-Period RTK GPS Network Observations

Cadastral Connection Data

*Connected on Cadastral Plan No.: SP258861 Boigu Island Land Boundary Framework Project

Comments

.....

Details completed by: Name Brian Lane ..... **Date** 10/07/2013.....

Organisation AUSNORTH Consultants PTY LTD .....

*Items marked thus are mandatory items for the section

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**189643**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**S/W CNR LOT 5 ON TS159**		
Related Information	**Suited to GNSS 10/07/2013**		
Mark Type	**MINI MARK**		
Installed By	**AUSNORTH**	Last Visited	**04-Mar-2016**
Installed Date	**23-May-2013**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Derived**		
Latitude	**9º 13' 56.94305" S**	MGA2020 Easting	**633901.728m**
Longitude	**142º 13' 08.18936" E**	MGA2020 Northing	**8979216.307m**
Hrz Posn Uncertainty	**0.070m**	MGA2020 Zone	**54**
Ellipsoidal Height		MGA2020 Point Scale	**0.99982188**
Vrt Posn Uncertainty		MGA2020 Grid Conv	**0º 11' 44"**
Published	**18-Jan-2020**	Fixed By	**GPS**
Adjustment	**TRANSFORMED TO GDA2020**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 13' 56.99186" S**	MGA94 Easting	**633900.803m**
Longitude	**142º 13' 08.15923" E**	MGA94 Northing	**8979214.811m**
Ellipsoidal Height		MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.468m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**28-May-2013**	Fixed By	**GPS**
Origin Mark	**177940**	NLN Section	
Source			

SURVEY CONNECTIONS

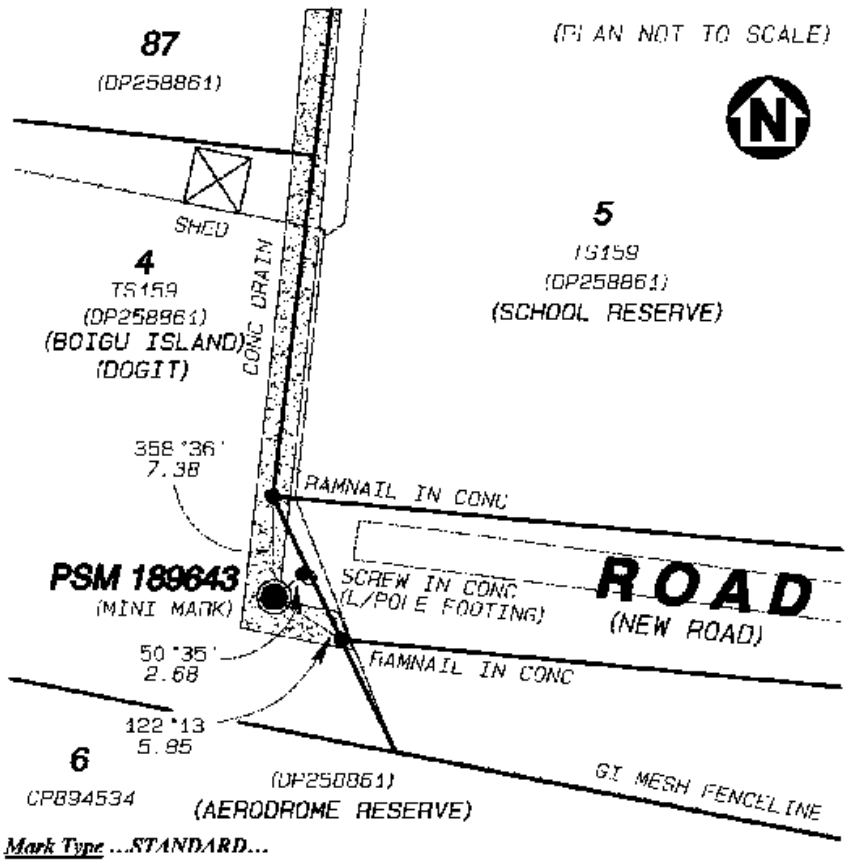
SP273190	04-Mar-2016
SP258861	02-Apr-2014

Form 6 – Version 4
Survey and Mapping Infrastructure Act 2003

PERMANENT SURVEY MARK PLAN

REGISTERED NO. .....189643.....

Bearings are ...MGA94 (ZONE 54) ... . (Magnetic, MGA) Distances are metres



Mark Type ***...STANDARD...***

Suited to GNSS	DETAILS ON REVERSE ARE TO BE COMPLETED
Yes/No YES	Prepared by Brian Lane [AUSNORTH Consultants]..... Date 10/07/2013 ..... (registered person or public authority)

This form is to be completed in accordance with the Department's Specification *Completion of Permanent Survey Mark Plans*

Survey Control Register - Permanent Survey Mark Data Sheet

Registered Number: .....189643.....

Administrative Data

Alternative Name 1: .....
Alternative Name 2: .....
Alternative Name 3: .....
*Mark type: MINI MARK (Steel Bolt/Washer)
*Mark condition: EXCELLENT .....
*Parish: ORMAN .....
*Installed by: AUSNORTH Consultants.....
*Date installed: 23/05/2013 .....
Date last visited: 04/06/2013 .....
*Locality: BOIGU ISLAND.....
City or Town: BOIGU ISLAND .....
*Local government: Torres Strait Island RC
Location description: SOUTH EASTERN CORNER AERODROME TAXIWAY IN CONC DRAIN.....

Note: The Survey Control Register is the authoritative source for coordinate and height information. The vertical and horizontal data below **may not be** the current information regarding this mark.

Vertical Control Data

*Height: 2.468 ..... *Datum: AHD..... Vertical Accuracy - *Order 4th ..... *Class B.....

Vertical Origin - *Regd No: PSM 177940..... *Height: 3.085 ..... *Datum: AHD .....

Geo-Sphd N: ..... Datum: ..... Model: AUSGEOID98 (Interp).

*Fixed By: Averaged Long-Period RTK GPS Network Observations *Date: 28/05/2013 .....

Horizontal Control Data

*Latitude: 9°13'56.9919" S..... *Longitude: 142°13'08.1592" E ..... *Datum: GDA94 .....

*Easting: 633 900.803..... *Northing: 8979 214.811 ..... *Zone: 54 .....

*Horiz Origin: PSM 177940 *Lat: 9°13'49.4824 S ..... *Long: 142°13'05.1008 E *Datum: GDA94

Horizontal Adjustment: Torres Strait Islands Control ..... *Date: .....

Horizontal Accuracy - *Order 2nd ..... *Class: B ..... *Fixed By: Averaged Long-Period RTK GPS Network Observations

Cadastral Connection Data

*Connected on Cadastral Plan No.: SP258861 Boigu Island Land Boundary Framework Project

Comments

.....

Details completed by: Name Brian Lane ..... **Date** 10/07/2013.....

Organisation AUSNORTH Consultants PTY LTD .....

*Items marked thus are mandatory items for the section

Annex D Saibai results of survey checks and survey control mark reports

Table D.1. Saibai ground survey checks with survey control mark

Control mark number	GDA94 Easting (m)	GDA94 Northing (m)	AHD height (m)	Ground survey height* (m)	Difference (m)
SCR173502	677175.283	8962702.278	3.353	3.200	0.153
SCR173501	677186.674	8962697.194	2.793	2.843	-0.050
SCR123153	677208.177	8962686.439	2.983	3.017	-0.034

*taken from 1 m grid DEM created from: X_60283674_SAIBAI_SURVEY.dwg

Table D.2. Saibai LiDAR survey checks with survey control mark

Control mark number	GDA94 Easting (m)	GDA94 Northing (m)	AHD height (m)	LiDAR survey height^ (m)	Difference (m)
123153	677208.177	8962686.439	2.983	2.237	0.746
123152	677216.753	8962662.568	2.989	2.263	0.726
177954	677208.177	8962686.439	2.983	2.366	0.703
112444	677963.793	8962881.755	2.747	1.909	0.839
173503	678501.138	8962946.814	2.264	1.526	0.738
Average difference (m)					0.750
Standard deviation (m)					0.052

^based on the average height of classified las points within 1 m radius of survey control mark

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**112444**		
Alternate Names	**BALBALBAMIZ**	Town	
	GUL MELAWAL	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
	SAIBAI WOVEN HUT		
Locality Description	**SAIBAI GARDEN NEAR WOVEN HUT**		
Related Information			
Mark Type	**S/PIC**		
Installed By	**J READER**	Last Visited	**10-Dec-2013**
Installed Date	**22-Nov-1995**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 42.86064" S**	MGA2020 Easting	**677964.717m**
Longitude	**142º 37' 14.30890" E**	MGA2020 Northing	**8962883.248m**
Hrz Posn Uncertainty	**0.018m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.941m**	MGA2020 Point Scale	**0.99999194**
Vrt Posn Uncertainty	**0.043m**	MGA2020 Grid Conv	**0º 15' 51"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 42.90938" S**	MGA94 Easting	**677963.793m**
Longitude	**142º 37' 14.27884" E**	MGA94 Northing	**8962881.755m**
Ellipsoidal Height	**77.055m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.747m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.748m		

SURVEY CONNECTIONS

SP248422	10-Dec-2013
SP253561	12-Mar-2012

SC5112444 V0 Page 1 of 1 Not To Scale

The Survey Co-ordination Act of 1952-1981
(Regulation 16)
FORM 6

QUEENSLAND

REGD No. 112444

PERMANENT MARK SKETCH PLAN

Other Ref. No.

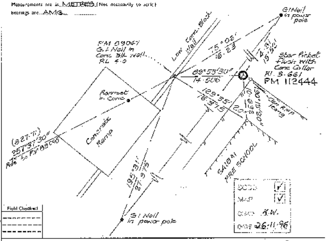
Description of Mark STAR PICKET WITH CONCRETE COLLAR D.M.S. District

Parish of GIAKA City or Town of SAIBAI ISLAND

Local Authority Map

PERMANENT SURVEY MARK INSTALLATION DETAILS

Measurements are in METRES (Not necessarily to scale)
Bearings are AMG



Field Checked

SCSB ✓
SKP ✓
CHKD K.W.
DATE 26.11.96

Installed by JOHN READER & ASSOCIATES PTY LTD Date 22.11.95
Placed in Connection with HYDROGRAPHIC survey (Type of survey/project) Plan and/or Field Bk. Ref. FB 92/1

Connd. or Cadastral Plan No

VERTICAL DATA

AUSTRALIAN HEIGHT DATUM (this section to be completed by D.M.S. when Official Lin. adj. Values are available)
Adj. Height Analysis Ref L. Book No.
Origin Sect. Secn. Nos. Book No.

OTHER DATUMS (Relevant information columns to be completed in full)
Reduced Level (i) RL A.H.D.(der.) (ii) RL 3.661 Datum Adopted (i) AHD (ii) LAT (Ass.) L. Book No. (i) (ii)
Levelled by (i) AUSLIG (ii) AUSLIG Date (i) (ii)
Origin Mark (i) PSM 89047 (ii) Origin R.L. (i) (ii) RL 4.0 on LAT

HOR DATA

A.M.G. CO-ORDINATES E 617857 N 8965721 Zone Date
OriginStns. for Co-ordinates with values accepted (i) E N (ii) (iii)
Local Co-ords. available on Plan Ref. Estd. by

Amended	

I certify that the permanent mark shown in this sketch has been placed on the ground in accordance with the regulations under "The Survey Co-ordination Act of 1952-1981".

Date 15th December 1995. Signature [signature] (Surveyor)
Authority

PLEASE LEAVE THIS MARGIN VACANT

The Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinate and height information contained on this document may not be the current information regarding this mark.

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**123152**		
Alternate Names	**POOR FOR GNSS**	Town	
	SAIBAI SHEDBOLT	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**SAIBAI ISLAND BEHIND SHED**		
Related Information			
Mark Type	**STAND**		
Installed By	**C & B**	Last Visited	**24-Sep-2009**
Installed Date	**15-Mar-2001**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 50.10679" S**	MGA2020 Easting	**677217.678m**
Longitude	**142º 36' 49.85802" E**	MGA2020 Northing	**8962664.060m**
Hrz Posn Uncertainty	**0.020m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.182m**	MGA2020 Point Scale	**0.99998865**
Vrt Posn Uncertainty	**0.042m**	MGA2020 Grid Conv	**0º 15' 47"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 50.15550" S**	MGA94 Easting	**677216.753m**
Longitude	**142º 36' 49.82792" E**	MGA94 Northing	**8962662.568m**
Ellipsoidal Height	**77.296m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.989m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.742m		

SURVEY CONNECTIONS

SP230804	24-Sep-2009
SP139205	03-Apr-2001

QUEENSLAND GOVERNMENT

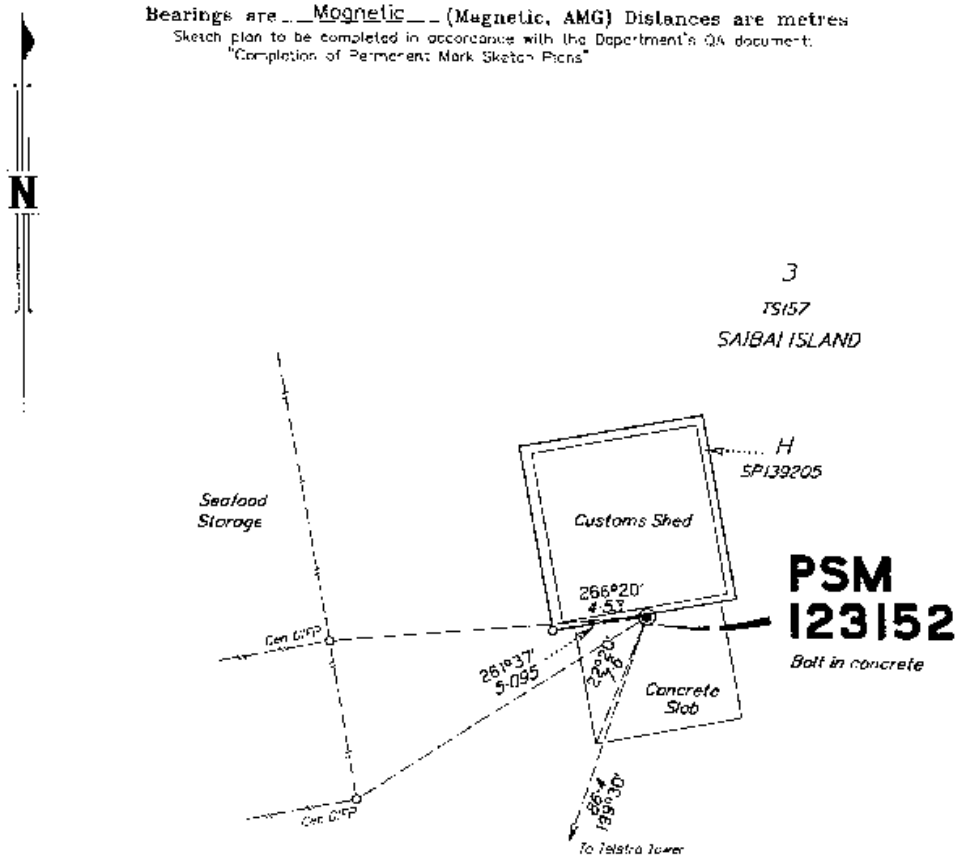
QUEENSLAND – DEPARTMENT OF NATURAL RESOURCES

PERMANENT MARK SKETCH PLAN

REGD NO. 123152

Queensland Government
Department of Natural Resources

Bearings are Magnetic (Magnetic, AMG) Distances are metres
Sketch plan to be completed in accordance with the Department's QA document:
"Completion of Permanent Mark Sketch Plans"



Mark Type Standard

Scale 1:300

Suited to GPS	Yes/Abu Yes
Date	

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "Tre Survey Co-ordination Act of 1952 1989"

The SCDB is the authoritative source for coordinate and height information
the Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinate and height information on this sketch document may not be the current information regarding this mark. For current information regarding this mark.

Department of Natural Resources

Survey Control Database - Permanent Mark Data Sheet

Registered Number: 123152

Administrative Data

Alternative Name 1:
Alternative Name 2:
Alternative Name 3:

Installed By: C&B CONSULTANTS PTY LTD ACN 055 931 096
Date Installed: 15/03/01
Date Last Visited:

Mark Type: Standard
Mark Condition: Good
Parish: GIAKA
Local Authority: Saibai Community Council

PSA:
Locality Description: SAIBAI ISLAND
City or Town:
Map Reference:

Vertical Control Data

Height: Vertical Accuracy - Order Class Datum:

Vertical Origin: Regd No: Height: Datum:

Geo- Sphd N: Datum: Model:

Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum:

Easting: Northing: Zone:

Horiz. Origin: Latitude: Longitude: Datum:

Easting: Northing: Zone:

Horizontal Adjustment:

Horizontal Accuracy - Order Class: Fixed By:

Cadastral Connection Data

Connected on Cadastral Plan No/s.: SP139205

Comments

SCDB
CHK
DATE

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**123153**		
Alternate Names	**BOLT IN RD CONC JOIN**	Town	
	SAIBAI ROAD BOLT	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**ESPLANADE/SAIBAI ISLAND**		
Related Information			
Mark Type	**STAND**		
Installed By	**C & B**	Last Visited	**24-Sep-2009**
Installed Date	**15-Mar-2001**	Sketch Available	**Yes**
Mark Condition	**DAMAGED**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 49.33110" S**	MGA2020 Easting	**677209.101m**
Longitude	**142º 36' 49.57333" E**	MGA2020 Northing	**8962687.931m**
Hrz Posn Uncertainty	**0.018m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.187m**	MGA2020 Point Scale	**0.99998861**
Vrt Posn Uncertainty	**0.040m**	MGA2020 Grid Conv	**0º 15' 47"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 49.37981" S**	MGA94 Easting	**677208.177m**
Longitude	**142º 36' 49.54327" E**	MGA94 Northing	**8962686.439m**
Ellipsoidal Height	**77.301m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.983m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.743m		

SURVEY CONNECTIONS

SP230804	24-Sep-2009
SP139205	03-Apr-2001

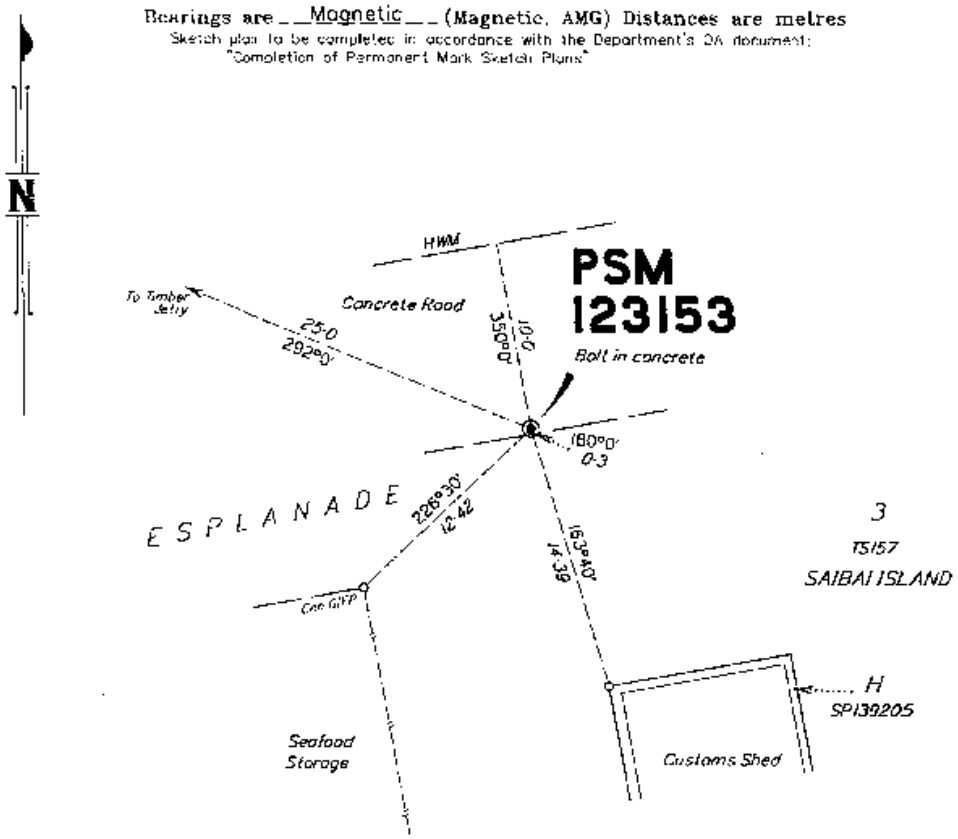
QUEENSLAND – DEPARTMENT OF NATURAL RESOURCES

PERMANENT MARK SKETCH PLAN

REGD NO. 123153

Bearings are Mognetic (Magnetic, AMG) Distances are metres

Sketch plan to be completed in accordance with the Department's DA document: "Completion of Permanent Mark Sketch Plans"



Mark Type Standard

Scale 1:300

Suited to GPS
Yes/No Yes
Date 15/03/01

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "The Survey Co-ordination Act of 1962–1989".

Date 3/4/01

Signature

Registered Surveyor (Licensed) 2/07/1999

The SCDB is the authoritative source for coordinate and height information. The Queensland Survey control diagram is the authoritative source for coordinate and height information. The coordinate and height information on this sketch may not be the current authoritative information regarding this mark.

Department of Natural Resources

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 123153

Administrative Data

Alternative Name 1:
Alternative Name 2:
Alternative Name 3:

Installed By: C&B CONSULTANTS PTY LTD ACN 055 931 096
Date Installed: 15/03/01
Date Last Visited:

Mark Type: Standard
Mark Condition: Good

PSA:
Locality Description: SAIBAI ISLAND

Parish: GIAKA
Local Authority: Saibai Community Council

City or Town:
Map Reference:

Vertical Control Data

Height: Vertical Accuracy – Order Class Datum:

Vertical Origin: Regd No: Height: Datum:

Geo–Sphc N: Datum: Model:

Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum:

Easting: Northing: Zone:

Horiz. Origin: Latitude: Longitude: Datum:

Easting: Northing: Zone:

Horizontal Adjustment:

Horizontal Accuracy – Order Class: Fixed By:

Cadastral Connection Data

Connected or Cadastral Plan No/s.: SP139205

Comments

SCDB	☐
CHK	
DATE	

Details completed by: C&B CONSULTANTS PTY LTD **Phone:** (07)4031 1336

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**173501**		
Alternate Names	**173502 JETTY ABUT**	Town	
	SAIBAI JETTY RM1	Local Authority	**TORRES SHIRE**
	SAIBAI SS JETTYSCREW		
Locality Description	**SAIBAI JETTY ABUTMENT**		
Related Information			
Mark Type	**OTHER STEEL BOLT IN CONC OF STRUCTURE**		
Installed By	**NRW**	Last Visited	**30-Aug-2017**
Installed Date	**01-Jan-2000**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 48.98420" S**	MGA2020 Easting	**677187.599m**
Longitude	**142º 36' 48.86698" E**	MGA2020 Northing	**8962698.687m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.981m**	MGA2020 Point Scale	**0.99998852**
Vrt Posn Uncertainty	**0.039m**	MGA2020 Grid Conv	**0º 15' 47"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 49.03295" S**	MGA94 Easting	**677186.674m**
Longitude	**142º 36' 48.83688" E**	MGA94 Northing	**8962697.194m**
Ellipsoidal Height	**77.095m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.793m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.743m		

SURVEY CONNECTIONS

SP296838	30-Aug-2017
SP230804	24-Sep-2009

Form 6
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

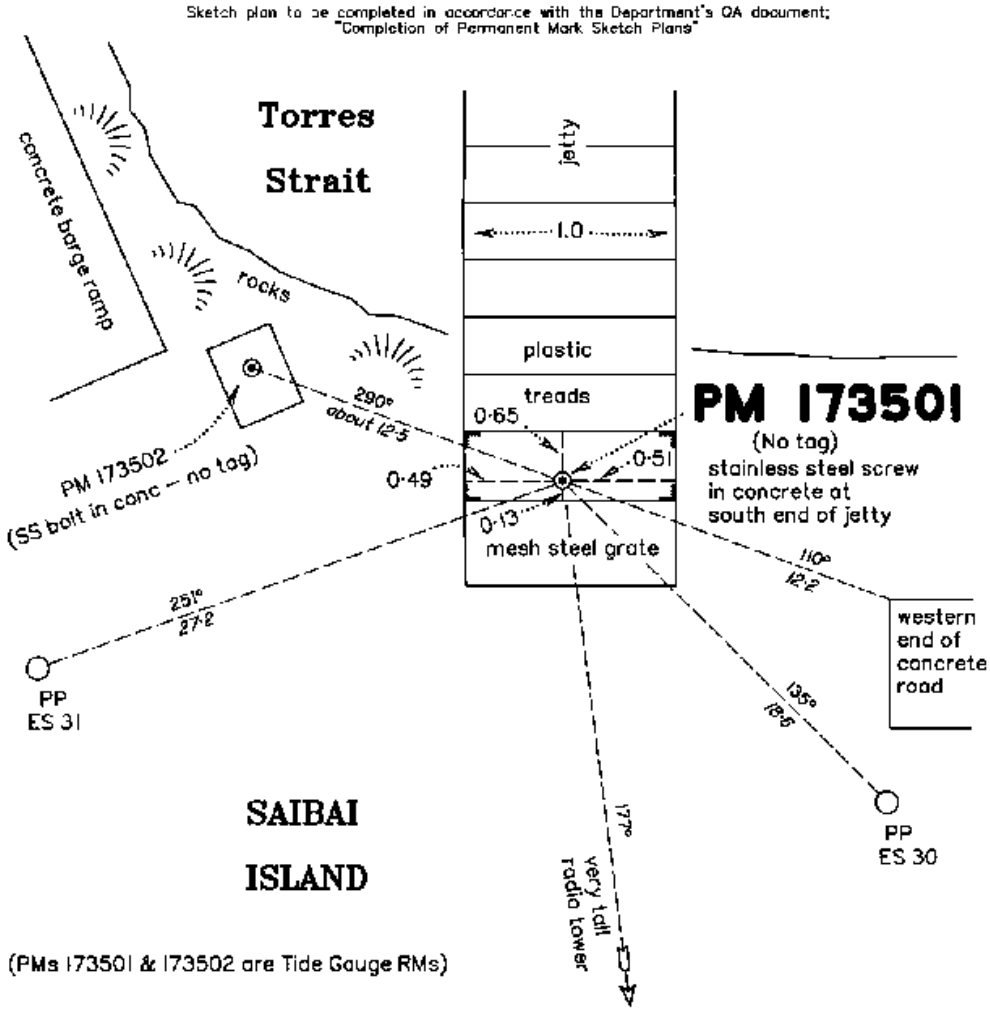
PERMANENT MARK SKETCH PLAN

REGD NO. 173501

"Saibai Jetty Abutment"

Bearings are Magnetic (Magnetic, MGA) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document: "Completion of Permanent Mark Sketch Plans"



Mark Type Steel bolt in conc. of structure

Not – to – Scale

Suited to GPS	
Yes/No	Yes
Date	16/5/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "Survey and Mapping Infrastructure Act 2003".

Date 2/12/2009 Signature K W Mallet

The Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinate and height information contained on this document may not be the current information regarding this mark.

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**173502**		
Alternate Names	**SAIBAI BARGERAMP RM2**	Town	
	SAIBAI TIDE RM 2	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**SAIBAI CONC FOOTING NEAR RAMP**		
Related Information			
Mark Type	**OTHER STEEL BOLT IN CONC AT SURFACE**		
Installed By	**UNKNOWN**	Last Visited	**24-Sep-2009**
Installed Date	**01-Jan-2000**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**1**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 48.82048" S**	MGA2020 Easting	**677176.207m**
Longitude	**142º 36' 48.49286" E**	MGA2020 Northing	**8962703.770m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.541m**	MGA2020 Point Scale	**0.99998847**
Vrt Posn Uncertainty	**0.039m**	MGA2020 Grid Conv	**0º 15' 47"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 48.86918" S**	MGA94 Easting	**677175.283m**
Longitude	**142º 36' 48.46280" E**	MGA94 Northing	**8962702.278m**
Ellipsoidal Height	**77.655m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.353m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.744m		

SURVEY CONNECTIONS

SP230804 24-Sep-2009

Form 6
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

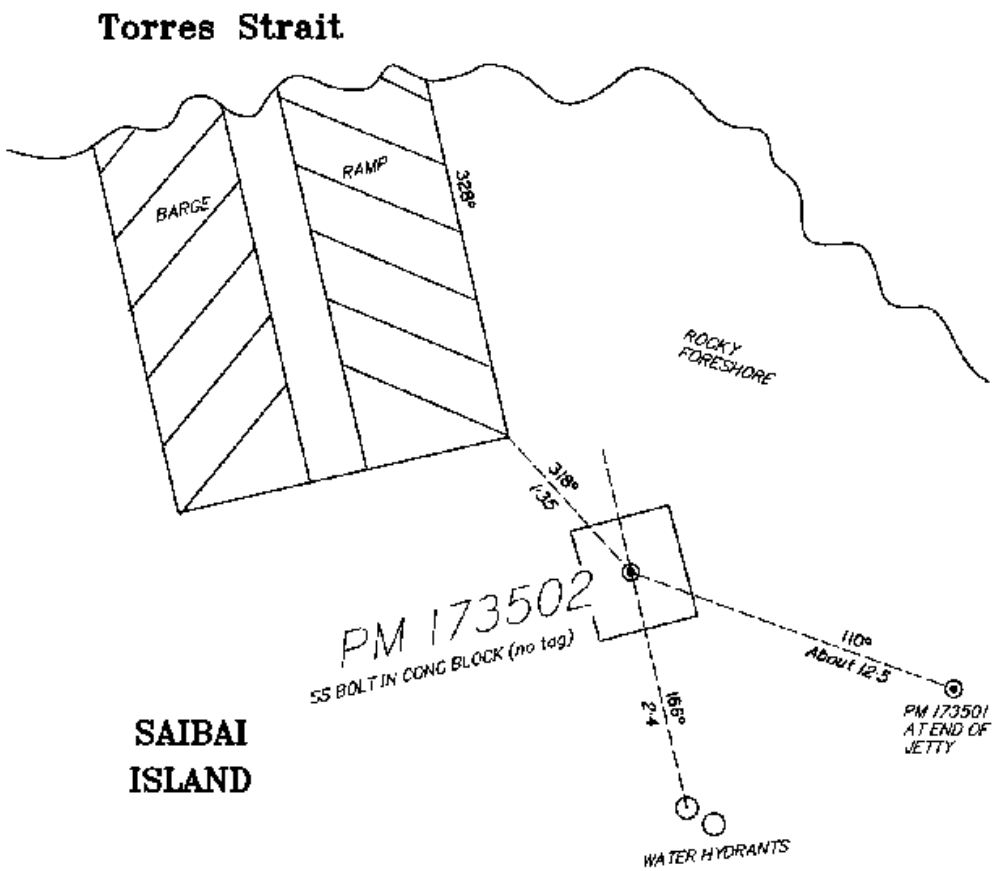
PERMANENT MARK SKETCH PLAN

REGD NO. 173502

"SAIBAI ISLAND BARGE RAMP"

Bearings are Magnetic (Magnetic, MGA) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document:
"Completion of Permanent Mark Sketch Plans"



PM173502 is SAIBAI TIDE RM 2

Mark Type STEEL BOLT IN CONC AT SURFACE

Not – to – Scale

Suited to GPS	
Yes/No	Yes
Date	16/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "Survey and Mapping Infrastructure Act 2003".

Date 2/12/2009 Signature KW Mallet

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Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**173503**		
Alternate Names	**SAIBAI RASC C548**	Town	
	SAIBAI WINDSOCK	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**SAIBAI MUDFLAT NEAR WINDSOCK**		
Related Information			
Mark Type	**OTHER BRONZE PLAQUE IN CONC AT SURFACE**		
Installed By	**RASC**	Last Visited	**18-Mar-2014**
Installed Date	**01-Jan-1970**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**5**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 40.66234" S**	MGA2020 Easting	**678502.062m**
Longitude	**142º 37' 31.91023" E**	MGA2020 Northing	**8962948.306m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.460m**	MGA2020 Point Scale	**0.99999431**
Vrt Posn Uncertainty	**0.039m**	MGA2020 Grid Conv	**0º 15' 54"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 40.71104" S**	MGA94 Easting	**678501.138m**
Longitude	**142º 37' 31.88017" E**	MGA94 Northing	**8962946.814m**
Ellipsoidal Height	**76.574m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.264m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.750m		

SURVEY CONNECTIONS

SP267930	18-Mar-2014
SP267929	05-Feb-2014
SP248422	10-Dec-2013
SP253561	12-Mar-2012
SP241281	03-Nov-2010

Form 6
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

PERMANENT MARK SKETCH PLAN

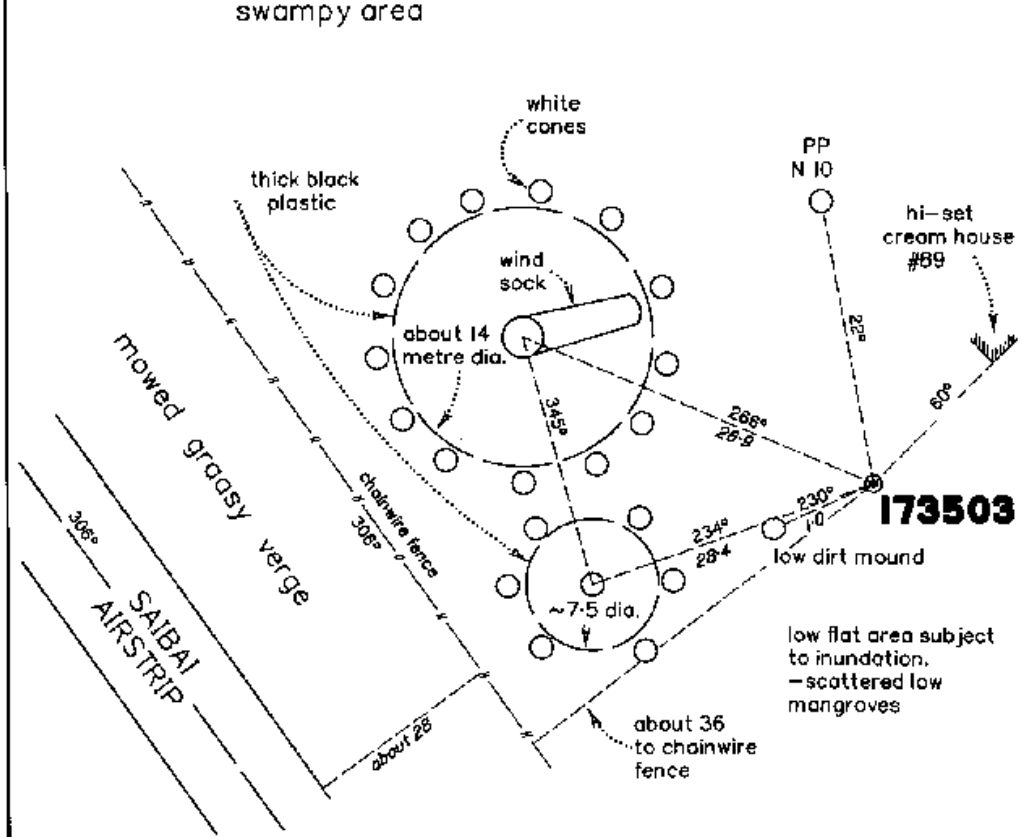
REGD NO. 173503

"Saibai Island Windsock"

Bearings are magnetic (Magnetic, MGA) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document; "Completion of Permanent Mark Sketch Plans"

Note: PM173503 is RASC Plaque "C548"



Mark Type Bronze plaque in conc. at surface
(Stamped "C548" – SCDB # Not stamped)

Not - to - Scale

Suited to GPS
Yes/No Yes
Date 16/2/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "Survey and Mapping Infrastructure Act 2003".

Date 2/12/2009 Signature DW Mallett

The Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinate and height information contained on this document may not be the current information regarding this mark.

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**177952**		
Alternate Names	**AIRPORT MONUMENT**	Town	
	SAIBAI AIRPORT	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
	SBI2		
Locality Description	**TOP OF SAIBAI AIRPORT MONUMENT**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**MALLET/ROSS**	Last Visited	**18-Mar-2014**
Installed Date	**16-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**6**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 34.85647" S**	MGA2020 Easting	**678151.176m**
Longitude	**142º 37' 20.38292" E**	MGA2020 Northing	**8963128.303m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**78.935m**	MGA2020 Point Scale	**0.99999276**
Vrt Posn Uncertainty	**0.039m**	MGA2020 Grid Conv	**0º 15' 52"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 34.90518" S**	MGA94 Easting	**678150.252m**
Longitude	**142º 37' 20.35286" E**	MGA94 Northing	**8963126.811m**
Ellipsoidal Height	**79.049m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**4.733m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.756m		

SURVEY CONNECTIONS

SP267930	18-Mar-2014
SP248422	10-Dec-2013
SP248421	20-May-2013
SP253561	12-Mar-2012
SP241281	03-Nov-2010
SP230811	11-Oct-2009

Form 6
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

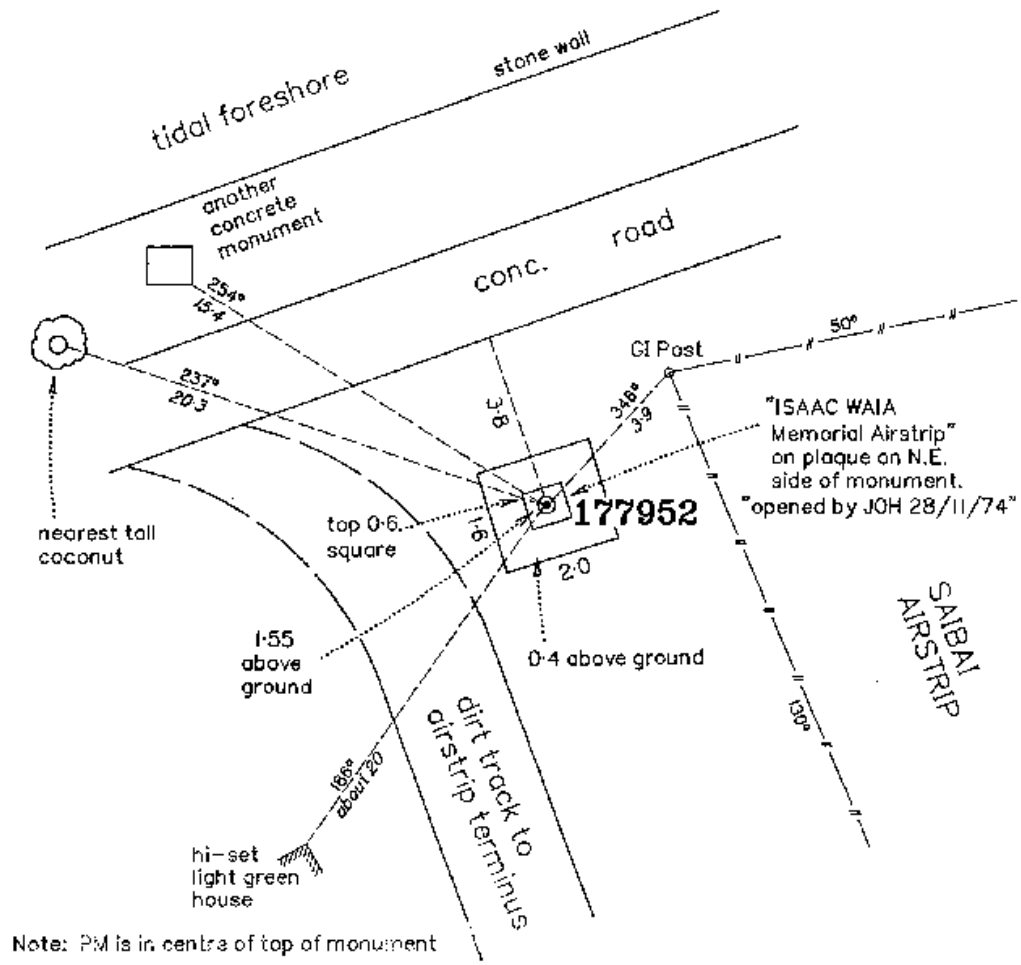
PERMANENT MARK SKETCH PLAN

REGD NO. 177952

"SAIBAI AIRPORT MONUMENT"

Bearings are magnetic (Magnetic, MGA) Distances are metres

Sketch plan to be completed in accordance with the Department's GA document: "Completion of Permanent Mark Sketch Plans"



Note: PM is in centre of top of monument

Mark Type Mini Mark

Not – to – Scale

Suited to GPS
Yes/No Yes
Date 16/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "Survey and Mapping Infrastructure Act 2003".

Date 2/12/2009 Signature KW Mallett

The SCDB is the authoritative source for coordinate and height information
The Current Survey Control Report is the authoritative source for coordinate and height information
The coordinate and height information contained on this document may not be the current information regarding this mark.

Department of Natural Resources & Water

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 177952

Administrative Data

Alternative Name 1: Airport Monument
Alternative Name 2: Saibai Airport
Alternative Name 3:
Mark Type: Mini Mark
Mark Condition: Good
Parish: Giaka
Local Authority: Torres Strait Island Regional

Installed By: Natural Resources & Water
Date Installed: 16/05/2008
Date Last Visited: 16/5/2008
Local Description: Top of Saibai Airport Monument
City or Town:
Map Reference:

Vertical Control Data

Height: Datum: A.H.D. Vertical Accuracy – Order Class

Vertical Origin – Regd No: Height: Datum: A.H.D.

Geo–Sphd N: Datum: Model:
Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum: MGA
Easting: Northing: Zone: 54
Horiz Origin: Lat: Long: Datum: MGA
MGA

Horizontal Adjustment:
Horizontal Accuracy – Order Class: Fixed By:

Cadastral Connection Data

Connected on Cadastral Plan No.:

Comments

SCDS ☑
MAP ☐
CHKD
DATE 2/12/09

Details completed by: David Mallet **Phone:** 4688 1061

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**177954**		
Alternate Names	**SAIBAI GUN GUN BOYS**	Town	
	SAIBAI WASHBAY	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
	SBI_		
Locality Description	**SAIBAI WASHBAY NEAR DEPOT**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**MALLET/ROSS**	Last Visited	**05-Feb-2014**
Installed Date	**15-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**3**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 50.08825" S**	MGA2020 Easting	**677228.731m**
Longitude	**142º 36' 50.22022" E**	MGA2020 Northing	**8962664.579m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.258m**	MGA2020 Point Scale	**0.99998870**
Vrt Posn Uncertainty	**0.039m**	MGA2020 Grid Conv	**0º 15' 47"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 50.13696" S**	MGA94 Easting	**677227.807m**
Longitude	**142º 36' 50.19016" E**	MGA94 Northing	**8962663.086m**
Ellipsoidal Height	**77.372m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.069m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.742m		

SURVEY CONNECTIONS

SP267929	05-Feb-2014
SP241282	03-Nov-2010
SP230804	24-Sep-2009

Form 6
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

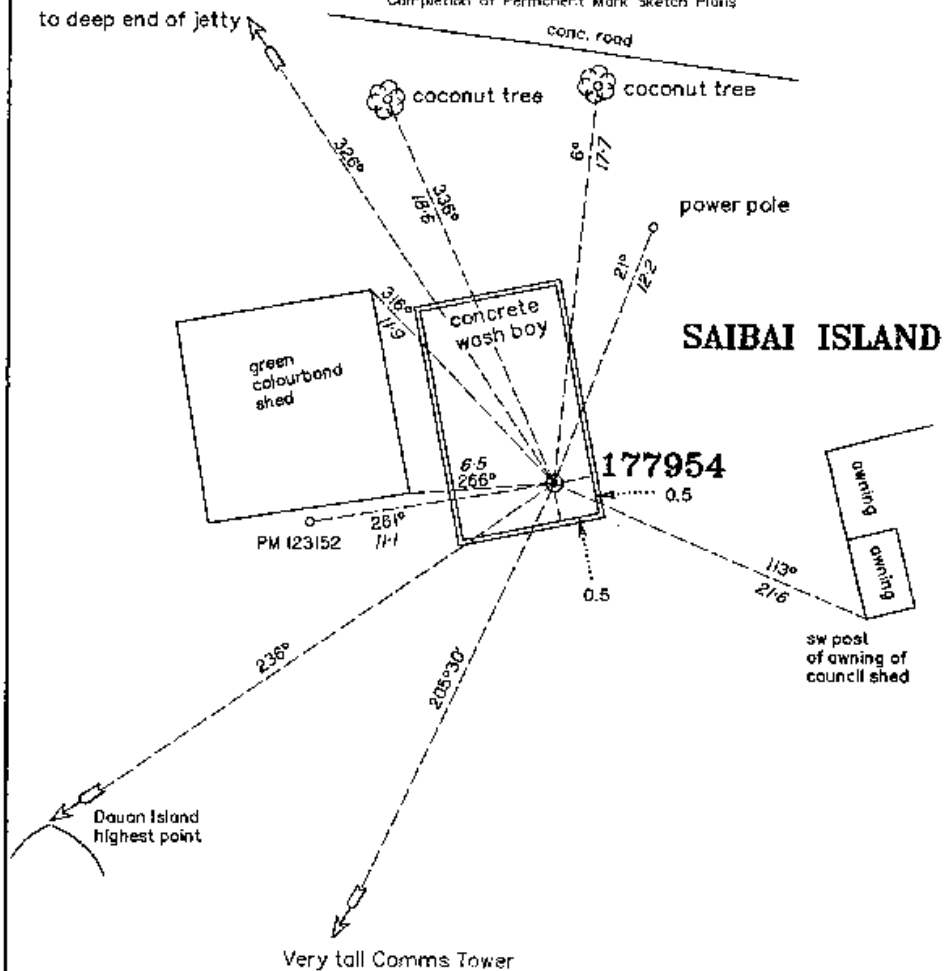
PERMANENT MARK SKETCH PLAN

REGD NO. 177954

"SAIBAI WASH BAY"

Bearings are Magnetic (Magnetic, MGA) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document: "Completion of Permanent Mark Sketch Plans"



Mark Type Minimark

Not – to – Scale

Suited to GPS
Yes/No Yes
Date 16/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "Survey and Mapping Infrastructure Act 2003".

Date 1/12/2009 Signature

The SCDB is the authoritative source for coordinate and height information
[illegible] it information regarding this mark.

Department of Natural Resources & Water

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 177954

Administrative Data

Alternative Name 1: SAIBAI WASH BAY
Alternative Name 2: MACHINERY PILE
Alternative Name 3: SAIBAI GUN GUN BOYS
Mark Type: Minimark
Mark Condition: Good
Parish: GIAKA
Local Authority: Torres Strait Island Regional

Installed By: NRW ~~fe Tordent~~ 15
Date Installed: ~~17/07/1995~~ 15/5/2002
Date Last Visited: 24/5/2002
Local Description: Boat Ramp West Corner
City or Town:
Map Reference:

Vertical Control Data

Height: Datum: A.H.D. Vertical Accuracy – Order Class

Vertical Origin – Regd No: Height: Datum: A.H.D.

Geo–Sphd N: Datum: Model:
Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum: MGA
Easting: Northing: Zone: 54
Horiz Origin: Lat: Long: Datum: MGA
MGA

Horizontal Adjustment:
Horizontal Accuracy – Order Class: Fixed By:

Cadastral Connection Data

Connected on Cadastral Plan No.:

Comments

SCDB ☑
MAP ☐
CHKD
DATE 1/12/2009

Details completed by: David Mallet **Phone:** 46881061

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**177956**		
Alternate Names	**COUNCIL WORK DEPOT**	Town	
	SAIBAI MANHOLE	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
	SBI1		
Locality Description	**SAIBAI SEWER MANHOLE**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**MALLET/ROSS**	Last Visited	**05-Feb-2014**
Installed Date	**15-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**4**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**9º 22' 51.63398" S**	MGA2020 Easting	**677267.576m**
Longitude	**142º 36' 51.50052" E**	MGA2020 Northing	**8962616.910m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.197m**	MGA2020 Point Scale	**0.99998887**
Vrt Posn Uncertainty	**0.039m**	MGA2020 Grid Conv	**0º 15' 48"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**9º 22' 51.68269" S**	MGA94 Easting	**677266.652m**
Longitude	**142º 36' 51.47046" E**	MGA94 Northing	**8962615.418m**
Ellipsoidal Height	**77.311m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.010m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.741m		

SURVEY CONNECTIONS

SP267929	05-Feb-2014
SP248421	20-May-2013
SP241282	03-Nov-2010
SP230804	24-Sep-2009

Form 6
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

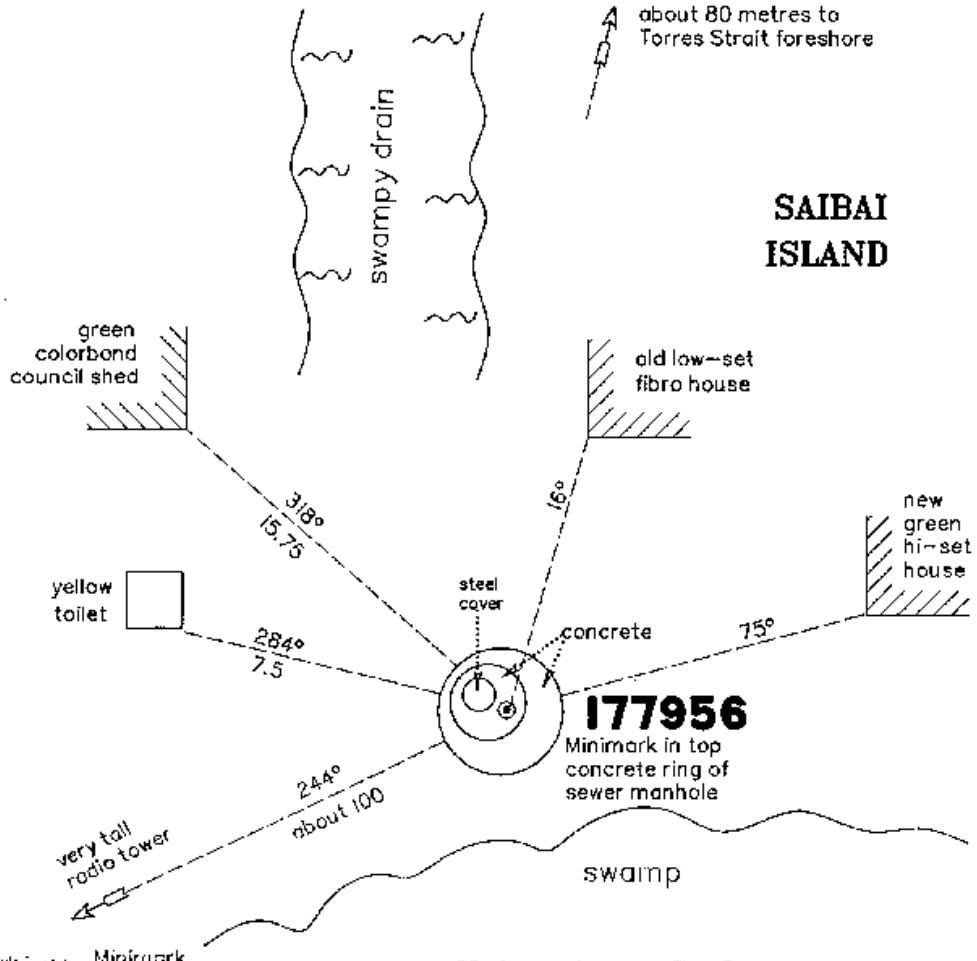
PERMANENT MARK SKETCH PLAN

REGD NO. 177956

"SAIBAI ISLAND MANHOLE"

Bearings are magnetic (Magnetic, MGA) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document; "Completion of Permanent Mark Sketch Plans"



Mark type Minimark

Not - to - Scale

Suited to GPS
Yes/No Yes
Date 15/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "Survey and Mapping Infrastructure Act 2003".

Date 2/12/2009 Signature K W Mallett

The SCDB is the authoritative source for coordinate and height information
The Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinates and heights recorded on this sketch may not be the current 'best' information regarding this mark

Department of Natural Resources & Water

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 177956

Administrative Data

Alternative Name 1: Council Work Depot
Alternative Name 2: Saibai Manhole
Alternative Name 3: Saibai Swamp Edge
Mark Type: Minimark
Mark Condition: Good
Parish: Ginka
Local Authority: Torres Strait Island Regional

Installed By: Natural Resources & Water
Date Installed: 15/05/2008
Date Last Visited: 24/9/2009
Local Description: Saibai Sewer Manhole
City or Town:
Map Reference:

Vertical Control Data

Height: Datum: A.H.D. Vertical Accuracy – Order Class

Vertical Origin – Regd No: Height: Datum: A.H.D.

Geo–Sphd N: Datum: Model:
Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum: MGA
Easting: Northing: Zone: 54
Horiz Origin: Lat: Long: Datum: MGA
MGA

Horizontal Adjustment:
Horizontal Accuracy – Order Class: Fixed By:

Cadastral Connection Data

Connected on Cadastral Plan No.:

Comments

SCDB ☑
MAP ☐
CHKD
DATE 2/12/09

Details completed by: David Mallet **Phone:** 4688 1061

Annex E Poruma results of survey checks and survey control mark reports

Table E.1. Poruma ground survey checks with survey control mark

Control mark number	GDA94 Easting (m)	GDA94 Northing (m)	AHD height (m)	Ground survey height* (m)	Difference (m)
140484	726187.126	8888408.598	2.524	4.48	1.956
156559	726188.654	8888408.832	3.085	5.075	1.981
156560	726181.454	8888412.704	3.163	4.394	2.076
177937	726243.817	8888399.698	2.633	4.717	2.084

*taken from 1 m grid DEM created from: PR142018-2.dwg; PR142018-3.dwg

Table E.2. Poruma LiDAR survey checks with survey control mark

Control mark number	GDA94 Easting (m)	GDA94 Northing (m)	AHD height (m)	LiDAR survey height^ (m)	Difference (m)
177937	726243.817	8888399.698	2.633	2.102	0.531
140886	726698.711	8888230.287	4.078	3.581	0.497
156563	726649.637	8888351.299	5.267	4.741	0.526
156562	726842.886	8888313.367	5.227	4.692	0.535
Average difference (m)					0.522
Standard deviation (m)					0.017

^based on the average height of classified las points within 1 m radius of survey control mark

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**140484**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**COCONUT ISLAND BOAT RAMP**		
Related Information			
Mark Type	**STAND**		
Installed By	**R.AUST NAVY**	Last Visited	**19-Aug-2014**
Installed Date	**17-Sep-1991**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**11**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 02' 57.98738" S**	MGA2020 Easting	**726188.045m**
Longitude	**143º 03' 49.44564" E**	MGA2020 Northing	**8888410.084m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.786m**	MGA2020 Point Scale	**1.00023311**
Vrt Posn Uncertainty	**0.040m**	MGA2020 Grid Conv	**0º 21' 37"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 02' 58.03595" S**	MGA94 Easting	**726187.126m**
Longitude	**143º 03' 49.41576" E**	MGA94 Northing	**8888408.598m**
Ellipsoidal Height	**76.899m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.524m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.830m		

SURVEY CONNECTIONS

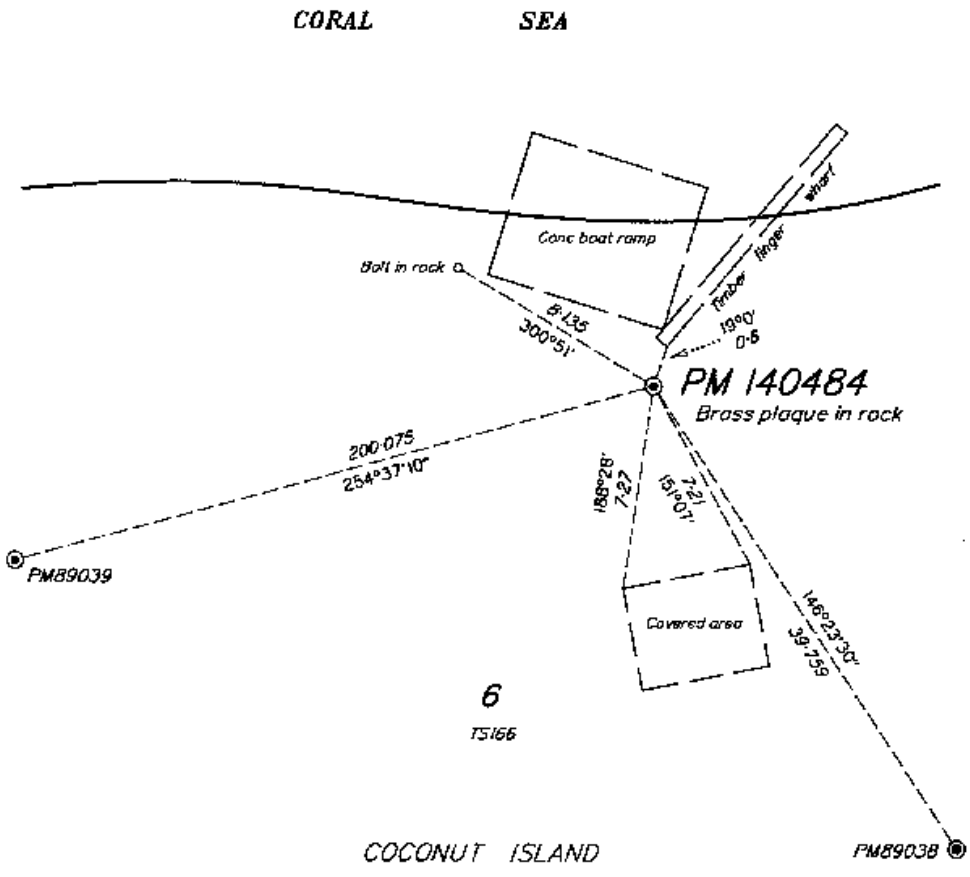
SP270862	19-Aug-2014	**SP151788**	04-Sep-2002
IS234514	01-Jul-2014	**SP148521**	26-Feb-2002
SP253569	15-Mar-2012	**RC843609**	07-May-1992
SP253568	15-Mar-2012		
SP253567	14-Mar-2012		
SP253566	14-Mar-2012		
SP248114	09-Aug-2011		
SP246917	09-Jun-2011		

QUEENSLAND – DEPARTMENT OF NATURAL RESOURCES AND MINES

PERMANENT MARK SKETCH PLAN

REGD NO. 140484

Bearings are AMG (Magnetic, AMG) Distances are metres
Sketch plan to be completed in accordance with the Department's QA document;
"Completion of Permanent Mark Sketch Plans"



Suited to GPS	
Yes/No	Yes
Date	13·6·2002

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "The Survey Co-ordination Act of 1952–1989".

Date 23·10·2002 Signature

The SCDB is the authoritative source for coordinate and height information
the Queensland Survey Control Register is the current authoritative source for coordinate and height information
The coordinate and height information contained on this sketch may not be the current information regarding this mark. it information regarding this mark.

Department of Natural Resources and Mines

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 140484

Administrative Data

Alternative Name 1:	Mermaid Six	Installed By:	Unknown
Alternative Name 2:		Date Installed:	7·5·1992
Alternative Name 3:		Date Last Visited:	13·6·02
Mark Type:	Standard	PSA:	
Mark Condition:	Good	Locality Description:	Boat Ramp
Parish:	Giaka	City or Town:	Coconut Island
Local Authority:	Coconut Is Comm C	Map Reference:	7577–44133

Vertical Control Data

Height: ______ Vertical Accuracy – Order ______ Class ______ Datum: ______

Vertical Origin: Regd No: ______ Height: ______ Datum: ______

Geo–Sphd N: ______ Datum: ______ Model: ______

Fixed By: ______ Date: ______

Horizontal Control Data

Latitude: ______ Longitude: ______ Datum: AG

Easting: 726 065 Northing: 8 888 240 Zone: 54

Horiz. Origin: Latitude: ______ Longitude: ______ Datum: ______

Easting: ______ Northing: ______ Zone: ______

Horizontal Adjustment: ______

Horizontal Accuracy – Order ______ Class: PF Fixed By: Hand held GPS

Cadastral Connection Data

Connected on Cadastral Plan No/s.: RC843609

Comments ______

SCDB
CHK
DATE

Details completed by: R J Grandison **Phone:** 40398568

03/04 '02 WED 15:28 FAX 61 2 42218657 RAN HYDRO OFFICE 001

100002213

Form AH 544/41 1975 (to accompany Form H 1431)

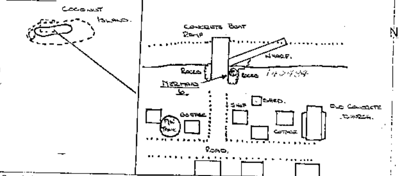
BM No MERMAID 6.

PSM. 140484

ROYAL AUSTRALIAN NAVY
HYDROGRAPHIC SERVICE

BENCH MARK RECORD

Access Sketch



Description

MERMAID 6 is a Hydrographic Service brass plaque set in concrete approx 10 meters SSE of the intersect of the concrete boat ramp and wharf. The plaque is stamped 'MERMAID 6'

STATUS - OK FEB 1993 - ~~MERMAID~~ BENALLA

- OK OCT 1995 - MERMAID HI 236

Mark revisited June 1992. Found to be in good order by HMAS MERMAID.

Reduced Level .... metres .... Datum ....

Established by HMAS MERMAID .... Date 17 SEP 1991

Under field supervision LCDR R. QUARRILL .... RAN ....

1:250,000 Map Sheet .... Probable life of mark 20 YEARS

Scaled Latitude S 10° 03'.0 .... Scaled Longitude E 143° 04'.0

PHOTO IDENTIFICATION

AERIAL, Area .... Film No. .... Run No. .... Photo No. ....

TERRESTRIAL .... Film No. .... Photo No. ....

Checked .... RAN .... Date ....

Approved .... RAN .... Date 9/4/92

(Officer-in-Charge of Survey)

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**140886**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**COCONUT ISLAND**		
Related Information	**Gone vide SP270862 on 19/08/2014**		
Mark Type	**STAND**		
Installed By	**C & B**	Last Visited	**19-Aug-2014**
Installed Date	**19-Mar-2001**	Sketch Available	**Yes**
Mark Condition	**NOT FOUND**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 03' 03.68464" S**	MGA2020 Easting	**726699.630m**
Longitude	**143º 04' 06.27866" E**	MGA2020 Northing	**8888231.774m**
Hrz Posn Uncertainty	**0.018m**	MGA2020 Zone	**54**
Ellipsoidal Height	**78.357m**	MGA2020 Point Scale	**1.00023598**
Vrt Posn Uncertainty	**0.041m**	MGA2020 Grid Conv	**0º 21' 40"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 03' 03.73320" S**	MGA94 Easting	**726698.711m**
Longitude	**143º 04' 06.24878" E**	MGA94 Northing	**8888230.287m**
Ellipsoidal Height	**78.470m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**4.078m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.843m		

SURVEY CONNECTIONS

SP270862	19-Aug-2014
SP139203	19-Mar-2001

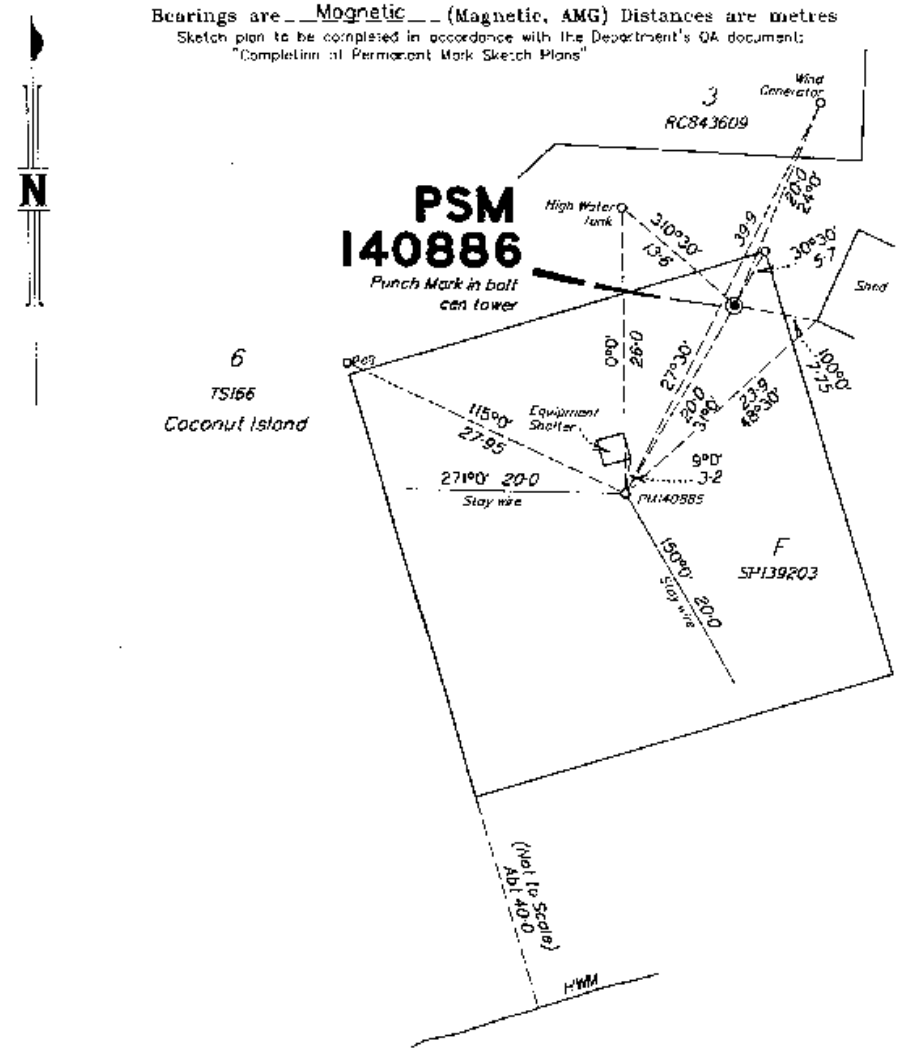
QUEENSLAND - DEPARTMENT OF NATURAL RESOURCES

PERMANENT MARK SKETCH PLAN

REGD NO. 140886

Bearings are Mognetic (Magnetic, AMG) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document: "Completion of Permanent Mark Sketch Plans"



Mark Type Punch Mark in Bolt

Scale 1:500

Suited to GPS	
Mark/No	No
Date	19/03/0

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "The Survey Co-ordination Act of 1952-1989".

Date 6/4/01

Signature

Registered Surveyor 3/07/1999

(Surveyor)

The SCDB is the authoritative source for coordinate and height information.
The Queensland Survey Control Register is the authoritative source for coordinate and height information.
The coordinate and height information contained on this document may not be the current information regarding this mark.

Department of Natural Resources

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 140886

Administrative Data

Alternative Name 1:
Alternative Name 2:
Alternative Name 3:

Installed By: C&B CONSULTANTS PTY LTD ACN 055 93[illegible]096
Date Installed: 19/03/01
Date Last Visited:

Mark Type: Standard
Mark Condition: Good

PSA:
Locality Description: COCONUT ISLAND

Parish: GIAKA
Local Authority: Pormpuraaw Community Council

City or Town:
Map Reference:

Vertical Control Data

Height: Vertical Accuracy – Order Class Datum:

Vertical Origin: Regd No: Height: Datum:

Geo–Sphd N: Datum: Model:

Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum:

Easting: Northing: Zone:

Horiz. Origin: Latitude: Longitude: Datum:

Easting: Northing: Zone:

Horizontal Adjustment:

Horizontal Accuracy – Order Class: Fixed By:

Cadastral Connection Data

Connected on Cadastral Plan No/s.: SP139203

Comments

SCDB	☐
CHK	
DATE	

Details completed by: C&B CONSULTANTS PTY LTD **Phone:** (07)4031 1336

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**156559**		
Alternate Names	**SO5**	Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**COCONUT ISLAND**		
Related Information			
Mark Type	**STAND**		
Installed By	**RAN HYDRO**	Last Visited	**19-Aug-2014**
Installed Date	**01-Jan-2004**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 02' 57.97939" S**	MGA2020 Easting	**726189.572m**
Longitude	**143º 03' 49.49572" E**	MGA2020 Northing	**8888410.320m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.360m**	MGA2020 Point Scale	**1.00023312**
Vrt Posn Uncertainty	**0.041m**	MGA2020 Grid Conv	**0º 21' 37"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 02' 58.02799" S**	MGA94 Easting	**726188.654m**
Longitude	**143º 03' 49.46587" E**	MGA94 Northing	**8888408.832m**
Ellipsoidal Height	**77.473m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.094m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.830m		

SURVEY CONNECTIONS

SP270862	19-Aug-2014
IS234514	01-Jul-2014

Form 6 - Version 2
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

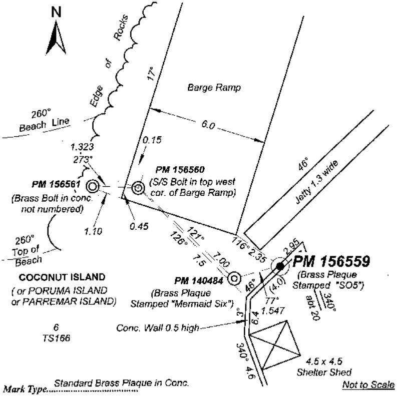
PERMANENT MARK SKETCH PLAN

REGD NO. 156559

Bearings are Magnetic (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Mark Type Standard Brass Plaque in Conc.

Not to Scale

Suited to GPS	
Yes/No	Yes
Date	20/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 2/05/2008 Signature [signature]

The SCDB is the authoritative source for coordinate and height information ... t information regarding this mark.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 156559

Administrative Data

Alternative Name 1 SO5
Alternative Name 2
Alternative Name 3
Mark Type Standard Brass Plaque in conc.
Mark Condition Good
Parish Giaka
Local Authority Torres Strait Is. Regional

Installed By Royal Aust Navy Hydrographic Services
Date Installed Unknown
Date Last Visited 20/05/2008
Local Description Coconut Island
City or Town
Map Reference 7577-44133

Vertical Control Data

Height .... Datum .... Vertical Accuracy - Order .... Class ....

Vertical Origin - Regn No. .... Height .... Datum ....

Geo-Sphd N .... Datum .... Model ....
Fixed By .... Date ....

Horizontal Control Data

Latitude .... Longitude .... Datum ....
Easting 726191 Northing 8888410 Zone 54
Horiz Origin .... Lat .... Long .... Datum ....

Horizontal Adjustment ....
Horizontal Accuracy - Order .... Class .... Fixed By H/Held GPS

Cadastral Connection Data

Connected on Cadastral Plan No. ....

Comments

SCDB ☑
Chkd DGB
Date 13/8/2008

Details completed by NRW Nambour Phone ....

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**156560**		
Alternate Names		Town	
		Local Authority	**TORRES SHIRE**
Locality Description	**COCONUT ISLAND**		
Related Information			
Mark Type	**OTHER BOLT IN CONC**		
Installed By	**NRW NAMBOUR**	Last Visited	**01-Jul-2014**
Installed Date	**20-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**1**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 02' 57.85490" S**	MGA2020 Easting	**726182.374m**
Longitude	**143º 03' 49.25858" E**	MGA2020 Northing	**8888414.191m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.580m**	MGA2020 Point Scale	**1.00023308**
Vrt Posn Uncertainty	**0.040m**	MGA2020 Grid Conv	**0º 21' 37"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 02' 57.90350" S**	MGA94 Easting	**726181.454m**
Longitude	**143º 03' 49.22870" E**	MGA94 Northing	**8888412.704m**
Ellipsoidal Height	**76.693m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.318m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.830m		

SURVEY CONNECTIONS

IS234514 01-Jul-2014

Form 6 - Version 2

Survey and Mapping Infrastructure Act 2003

DEPARTMENT OF NATURAL RESOURCES & WATER

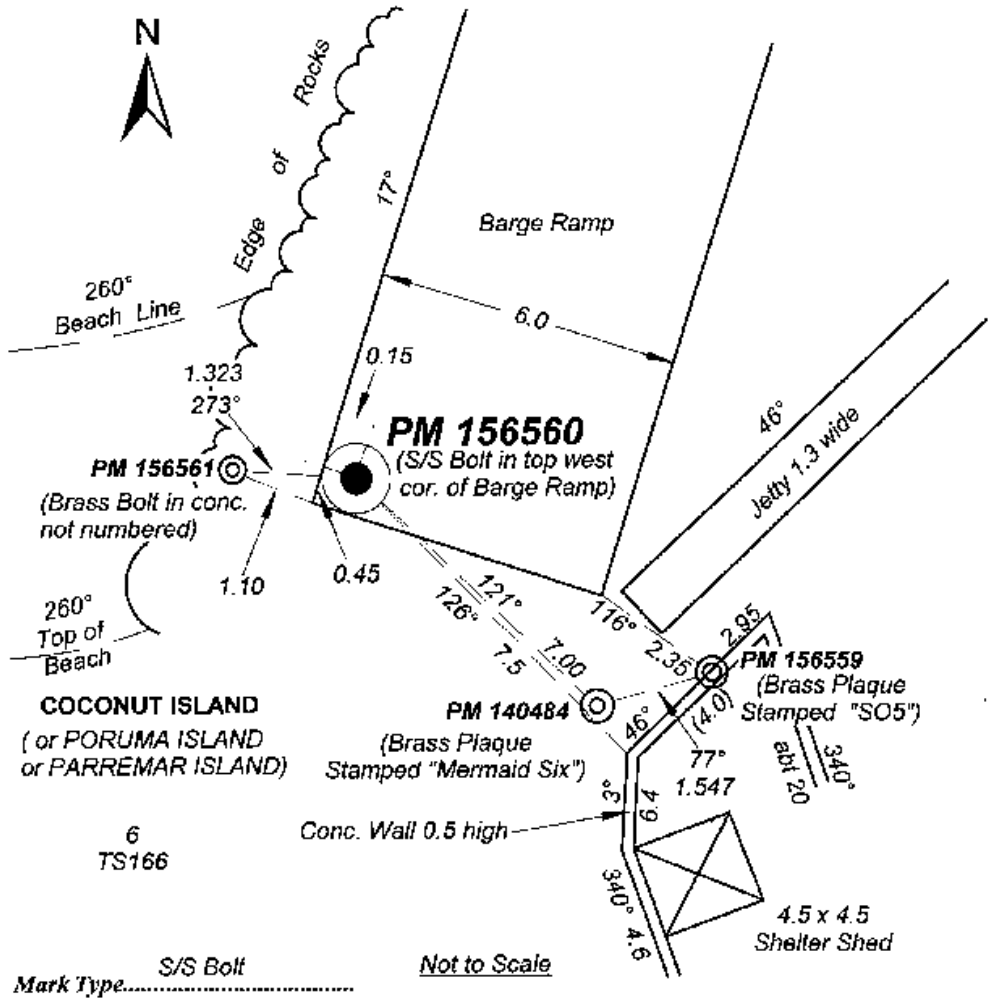
PERMANENT MARK SKETCH PLAN

REGD NO. 156560

Bearings are Magnetic (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Not to Scale

Mark Type S/S Bolt

Suited to GPS
Yes/No Yes
Date 20/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 2/09/2008 Signature

The SCDB is the authoritative source for coordinate and height information
[illegible] it information regarding the marks.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 156560

Administrative Data

Alternative Name 1.....
Alternative Name 2.....
Alternative Name 3.....
Mark Type.....S/S Bolt.....
Mark Condition.....Good.....
Parish.....Gieka.....
Local Authority.....Torres Strait Is. Regional

Installed By.....NRW Nambour.....
Date Installed.....20/05/2008.....
Date Last Visited.....
Local Description.....Coconut Island.....
City or Town.....
Map Reference.....7577-44133.....

Vertical Control Data

Height.....Datum.....Vertical Accuracy - Order.....Class.....

Vertical Origin - Regn No.....Height.....Datum.....

Geo-Sphd N.....Datum.....Model.....
Fixed By.....Date.....

Horizontal Control Data

Latitude..... Longitude..... Datum.....
Easting.....726182..... Northing.....8888412..... Zone.....54.....
Horiz Origin..... Lat..... Long..... Datum.....
....

Horizontal Adjustment.....
Horizontal Accuracy - Order..... Class..... Fixed By.....H/Held GPS.....

Cadastral Connection Data

Connected on Cadastral Plan No.....

Comments

.....
.....

Details completed by.....NRW Nambour..... Phone.....

SCDB ☑
Chkd.....DGB.....
Date.....11/8/2008.....

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**156562**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**COCONUT ISLAND**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**NRW NAMBOUR**	Last Visited	**19-Aug-2014**
Installed Date	**20-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 03' 00.95170" S**	MGA2020 Easting	**726843.806m**
Longitude	**143º 04' 10.99499" E**	MGA2020 Northing	**8888314.855m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**79.504m**	MGA2020 Point Scale	**1.00023679**
Vrt Posn Uncertainty	**0.040m**	MGA2020 Grid Conv	**0º 21' 41"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 03' 01.00030" S**	MGA94 Easting	**726842.886m**
Longitude	**143º 04' 10.96511" E**	MGA94 Northing	**8888313.367m**
Ellipsoidal Height	**79.617m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**5.227m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.846m		

SURVEY CONNECTIONS

SP270862	19-Aug-2014
SP258352	13-Nov-2012

Form 6 - Version 2
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

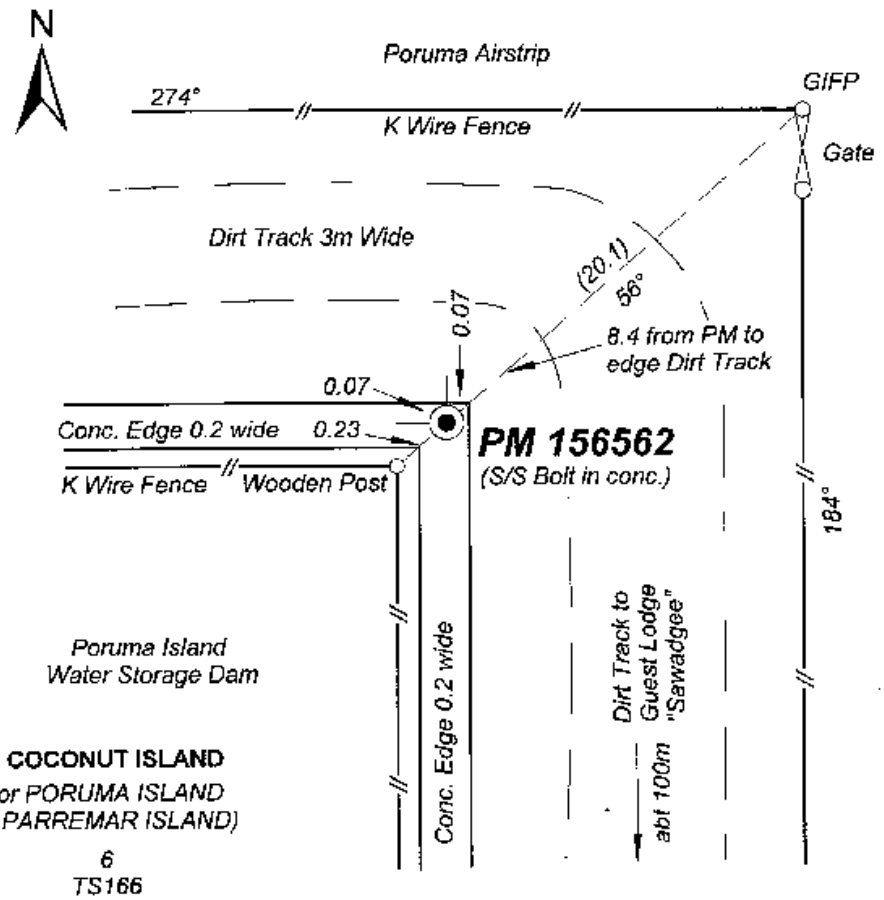
PERMANENT MARK SKETCH PLAN

REGD NO. 156562

Bearings are Magnetic (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Not to Scale

Mark Type S/S Bolt in conc.

Suited to GPS
Yes/No Yes
Date 20/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 2/09/2008

Signature

The SCDB is the authoritative source for coordinate and height information. The Queensland Survey Control Register is the authoritative source for coordinate and height information. The coordinates on this sketch may not be the current information regarding this mark. Contact information regarding this mark.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 156562

Administrative Data

Alternative Name 1
Alternative Name 2
Alternative Name 3
Mark Type S/S Bolt in conc.
Mark Condition Good
Parish Giaka
Local Authority Torres Strait Is. Regional

Installed By NRW Nambour
Date Installed 20/05/2008
Date Last Visited
Local Description Coconut Island
City or Town
Map Reference 7577-44133

Vertical Control Data

Height Datum Vertical Accuracy - Order Class

Vertical Origin - Regn No. Height Datum

Geo-Sphd N Datum Model
Fixed By Date

Horizontal Control Data

Latitude Longitude Datum
Easting 726845 Northing 8888312 Zone 54
Horiz Origin Lat Long Datum

Horizontal Adjustment
Horizontal Accuracy - Order Class Fixed By H/Held GPS.

Cadastral Connection Data

Connected on Cadastral Plan No.

Comments

Details completed by NRW Nambour Phone

SCDB ✓
Chkd. DGB
Date 11/8/2008

[illegible]

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**156563**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**COCONUT ISLAND**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**NRW NAMBOUR**	Last Visited	**19-Aug-2014**
Installed Date	**20-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 02' 59.75711" S**	MGA2020 Easting	**726650.557m**
Longitude	**143º 04' 04.64246" E**	MGA2020 Northing	**8888352.785m**
Hrz Posn Uncertainty	**0.018m**	MGA2020 Zone	**54**
Ellipsoidal Height	**79.542m**	MGA2020 Point Scale	**1.00023571**
Vrt Posn Uncertainty	**0.040m**	MGA2020 Grid Conv	**0º 21' 40"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 02' 59.80567" S**	MGA94 Easting	**726649.637m**
Longitude	**143º 04' 04.61258" E**	MGA94 Northing	**8888351.299m**
Ellipsoidal Height	**79.655m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**5.267m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.841m		

SURVEY CONNECTIONS

SP270862	19-Aug-2014
SP258352	13-Nov-2012

Form 6 - Version 2

Survey and Mapping Infrastructure Act 2003

DEPARTMENT OF NATURAL RESOURCES & WATER

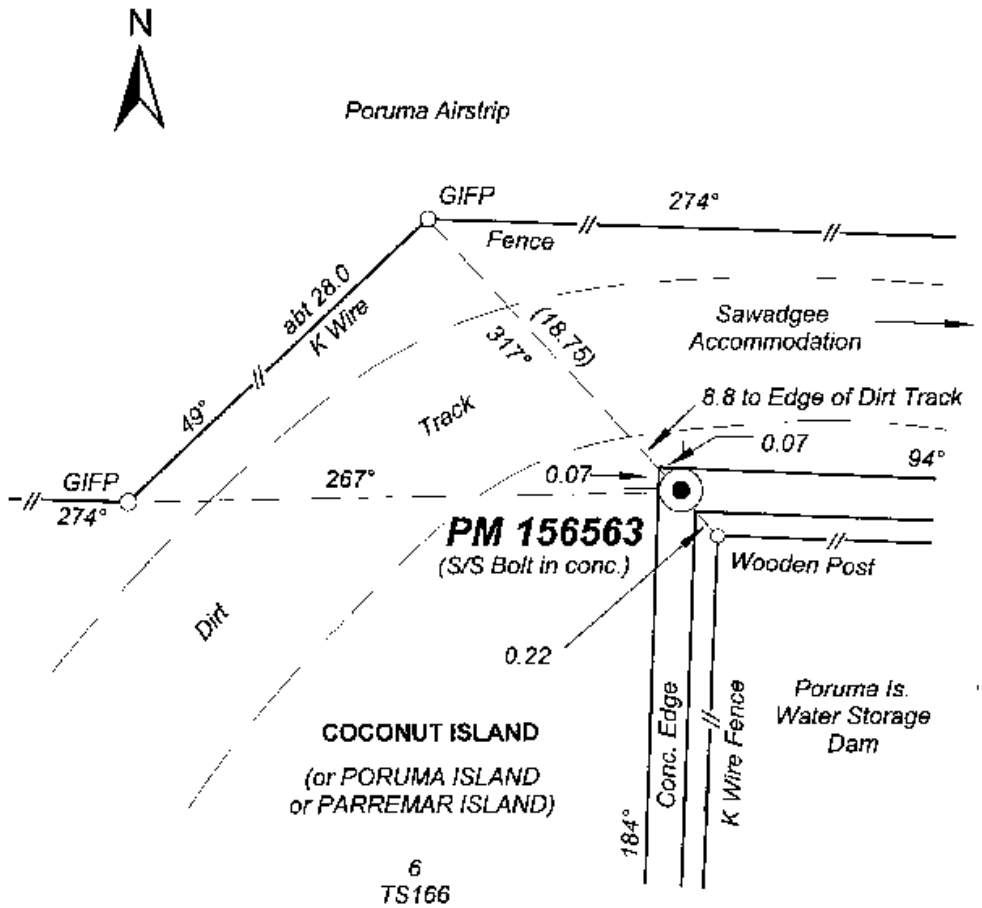
PERMANENT MARK SKETCH PLAN

REGD NO. 156563

Bearings are Magentic (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



S/S Bolt in Conc.

Mark Type.....

Not to Scale

Suited to GPS
Yes/No Yes
Date 20/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003

Date 21/09/2008

Signature

The SCDB is the authoritative source for coordinate and height information
[illegible] information regarding this mark

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 156563

Administrative Data

Alternative Name 1
Alternative Name 2
Alternative Name 3
Mark Type S/S Bolt in Conc.
Mark Condition Good
Parish Giaka
Local Authority Torres Strait Is. Regional

Installed By NRW Nambour
Date Installed 20/05/2008
Date Last Visited
Local Description Coconut Island
City or Town
Map Reference 7577-44133

Vertical Control Data

Height Datum Vertical Accuracy - Order Class

Vertical Origin - Regn No. Height Datum

Geo-Sphd N Datum Model
Fixed By Date

Horizontal Control Data

Latitude Longitude Datum
Easting 726649 Northing 8888350 Zone 54
Horiz Origin Lat Long Datum

Horizontal Adjustment
Horizontal Accuracy - Order Class Fixed By H/Held GPS

Cadastral Connection Data

Connected on Cadastral Plan No.

Comments

SCDB ☑
Chkd DGB
Date 11/8/2008

Details completed by NRW Nambour Phone

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**177937**		
Alternate Names	**POI1**	Town	
		Local Authority	**TORRES SHIRE**
Locality Description	**COCONUT ISLAND**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**NRW NAMBOUR**	Last Visited	**19-Aug-2014**
Installed Date	**19-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**1**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 02' 58.26534" S**	MGA2020 Easting	**726244.737m**
Longitude	**143º 03' 51.30875" E**	MGA2020 Northing	**8888401.186m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.897m**	MGA2020 Point Scale	**1.00023343**
Vrt Posn Uncertainty	**0.040m**	MGA2020 Grid Conv	**0º 21' 37"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 02' 58.31394" S**	MGA94 Easting	**726243.817m**
Longitude	**143º 03' 51.27887" E**	MGA94 Northing	**8888399.698m**
Ellipsoidal Height	**77.010m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.633m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.831m		

SURVEY CONNECTIONS

SP270862 19-Aug-2014

Form 6 - Version 2
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

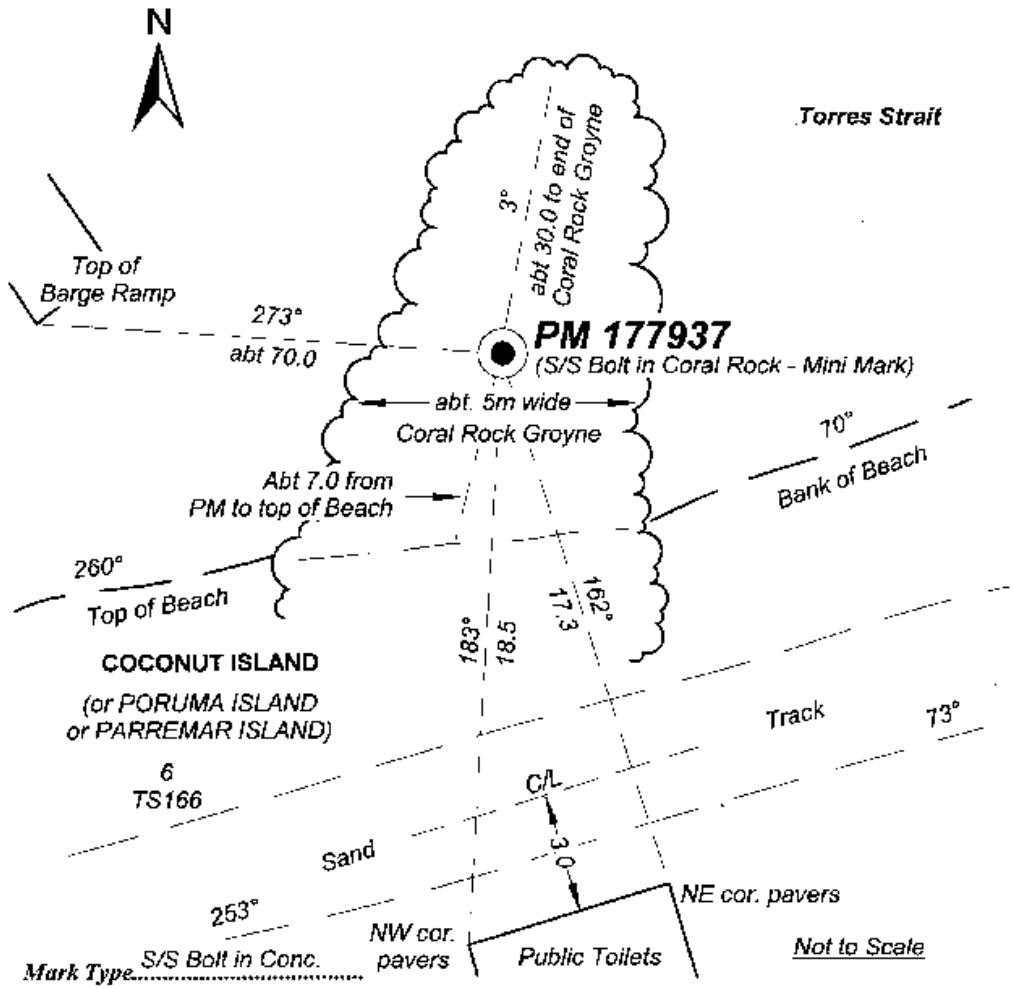
PERMANENT MARK SKETCH PLAN

REGD NO. 177937

Bearings are *Magnetic* (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Suited to GPS
Yes/No
Yes
Date
19/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 3/09/2008 Signature

The SCDB is the authoritative source for coordinate and height information. The Queensland Survey Control Register is the authoritative source for coordinate and height information. The coordinates on this sketch may not be the current as more recent adjustments may affect this mark. Contact information regarding this mark.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 177937

Administrative Data

Alternative Name 1
Alternative Name 2
Alternative Name 3
Mark Type Mini Mark
Mark Condition Good
Parish Giaka
Local Authority Torres Strait Is. Regional

Installed By NRW Nambour
Date Installed 19/05/2008
Date Last Visited
Local Description Coconut Island
City or Town
Map Reference 7577- 44133

Vertical Control Data

Height Datum Vertical Accuracy - Order Class

Vertical Origin - Regn No. Height Datum

Geo-Sphd N Datum Model
Fixed By Date

Horizontal Control Data

Latitude Longitude Datum
Easting 726243 Northing 8888402 Zone 54
Horiz Origin Lat Long Datum

Horizontal Adjustment
Horizontal Accuracy - Order Class Fixed By H/Held GPS

Cadastral Connection Data

Connected on Cadastral Plan No.

Comments

Details completed by NRW Nambour Phone

SCDB ☑
Chkd. DGB
Date 12/8/2008

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**700846**		
Alternate Names	**C 242**	Town	
	COCONUT IS	Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**COCONUT ISLAND**		
Related Information			
Mark Type	**STAND**		
Installed By	**RASC**	Last Visited	**19-Aug-2014**
Installed Date	**01-Jan-1968**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**1**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 03' 05.13432" S**	MGA2020 Easting	**726389.755m**
Longitude	**143º 03' 56.11374" E**	MGA2020 Northing	**8888189.174m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**82.300m**	MGA2020 Point Scale	**1.00023424**
Vrt Posn Uncertainty	**0.040m**	MGA2020 Grid Conv	**0º 21' 38"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

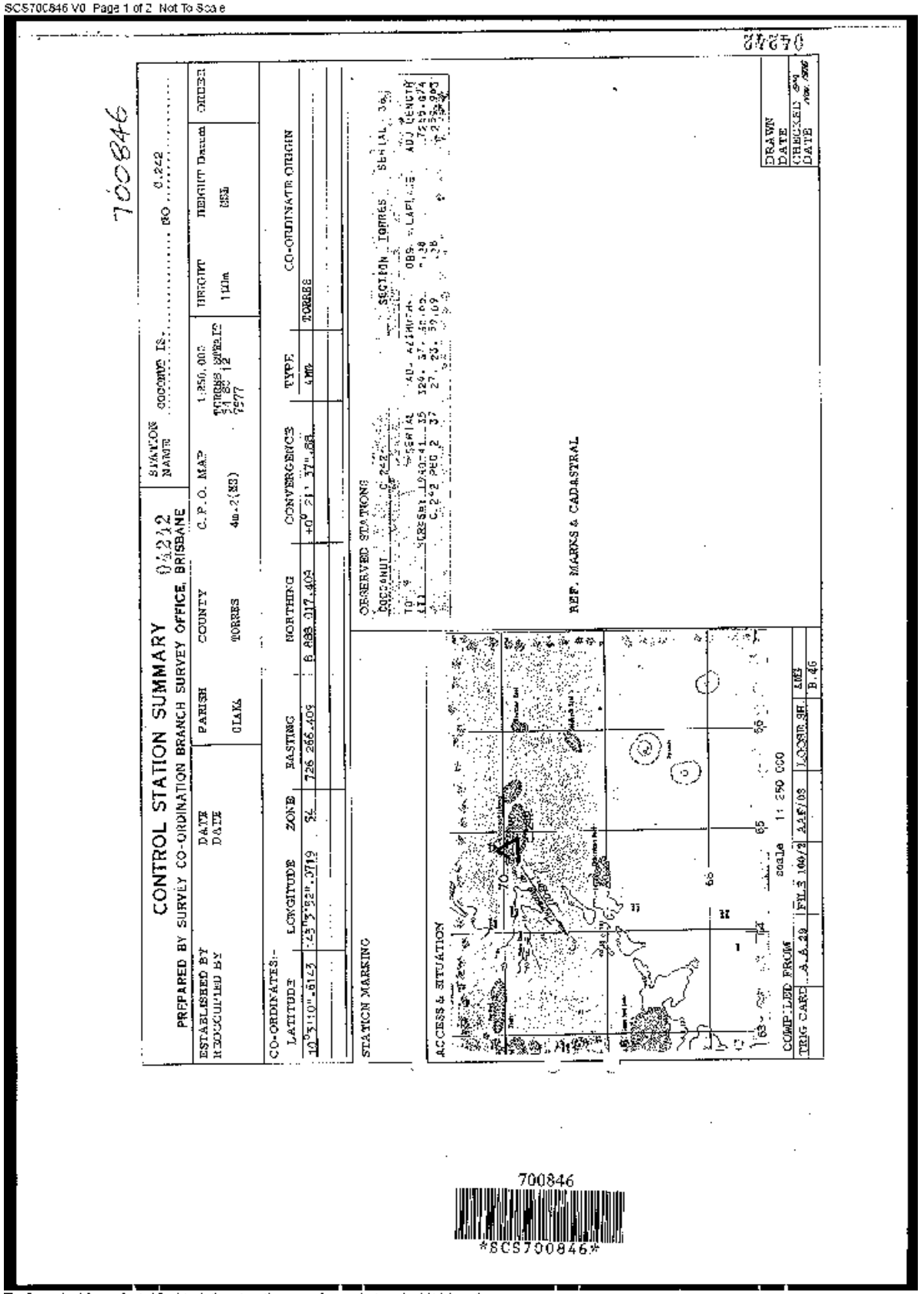
Latitude	**10º 03' 05.18288" S**	MGA94 Easting	**726388.835m**
Longitude	**143º 03' 56.08386" E**	MGA94 Northing	**8888187.687m**
Ellipsoidal Height	**82.413m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**8.033m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.835m		

SURVEY CONNECTIONS

SP270862 19-Aug-2014



The Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinate and height information contained on this document may not be the current information regarding this mark.

NATIONAL MAPPING COUNCIL OF AUSTRALIA
STATION SUMMARY

700846

Serial No.

Authority: ROYAL AUSTRALIAN SURVEY CORPS

04242 | Station Number and Name: C 242 COCONUT | Status: PROV

Original Station Established by: Royal Australian Survey Corps	Date: Nov 70	Map Name: CAPE YORK	Map Number: SC 54-12	Scale 1: 250,000
Existing Station Marked by: Royal Australian Survey Corps	Date: Jul 72	DATUM: Australian Geodetic Datum 1966	SPHEROID: Australian National Spheroid	
Reference Book: 1 Fd Svy Sqn: Field Book: C237 – C242		RECTANGULAR COORDINATES: Australian Map Grid in Metres		

GRID BEARING = AD AZIMUTH + CONVERGENCE — HEIGHTS in Metres on the Australian Height Datum

Cadastral Location: State: Queensland — County: Torres
Parish/Hundred: Glaka — Allotment/Section/Portion
Local Auth: Torres Shire — Working Map: 4 mil 2NS

SOUTH LATITUDE	EAST LONGITUDE	ZONE	EASTING	NORTHING	CONVERGENCE	HEIGHT

SEE NGDB AGD 84 DATA

To — ADJ AZIMUTH — ADJ LENGTH

Access and Locality Sketch — Particulars of station marking and beacon

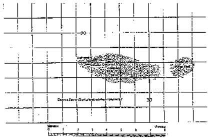
STATION MARK: Consists of a 9cm diameter RASVY bronze plaque, stamped "C 242", set in a precast concrete block to ground level. A rock cairn 0.6m high is erected over the station mark.

BEACON: Nil. Witness Post was placed Oct 73.

SITUATION: "C 242" is situated on a high sand dune SOUTH of the village on the SOUTHERN shore of COCONUT ISLAND which is approx 90km NE of CAPE YORK.
Grid Reference 263000 7577 COCONUT ISLAND 1:100,000.

ACCESS: By shallow draught boat or helicopter to the beach on the NORTH side of the island with a 5min walk from the village SOUTH to station.

VISIBILITY: 69deg – 260deg clear to horizon. 260deg – 67deg restricted by coconut palms. All bearings are magnetic.



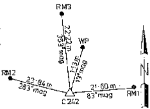
Station Revisited: Royal Australian Survey Corps, Jul 72, Oct 73, May 79.

Diagram showing Connections to Reference Marks

REFERENCE MARKS: Three RM each consisting of a 7.62mm cartridge case set in a precast concrete block to ground level. A rock cairn 0.6m high is erected over RM3.

WITNESS POST: Consists of a 2.5cm diameter GI pipe protruding 1.00m above ground level.

PHOTO PANELLING: Black plastic panels were laid around the station mark in Oct 73.



Not To Scale

Photo Identification: Absolute Imagery NTF 26730 4 Fd Svy Sqn A/12 Photo No 76 Date 26-28 Oct 73 Scale 1:8,000

Certified free of transcription errors: D J Williams — D. J WILLIAMS — SSGT — Date 10 MAR 88

Approved by: [signature] — S.A. COOPER — MAJ — Date 28 FEB 89

4242

NMO/DET/1004

Annex F Warraber results of survey checks and survey control mark reports

Table F.1. Warraber ground survey checks with survey control mark

Control mark number	GDA94 Easting (m)	GDA94 Northing (m)	AHD height (m)	Ground survey height* (m)	Difference (m)
SCR089040	700145.955	8871454.82	3.516	3.141	0.375
SCR126629	699911.698	8871446.449	2.037	2.044	-0.007
SCR137968	699620.319	8871383.205	3.187	3.167	0.020
SCR177936	699375.016	8871304.092	3.549	3.553	-0.004

*taken from 1 m grid DEM created from: PR148460-1_2d.dwg

Table F.2. Warraber LiDAR survey checks with survey control mark

Control mark number	GDA94 Easting (m)	GDA94 Northing (m)	AHD height (m)	LiDAR survey height^ (m)	Difference (m)
177935	699633.154	8870741.217	6.605	5.975	0.630
156564	699597.166	8871402.529	2.953	2.391	0.562
146550	699614.34	8871395.004	3.204	2.703	0.501
137967	699776.619	8871224.027	4.148	3.620	0.528
Average difference (m)					0.555
Standard deviation (m)					0.056

^based on the average height of classified las points within 1 m radius of survey control mark

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**89040**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**WARRABER ISLAND**		
Related Information	**GI Nail in top of low concrete post**		
Mark Type	**R/INF**		
Installed By	**AUSLIG**	Last Visited	**03-Jun-2015**
Installed Date	**01-Jun-1989**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**6**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 12' 14.74571" S**	MGA2020 Easting	**700146.873m**
Longitude	**142º 49' 37.53138" E**	MGA2020 Northing	**8871456.310m**
Hrz Posn Uncertainty	**0.020m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.078m**	MGA2020 Point Scale	**1.00009571**
Vrt Posn Uncertainty	**0.043m**	MGA2020 Grid Conv	**0º 19' 26"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 12' 14.79438" S**	MGA94 Easting	**700145.955m**
Longitude	**142º 49' 37.50150" E**	MGA94 Northing	**8871454.820m**
Ellipsoidal Height	**77.191m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.516m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.131m		

SURVEY CONNECTIONS

SP270859	03-Jun-2015
SP243810	24-Feb-2011
SP180031	05-Apr-2005
RC158819	04-Mar-2003
SP150204	02-Apr-2002
SP143316	26-Jun-2001

SC5089040 V0 Page 1 of 1 Not To Scale

The Survey Co-ordination Act of 1952-1981
(Regulation 16)
FORM 6

QUEENSLAND

REGD. No. 89040

PERMANENT MARK SKETCH PLAN

Other Ref. No.

Description of Mark G.I. NAIL IN TOP OF LOW CONC. POST

D.M.S. District CAIRNS

Parish of ADOLPHUS

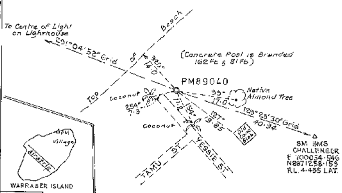
City or Town of WARRABER ISLAND

Local Authority Torres Shire Council

Map 4M.2

Measurements are in METRES (Not necessarily to scale)
Bearings are MAGNETIC

PERMANENT SURVEY MARK INSTALLATION DETAILS



Field Checked

Installed by AUSLIG   Date 19 - 6 - 89
Placed in Connection with (Type of survey/project) COMMUNITY DEVELOPMENT survey   Plan and / or Field Bk. Ref. 3966/28/4

Connd on Cadastral Plan No

VERTICAL DATA

AUSTRALIAN HEIGHT DATUM (This section to be completed by D.M.S. when Official Ht.-adj. Values are available)
Adj. Height   Analysis Ref.   L. Book No.
Origin Secn.   Secn. Nos.   Book No

OTHER DATUMS (Relevant information columns to be completed in full)

Reduced Level (i) 5·595 ~~A.H.D.fee.~~ (ii) 5·215   Datum Adopted (i) ~~A.H.D.~~ (ii) L.A.T.   L. Book No. (i) (ii)

Levelled by (i) AUSLIG (ii) AUSLIG   Date (i) (ii) 19 - 6 - 89

Origin Mark (i) TRIG C286 (ii) BM F61 (Coconut Island)   Origin R.L. (i) 5·82 (ii) 4·90

HOR. DATA

A.M.G. CO-ORDINATES E 700022·905 N 8871284·142 Zone 54 Date 19 - 6 - 89

Origin Stns. for Co-ordinates with values adopted (i) TRIG C286 E 699090·148 N 8870588·705 (ii) (iii)

Local Co ords. available on Plan Ref   Estab. by

Amended

I certify that the permanent mark shown in this sketch has been placed on the ground in accordance with the regulations under "The Survey Co-ordination Act of 1952-1981"

Date JULY 1989   Signature B Hallett
Authority AUSLIG

89040
SC5089040

PLEASE LEAVE THIS MARGIN VACANT

The Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinate and height information contained on this document may not be the current information regarding this mark.

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**126629**		
Alternate Names		Town	
		Local Authority	**TORRES SHIRE**
Locality Description	**WARRABER ISLAND**		
Related Information			
Mark Type	**OTHER METAL BOLT IN ROCK**		
Installed By	**C & B**	Last Visited	**03-Jun-2015**
Installed Date	**30-May-2001**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**9**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 12' 15.06121" S**	MGA2020 Easting	**699912.616m**
Longitude	**142º 49' 29.83714" E**	MGA2020 Northing	**8871447.938m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**75.587m**	MGA2020 Point Scale	**1.00009455**
Vrt Posn Uncertainty	**0.036m**	MGA2020 Grid Conv	**0º 19' 24"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 12' 15.10985" S**	MGA94 Easting	**699911.698m**
Longitude	**142º 49' 29.80726" E**	MGA94 Northing	**8871446.449m**
Ellipsoidal Height	**75.700m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.037m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.125m		

SURVEY CONNECTIONS

SP270859	03-Jun-2015	**SP143316**	26-Jun-2001
SP276810	07-Feb-2015		
SP243809	24-Feb-2011		
SP202805	30-Mar-2007		
SP180031	05-Apr-2005		
DP172485	17-May-2004		
RC158819	04-Mar-2003		
SP150204	02-Apr-2002		

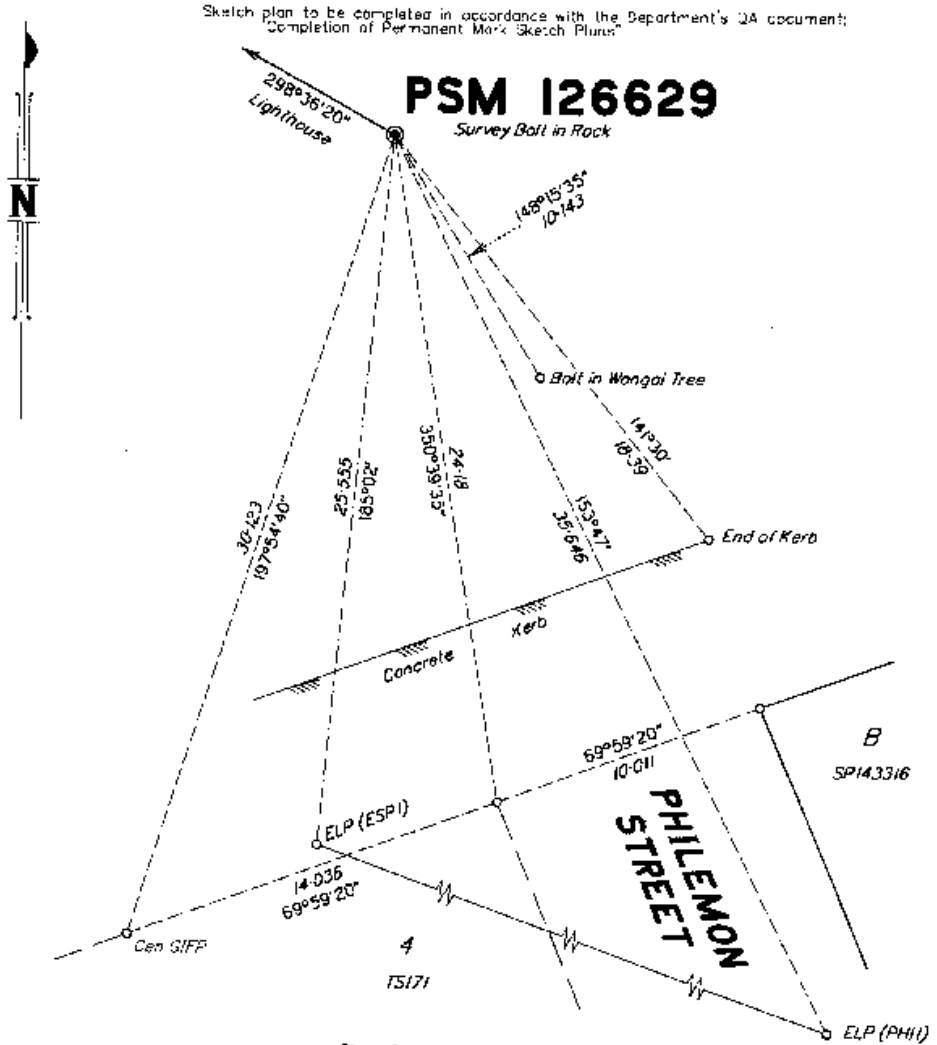
QUEENSLAND – DEPARTMENT OF NATURAL RESOURCES

PERMANENT MARK SKETCH PLAN

REGD NO. 126629

Bearings are A.M.G. (Magnetic, AMG) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document; "Completion of Permanent Mark Sketch Plans"



Scale 1:200

Suited to CPS	
Yes/No	Yes
Date	30/05/01

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "The Survey Co-ordination Act of 1962–1985"

Date 26/6/01 Signature _____ Licensed Surveyor

15/04/98

The SCDB is the authoritative source for coordinate and height information
[illegible] it information regarding this mark.

Department of Natural Resources

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 126629

Administrative Data

Alternative Name 1:
Alternative Name 2:
Alternative Name 3:
Mark Type: Bolt in Rock
Mark Condition: Good
Parish: Adolphus
Local Authority: Warraber Island Council

Installed By: C&B CONSULTANTS PTY LTD ACN 055 931 096
Date Installed: 30/05/01
Date Last Visited:
PSA:
Locality Description: Warraber Island
City or Town:
Map Reference: 7477-13243

Vertical Control Data

Height: Datum: Vertical Accuracy – Order Class

Vertical Origin – Regd No: Height: Datum:

Geo-Sphd N: Datum: Model:
Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum:
Easting: Northing: Zone:
Horiz Origin: Lat: Long: Datum:

Horizontal Adjustment:
Horizontal Accuracy – Order Class: Fixed By:

Cadastral Connection Data

Connected on Cadastral Plan No.: SP143316

Comments

SCDB
MAP
DATE

Details completed by: C&B Consultants Pty Ltd ACN 055 931 096 **Phone:** 07403 136

The Queensland Survey Control Register is the authoritative source for coordinate and height information.

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**137967**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**WARRABER ISLAND - MINI MARK**		
Related Information			
Mark Type	**R/INF**		
Installed By	**D TARDENT**	Last Visited	**03-Jun-2015**
Installed Date	**17-May-2004**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 12' 22.32439" S**	MGA2020 Easting	**699777.537m**
Longitude	**142º 49' 25.44074" E**	MGA2020 Northing	**8871225.517m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.702m**	MGA2020 Point Scale	**1.00009388**
Vrt Posn Uncertainty	**0.036m**	MGA2020 Grid Conv	**0º 19' 24"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 12' 22.37303" S**	MGA94 Easting	**699776.619m**
Longitude	**142º 49' 25.41086" E**	MGA94 Northing	**8871224.027m**
Ellipsoidal Height	**77.815m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**4.148m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.122m		

SURVEY CONNECTIONS

SP270859	03-Jun-2015
DP172485	17-May-2004

Queensland Government
Natural Resources Mines and Energy

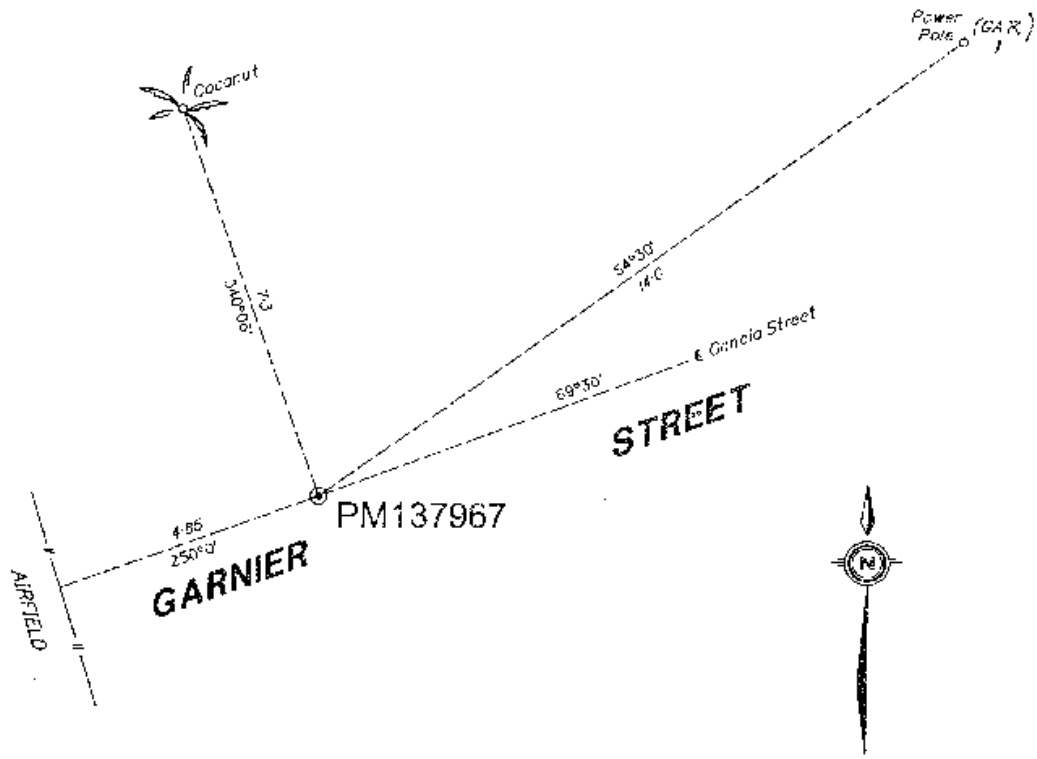
DEPARTMENT OF NATURAL RESOURCES, MINES & ENERGY

PERMANENT MARK SKETCH PLAN

REGD NO. 137967

Bearings are AMG (Magnetic, MGA) Distances are metres

Sketch plan to be completed in accordance with the Department's GA document "Completion of Permanent Mark Sketch Plans"



Mark Type MINI MARK Scale 1: 100

Suited to GPS
Yes/No Yes
Date 17/5/2004

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "The Survey Co-ordination Act of 1982–1989".

Date 10-6-04 Signature

21/11/01

The SCDB is the authoritative source for coordinate and height information on the Queensland survey control network and height network. The coordinate and height information on this document may not be the current information regarding this mark.

Department of Natural Resources, Mines & Energy

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 137967

Administrative Data

Alternative Name 1:
Alternative Name 2:
Alternative Name 3:
Mark Type: MINI MARK
Mark Condition: Good
Parish: ADOLPHUS
Local Authority: Sue Island Community Council

Installed By: David Tardent
Date Installed: 17/5/2004
Date Last Visited:
PSA:
Locality Description: WARRABER (SUE) ISLAND
City or Town: Torres Strait
Map Reference: 7477-13243

Vertical Control Data

Height: Datum: Vertical Accuracy – Order Class

Vertical Origin – Regd No: Height: Datum:

Geo-Sphd N: Datum: Model:
Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum:
Easting: Northing: Zone:
Horiz Origin: Lat: Long: Datum:

Horizontal Adjustment:
Horizontal Accuracy – Order Class: Fixed By:

Cadastral Connection Data

Connected on Cadastral Plan No.: DP172485

Comments

SCDB	
CHK	
DATE	

Details completed by: David Tardent Phone: (07) 5533 0327

WARRABER TAC40521

The Queensland Survey Control Register is the authoritative source for coordinate and height information. The ... information ... may not be ... regarding the mark

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**137968**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**MINI MARK - WARRABER ISLAND**		
Related Information			
Mark Type	**R/INF**		
Installed By	**TARDENT**	Last Visited	**24-Feb-2011**
Installed Date	**17-May-2004**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 12' 17.17290" S**	MGA2020 Easting	**699621.237m**
Longitude	**142º 49' 20.27644" E**	MGA2020 Northing	**8871384.694m**
Hrz Posn Uncertainty	**0.018m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.723m**	MGA2020 Point Scale	**1.00009311**
Vrt Posn Uncertainty	**0.037m**	MGA2020 Grid Conv	**0º 19' 23"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 12' 17.22154" S**	MGA94 Easting	**699620.319m**
Longitude	**142º 49' 20.24656" E**	MGA94 Northing	**8871383.205m**
Ellipsoidal Height	**76.836m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.187m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.117m		

SURVEY CONNECTIONS

SP243809	24-Feb-2011
DP172485	17-May-2004

Queensland Government
Natural Resources Mines and Energy

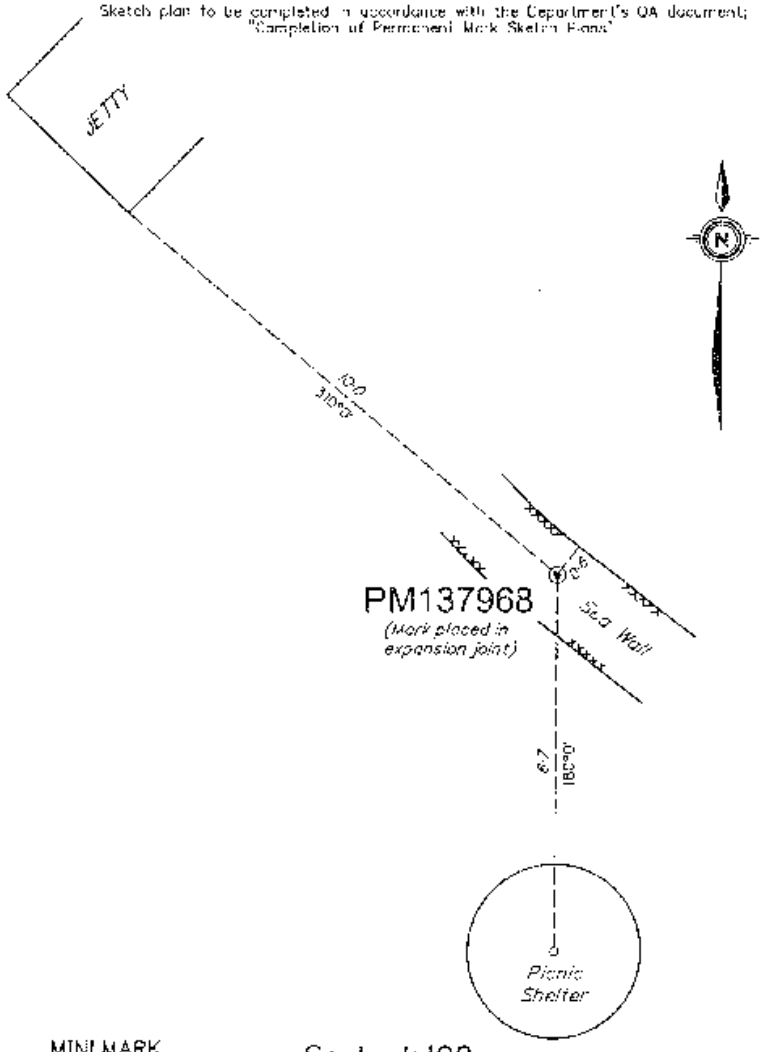
DEPARTMENT OF NATURAL RESOURCES, MINES & ENERGY

PERMANENT MARK SKETCH PLAN

REGD NO. 137968

Bearings are AMG (Magnetic, MGA) Distances are metres

Sketch plan to be completed in accordance with the Department's QA document; "Completion of Permanent Mark Sketch Plans"



Mark Type MINI MARK

Scale 1:100

Suited to GPS
Yes/No Yes
Date 17/5/2004

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the "The Survey Co ordination Act of 1952 1989".

Date 10-6-04 Signature

2:/1/

The SCDB is the authoritative source for coordinate and height information
The Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinate and height information recorded on this document may not be the current information regarding this mark. it information regarding this mark.

Department of Natural Resources, Mines & Energy

Survey Control Database – Permanent Mark Data Sheet

Registered Number: 137968

Administrative Data

Alternative Name 1:		Installed By:	David Tardent
Alternative Name 2:		Date Installed:	17/5/2004
Alternative Name 3:		Date Last Visited:	
Mark Type:	MINI MARK	PSA:	
Mark Condition:	Good	Locality Description:	WARRABER (SUE) ISLAND
Parish:	ADOLPHUS	City or Town:	Torres Strait
Local Authority:	Sue Island Community Council	Map Reference:	7477-13243

Vertical Control Data

Height: Datum: Vertical Accuracy – Order Class

Vertical Origin – Regd No: Height: Datum:

Geo–Sphd N: Datum: Model:

Fixed By: Date:

Horizontal Control Data

Latitude: Longitude: Datum:

Easting: Northing: Zone:

Horiz Origin: Lat: Long: Datum:

Horizontal Adjustment:

Horizontal Accuracy – Order Class: Fixed By:

Cadastral Connection Data

Connected on Cadastral Plan No.: DP172485

Comments

SCDB	☐
CHK	
DATE	

Details completed by: David Tardent Phone: (07) 5533 0327

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**146550**		
Alternate Names		Town	
		Local Authority	**TORRES SHIRE**
Locality Description	**WARRABER ISLAND**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**UNKNOWN**	Last Visited	**26-Oct-2017**
Installed Date	**01-Jan-2002**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**3**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 12' 16.79000" S**	MGA2020 Easting	**699615.258m**
Longitude	**142º 49' 20.07782" E**	MGA2020 Northing	**8871396.493m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.747m**	MGA2020 Point Scale	**1.00009308**
Vrt Posn Uncertainty	**0.035m**	MGA2020 Grid Conv	**0º 19' 23"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 12' 16.83864" S**	MGA94 Easting	**699614.340m**
Longitude	**142º 49' 20.04794" E**	MGA94 Northing	**8871395.004m**
Ellipsoidal Height	**76.860m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.204m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.117m		

SURVEY CONNECTIONS

SP302206	26-Oct-2017
SP270859	03-Jun-2015
SP243809	24-Feb-2011

Form 6 - Version 2
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

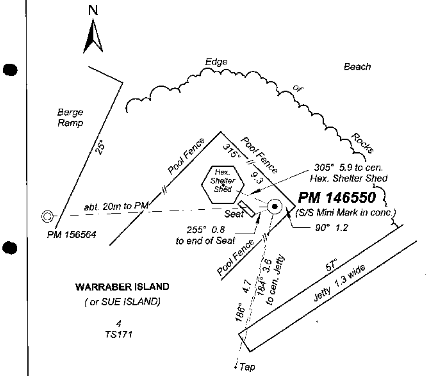
PERMANENT MARK SKETCH PLAN

REGD NO. 146550

Bearings are *Magnetic* (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Mark Type S/S Mini Mark in Conc. — Not to Scale

Suited to GPS	**SCDB DETAILS ON REVERSE ARE TO BE COMPLETED**
Yes/No Yes	I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.
Date 22/05/2008	Date 3/09/2008 Signature [signature]

The SCDB is the authoritative source for coordinate and height information
...t information regarding this mark.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 146550

Administrative Data

Alternative Name 1

Alternative Name 2

Alternative Name 3

Mark Type S/S Mark in Conc.

Mark Condition Good

Parish Adolphus

Local Authority Torres Strait Is. Regional

Installed By Unknown

Date Installed

Date Last Visited 22/05/2008

Local Description The Three Sisters

City or Town

Map Reference 7477-13243

Vertical Control Data

Height Datum Vertical Accuracy - Order Class

Vertical Origin - Regn No. Height Datum

Geo-Sphd N Datum Model

Fixed By Date

Horizontal Control Data

Latitude Longitude Datum

Easting 699611 Northing 8871408 Zone 54

Horiz Origin Lat Long Datum

Horizontal Adjustment

Horizontal Accuracy - Order Class Fixed By H/Held GPS

Cadastral Connection Data

Connected on Cadastral Plan No.

Comments

Details completed by NRW Nambour Phone

SCDB ☑

Chkd. DGB

Date 12/9/2008

The Queensland Survey Control Register is the authoritative source for coordinate and height information.
The coordinate and height information contained in this document may not be the current information regarding this mark.

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**156564**		
Alternate Names	**WBI1**	Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**WARRABER ISLAND**		
Related Information			
Mark Type	**OTHER BOLT IN CONC**		
Installed By	**NRW NAMBOUR**	Last Visited	**26-Oct-2017**
Installed Date	**22-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**2**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 12' 16.54826" S**	MGA2020 Easting	**699598.082m**
Longitude	**142º 49' 19.51219" E**	MGA2020 Northing	**8871404.018m**
Hrz Posn Uncertainty	**0.016m**	MGA2020 Zone	**54**
Ellipsoidal Height	**76.497m**	MGA2020 Point Scale	**1.00009299**
Vrt Posn Uncertainty	**0.035m**	MGA2020 Grid Conv	**0º 19' 22"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 12' 16.59690" S**	MGA94 Easting	**699597.166m**
Longitude	**142º 49' 19.48235" E**	MGA94 Northing	**8871402.529m**
Ellipsoidal Height	**76.610m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**2.953m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.117m		

SURVEY CONNECTIONS

SP302206	26-Oct-2017
SP270859	03-Jun-2015

Form 6 - Version 2

Survey and Mapping Infrastructure Act 2003

DEPARTMENT OF NATURAL RESOURCES & WATER

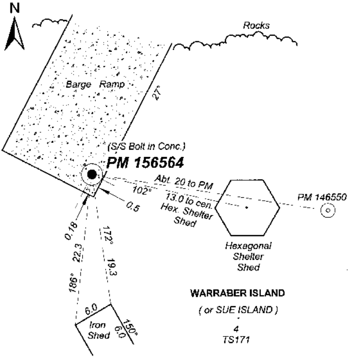
PERMANENT MARK SKETCH PLAN

REGD NO. 156564

Bearings are Magnetic (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document

"Completion of Permanent Mark Sketch Plans"



Mark Type S/S Bolt in Conc.

Sorted to GPS
Yes/No Yes
Date 22/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 2/09/2008 Signature [signature]

The SCDB is the authoritative source for coordinate and height information

...t information regarding this mark.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 156564

Administrative Data

Alternative Name 1
Alternative Name 2
Alternative Name 3
Mark Type S/S Bolt in Conc.
Mark Condition Good
Parish Adolphus
Local Authority Torres Strait Is. Regional

Installed By NRW Nambour
Date Installed 22/05/2008
Date Last Visited
Local Description The Three Sisters
City or Town
Map Reference 7747-13243

Vertical Control Data

Height Datum Vertical Accuracy - Order Class

Vertical Origin - Regn No Height Datum

Geo-Sphd N Datum Model
Fixed By Date

Horizontal Control Data

Latitude Longitude Datum
Easting 699599 Northing 8871406 Zone 54
Horiz Origin Lat Long Datum

Horizontal Adjustment
Horizontal Accuracy - Order Class Fixed By H/Held GPS

Cadastral Connection Data

Connected on Cadastral Plan No

Comments

Details completed by NRW Nambour Phone

SCDB ☑
Chkd DGB
Date 11/8/2008

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**177935**		
Alternate Names		Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**WARRABER ISLAND**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**NRW NAMBOUR**	Last Visited	**03-Jun-2015**
Installed Date	**23-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**1**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 12' 38.06305" S**	MGA2020 Easting	**699634.071m**
Longitude	**142º 49' 20.81701" E**	MGA2020 Northing	**8870742.706m**
Hrz Posn Uncertainty	**0.017m**	MGA2020 Zone	**54**
Ellipsoidal Height	**80.150m**	MGA2020 Point Scale	**1.00009317**
Vrt Posn Uncertainty	**0.036m**	MGA2020 Grid Conv	**0º 19' 23"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 12' 38.11169" S**	MGA94 Easting	**699633.154m**
Longitude	**142º 49' 20.78713" E**	MGA94 Northing	**8870741.217m**
Ellipsoidal Height	**80.263m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**6.605m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.119m		

SURVEY CONNECTIONS

SP270859 03-Jun-2015

Form 6 - Version 2
Survey and Mapping Infrastructure Act 2003
DEPARTMENT OF NATURAL RESOURCES & WATER

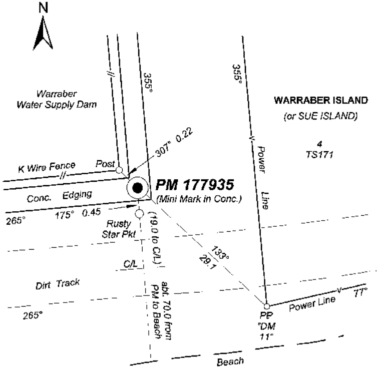
PERMANENT MARK SKETCH PLAN

REGD NO. 177935

Bearings are Magnetic (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Mark Type Mini Mark

Suited to GPS
Yes/No Yes
Date 23/05/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 2/09/2008

Signature [signature]

The SCDB is the authoritative source for coordinate and height information
... it information regarding this mark.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number........177935........

Administrative Data

Alternative Name 1..............................
Alternative Name 2..............................
Alternative Name 3..............................
Mark Type.........Mini Mark..........
Mark Condition.......Good..........
Parish...........Adolphus...........
Local Authority..Torres Strait Is. Regional

Installed By.........NRW Nambour.....
Date Installed.........23/05/2008.........
Date Last Visited..............................
Local Description..The Three Sisters
City or Town..............................
Map Reference.....7477-13243........

Vertical Control Data

Height....................Datum...............Vertical Accuracy - Order...............Class...............

Vertical Origin - Regn No..............................Height..........................Datum....................

Geo-Sphd N...Datum..............................Model.....................
Fixed By..........................   Date.................

Horizontal Control Data

Latitude.. Longitude.. Datum...............
Easting.........699634...................... Northing.....8870740.................... Zone.....54.....
Horiz Origin........ Lat......................... Long....................................... Datum...................
....

Horizontal Adjustment..
Horizontal Accuracy - Order............... Class....................... Fixed By..H/Held GPS..

Cadastral Connection Data

Connected on Cadastral Plan No...

Comments

....
....

Details completed by......NRW Nambour.............. Phone...................................

SCDB ☑
Chkd. DGB
Date. 11/8/2008

Survey Control Mark Report

ADMINISTRATIVE DETAILS

Mark Number	**177936**		
Alternate Names	**WBI_**	Town	
		Local Authority	**TORRES STRAIT ISLAND REGIONAL**
Locality Description	**WARRABER ISLAND**		
Related Information			
Mark Type	**MINI MARK**		
Installed By	**NRW NAMBOUR**	Last Visited	**03-Jun-2015**
Installed Date	**22-May-2008**	Sketch Available	**Yes**
Mark Condition	**GOOD**	Num Connections	**1**

GDA2020 COORDINATES

Lineage	**Datum**		
Latitude	**10º 12' 19.79248" S**	MGA2020 Easting	**699375.934m**
Longitude	**142º 49' 12.23234" E**	MGA2020 Northing	**8871305.581m**
Hrz Posn Uncertainty	**0.016m**	MGA2020 Zone	**54**
Ellipsoidal Height	**77.085m**	MGA2020 Point Scale	**1.00009190**
Vrt Posn Uncertainty	**0.035m**	MGA2020 Grid Conv	**0º 19' 21"**
Published	**18-May-2023**	Fixed By	**GPS**
Adjustment	**QLD ANJ 23.05**		

GDA94 TRANSFORMED COORDINATES

Latitude	**10º 12' 19.84111" S**	MGA94 Easting	**699375.016m**
Longitude	**142º 49' 12.20246" E**	MGA94 Northing	**8871304.092m**
Ellipsoidal Height	**77.198m**	MGA94 Zone	**54**

AHD HEIGHT

Lineage	**Derived**		
Height	**3.549m**	Vertical Uncertainty	**Class D / 5th ORDER**
Published	**23-Mar-2009**	Fixed By	**GPS**
Origin Mark		NLN Section	
Source	**TORRES STRAIT ISLANDS CONTROL**		
	Model: AUSGEOID98 INTERPOLATED / N Value: 73.111m		

SURVEY CONNECTIONS

SP270859 03-Jun-2015

Form 6 - Version 2

Survey and Mapping Infrastructure Act 2003

DEPARTMENT OF NATURAL RESOURCES & WATER

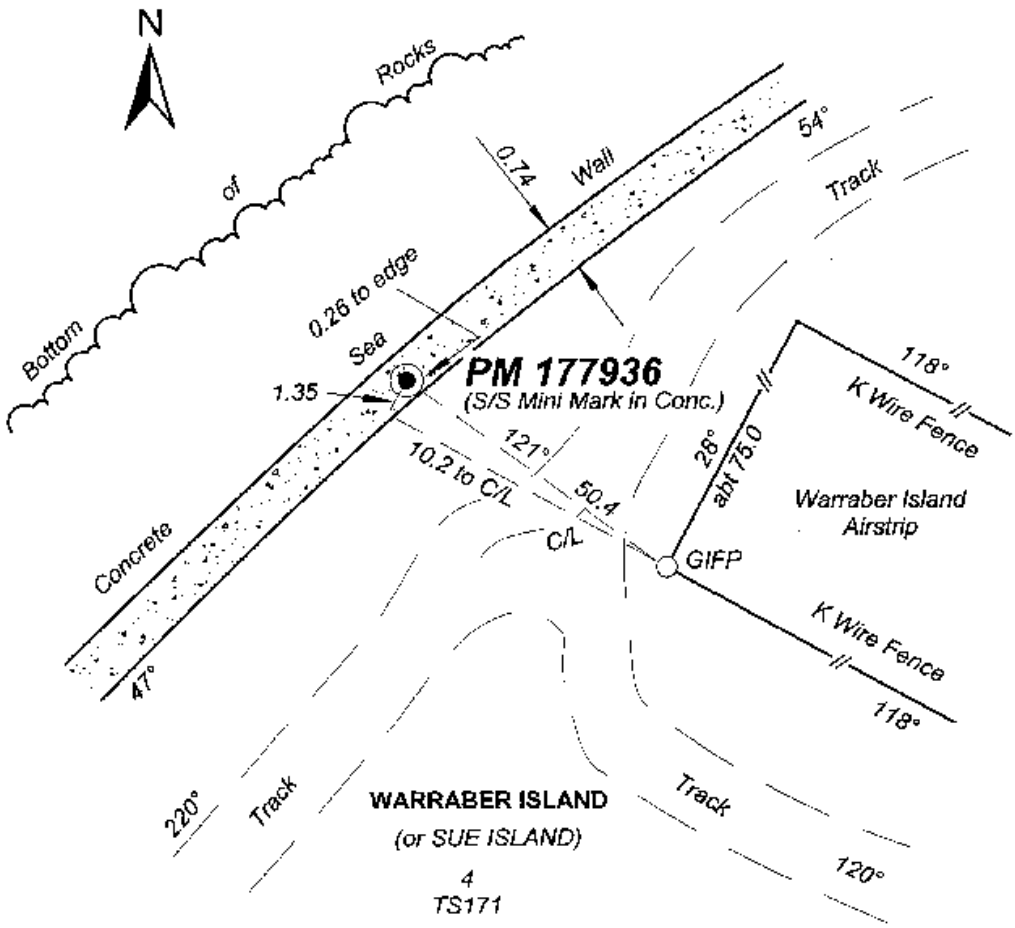
PERMANENT MARK SKETCH PLAN

REGD NO. 177936

Bearings are *Magnetic* (Magnetic, MGA) Distance are metres.

Sketch Plan to be completed in accordance with the Department's QA document:

"Completion of Permanent Mark Sketch Plans"



Mark Type Mini Mark

Not to Scale

Suited to GPS
Yes/No Yes
Date 22/5/2008

SCDB DETAILS ON REVERSE ARE TO BE COMPLETED

I certify that the permanent mark sketch has been prepared in accordance with the Survey and Mapping Infrastructure Act 2003.

Date 3/09/2008 Signature

The SCDB is the authoritative source for coordinate and height information
the Queensland Survey Control Register is the authoritative source for coordinate and height information
The coordinates and heights recorded on this document may not be the current information regarding this mark. it information regarding this mark.

Department of Natural Resources and Water

Survey Control Database - Permanent Mark Data Sheet

Registered Number 177936

Administrative Data

Alternative Name 1.....
Alternative Name 2.....
Alternative Name 3.....
Mark Type.....*Mini Mark*.....
Mark Condition.....*Good*.....
Parish.....*Adolphus*.....
Local Authority.....*Torres Strait Is. Regional*

Installed By.....*NRW Nambour*.....
Date Installed.....*22/05/2008*.....
Date Last Visited.....
Local Description.....*The Three Sisters*
City or Town.....
Map Reference.....*7477-13243*.....

Vertical Control Data

Height.....Datum.....Vertical Accuracy - Order.....Class.....

Vertical Origin - Regn No.....Height.....Datum.....

Geo-Sphd N.....Datum.....Model.....
Fixed By.....Date.....

Horizontal Control Data

Latitude..... Longitude..... Datum.....
Easting.....*699376*..... Northing.....*8871306*..... Zone...*54*.....
Horiz Origin..... Lat..... Long..... Datum.....
....

Horizontal Adjustment.....
Horizontal Accuracy - Order..... Class..... Fixed By...*H/Held GPS*.

Cadastral Connection Data

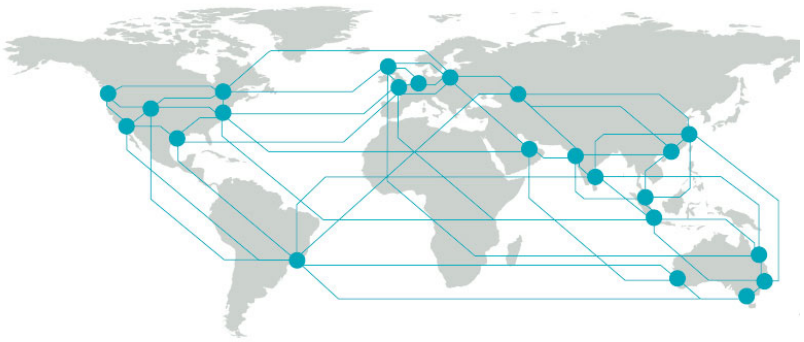
Connected on Cadastral Plan No.....

Comments

.....
.....

Details completed by.....*NRW Nambour*..... Phone.....

SCDB ☑
Chkd *DGB*
Date *12/8/2008*



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