

# STORM SURGE RISK

## 1. Citation

This Local Planning Policy has been prepared pursuant to Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations 2015* (Deemed Provisions). The policy may be cited as Local Planning Policy 19 – Storm Surge Risk (LPP 19).

## 2. Introduction

The purpose of this policy is to provide clear guidance on the application of the City of Karratha Local Planning Scheme No. 8 (Scheme) in relation to development on land identified as vulnerable to a 500-year Average Recurrence Interval (ARI) storm surge event. It establishes a locally responsive framework for risk management and adaptation, ensuring that development proposals adequately account for coastal hazards to protect life and property.

Coastal areas within the City of Karratha are susceptible to significant storm surge inundation, primarily driven by wind setup and atmospheric pressure during cyclonic events. The City has undertaken detailed mapping of the 500-year ARI event to inform decision-making in areas subject to development pressure.

While this policy provides current best-practice standards, it serves as an interim instrument while the City prepares a comprehensive Coastal Hazard Risk Management and Adaptation Plan (CHRMAP) as required by State Planning Policy 2.6 – Coastal Planning (SPP 2.6).

## 3. Objectives

3.1. The objectives of this policy are to:

- (a) Establish procedures for the assessment of development applications on land identified as being vulnerable to a 500-year ARI storm surge event.
- (b) Provide interim guidance for coastal risk and storm surge management pending the finalisation of the City's Coastal Hazard Risk Management and Adaption Plan (CHRMAP).
- (c) Ensure that development proposals adequately account for coastal hazards to protect life and property.

## 4. Application of this Policy

### 4.1. Extent of Scope

4.1.1. This policy applies to all development proposals on land identified as being vulnerable to a 500-year ARI storm surge event as mapped and maintained by the City. Refer **Appendix B – Storm Surge Risk Mapping**.

## Local Planning Policy 19

### Storm Surge Risk Policy

- 4.1.2. This policy also applies to all development proposals on land identified as being 'potentially vulnerable' to a 500-year storm surge event, where vulnerability is confirmed by the relevant authority.

## 4.2. Relationship with State and Local Planning Framework

- 4.2.1. This policy is to be read in conjunction with the Scheme and the relevant state and local planning policies, specifically SPP 2.6. To the extent of any inconsistency between this policy and the Scheme or SPP 2.6, the Scheme and SPP 2.6 prevail.

## 4.3. Assessment Criteria

- 4.3.1. Development approval is required for any proposal on land identified as vulnerable to a 500-year ARI storm surge event to assess its acceptability against the provisions and objectives of this policy.
- 4.3.2. The City should exercise its discretion when considering the suitability of development in identified risk areas. The City should exercise its discretion by having regard to:
- (a) The nature and suitability of the proposed development, given the identified risk.
  - (b) The adequacy of the proposed risk management and adaption measures to protect human life and property.
  - (c) The outcome of the proposed development as an outcome of the Risk Assessment Matrix (contained at **Appendix C** to this policy).
  - (d) The findings and recommendations of the Karratha Coastal Vulnerability Study.
  - (e) The precinct objectives for the subject site, as outlined in the Scheme, together with any other relevant and applicable Scheme provisions.

## 5. Policy Provisions

### 5.1. General Requirements

- 5.1.1. Where mapping is not available for a particular locality or land the City considers that the land could be vulnerable to storm surge but it is not identified by the mapping at **Appendix B**, the application may be referred to the relevant department to determine whether the site is likely to be vulnerable to a 500-year ARI storm surge event and, if so, the requirements of this policy apply.
- 5.1.2. The impact of stormwater events on land the subject of a development application is assessed and managed separately to the impact of a 500-year ARI storm surge event, which is the subject of this policy.
- 5.1.3. An application should be supported by a Stormwater Management Strategy / Plan, prepared by a suitably qualified consultant, to determine the impact of overland flooding on the site and to identify appropriate finished floor levels and / or drainage requirements. Where such advice is not submitted, the City will refer the application to the relevant agencies and authorities for comment.

## 5.2. Standard Design Responses

- 5.2.1. Where a site (or portion of the site) is identified as being vulnerable to a 500-year ARI storm surge event, the proponent should consider the following standard design responses to sufficiently address the level of risk:
- (a) Elevating finished floor levels of habitable rooms and net lettable areas above the 500-year ARI storm surge event level, in accordance with **Table 1**; or

Table 1: Standard Design Responses for Storm Surge Risk.

| Height of Storm Surge above Natural Ground Level | Standard Design Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0 – 500mm                                        | Raise finished floor level for all habitable rooms (dwellings) or net lettable areas (commercial / community buildings) above the identified storm surge level through filling of the land, structural / design (e.g. elevated stilt construction) or a combination of both.                                                                                                                                                                                                                                                                |
| 500mm – 1 metre                                  | <p>Raise finished floor level for all habitable rooms (dwellings) or net lettable areas (commercial / community buildings) to the height of the identified storm surge level through filling of the land, structural design (e.g. elevated stilt construction) or a combination of both.</p> <p>Filling of the site between 500mm and 1 metre above natural ground level may be considered on a case-by-case basis where it does not detrimentally impact the adjoining amenity and complies with other relevant policy considerations.</p> |
| 1m – 2m +                                        | Raise finished floor levels for all habitable rooms (dwellings) or net lettable areas (commercial / community buildings) above the identified storm surge level through structural design (e.g. elevated stilt construction) or a combination of fill/retaining (to a maximum of 0.5 metres) and structural design.                                                                                                                                                                                                                         |

- (b) Locating the development on a portion of the site that is not identified as vulnerable to a 500-year ARI storm surge event.

## 5.3. Performance Based Approach

- 5.3.1. Where the standard design responses set out in Section 5.2 are not proposed, a risk assessment should be submitted to define the level of risk and determine the appropriate mitigation measures.
- 5.3.2. The Risk Assessment should be prepared in accordance with the City's Risk Assessment Matrix and should demonstrate that the proposal achieves an acceptable level of risk to life and property. Refer **Appendix C – Risk Assessment Matrix**.

## 5.4. Mitigation Measures

- 5.4.1. The City may consider imposing a range of mitigating measures as conditions of development approval, including:

## Local Planning Policy 19

### Storm Surge Risk Policy

- (a) Relocation of the proposed development to the least hazardous portion of the site.
- (b) A storm surge protection wall or barrier.
- (c) The registration of a Notification on Title (Section 70A of the *Transfer of Land Act 1893*) for the purpose of advising prospective purchasers that the land is identified as being vulnerable to storm surge inundation.
- (d) The installation and maintenance of signage on public buildings advising of flood vulnerability.
- (e) An Emergency Evacuation Plan where the scale or nature of the development warrants such a response.
- (f) Where filling is proposed, plans prepared by a suitably qualified professional to demonstrate appropriate erosion control and foundation stabilisation.

## 5.5. Design Considerations

- 5.5.1. Building design should handle structural loads associated with storm surge flow, waves and debris impact.
- 5.5.2. Electrical infrastructure, including power point sockets, should be located above the modelled 500-year ARI storm surge level.
- 5.5.3. Effluent disposal vents and systems should be located so they are not impacted by 500-year ARI storm surge inundation.
- 5.5.4. Proponents should avoid the enclosure of understorey areas to minimise the structural loads associated with water flow or wave impact.

## 6. Document Control

| Version             | Decision to Adopt / Amend                                           |               |                |
|---------------------|---------------------------------------------------------------------|---------------|----------------|
| 1.                  | <a href="#">18 July 2016   Ordinary Council Meeting   Item 11.3</a> |               |                |
| 2.                  | [Date]   Ordinary Council Meeting   Item [No.]                      |               |                |
| 3.                  |                                                                     |               |                |
| 4.                  |                                                                     |               |                |
| Public Consultation | Not required – minor / administrative update                        |               |                |
| WAPC Approval       | Not required                                                        | Approval Date | Not applicable |
| Document Reference  | Document Reference: LPP 19<br>Previous Policy Number: DP 19         |               |                |
| Next Review Date    | TBC                                                                 |               |                |
| Review Frequency    | Every 5 years                                                       |               |                |

| Related Documents                            |                                                                                                                                                       |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal                                     | External                                                                                                                                              |
| City of Karratha Local Planning Scheme No. 8 | State Planning Policy 2.6 – Coastal Planning<br>State Planning Policy 3.4 – Natural Hazards and Disasters<br>State Coastal Planning Policy Guidelines |

### Relevant Legislation

*Planning and Development Act 2005*

*Planning and Development (Local Planning Schemes) Regulations 2015*

*State Administrative Tribunal Act 2004*

*Transfer of Land Act 1893*

**This policy takes effect from the date of adoption by Council and shall remain valid for a period of 5 years unless reviewed prior.**

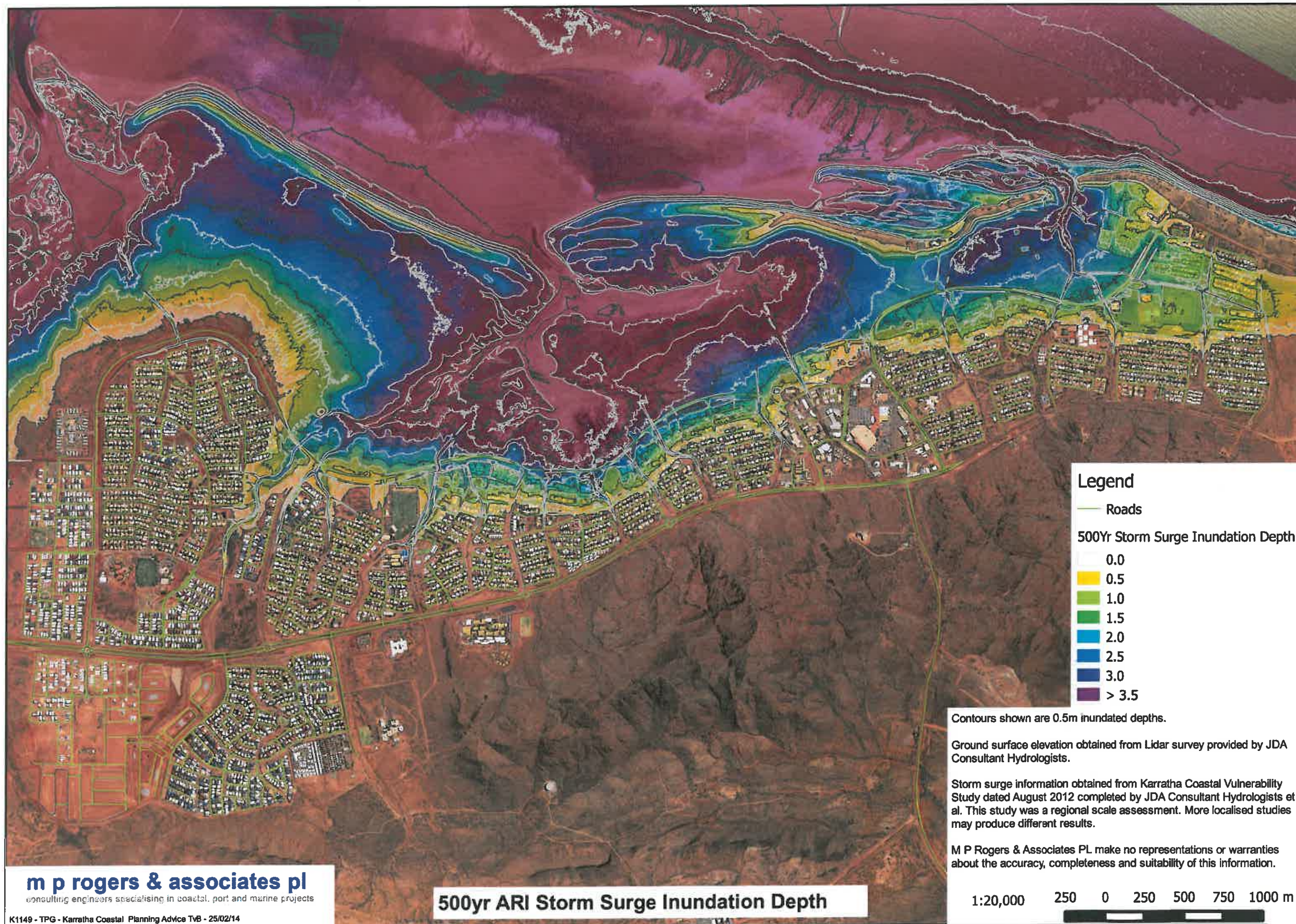
All records created or maintained under this document must be captured in the City's approved recordkeeping or business system. These records are to be retained and managed in accordance with the *State Records Act 2000*, *Privacy and Responsible Information Sharing Act 2024*, the City's Recordkeeping Plan and authorised disposal authorities.

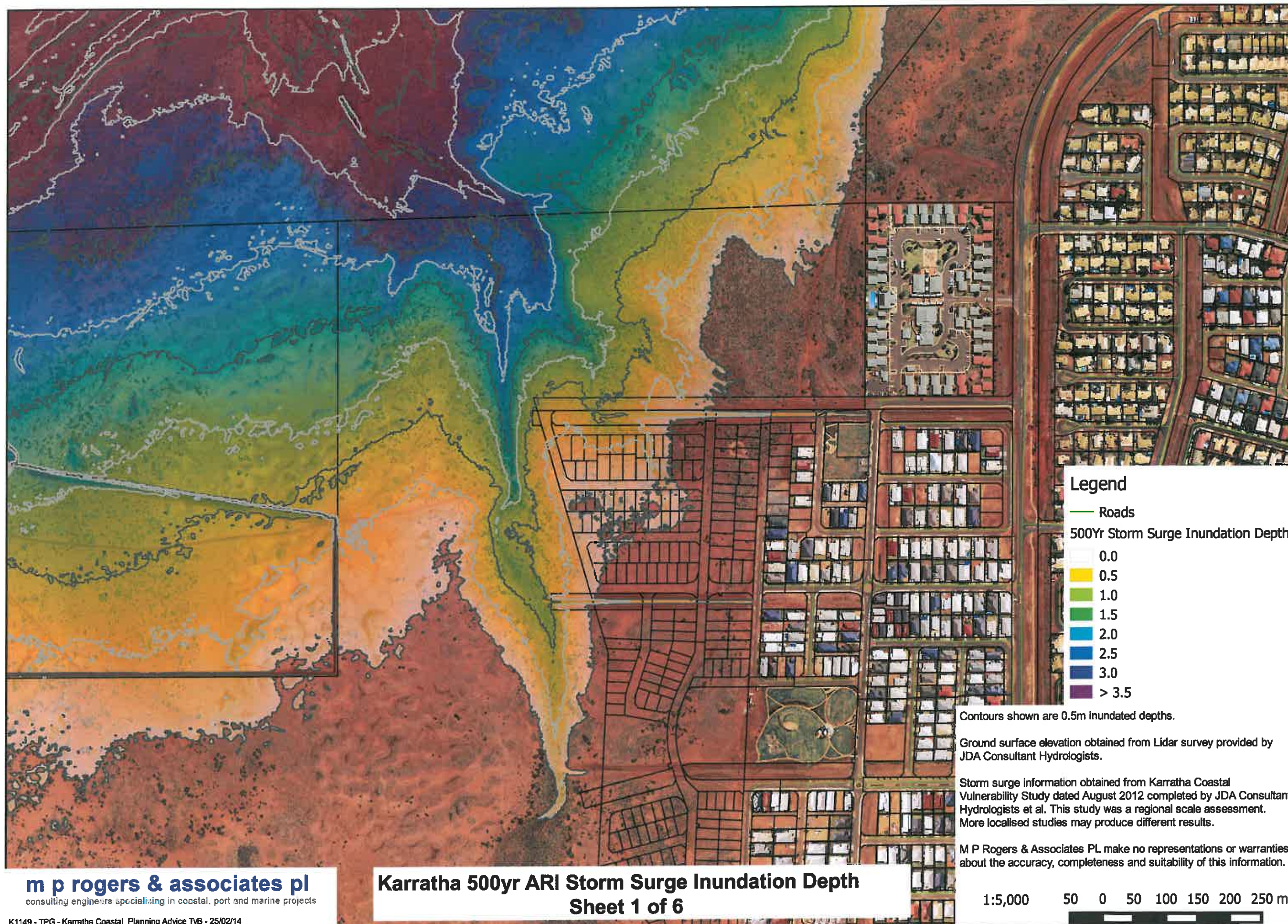
## APPENDIX A DEFINITIONS

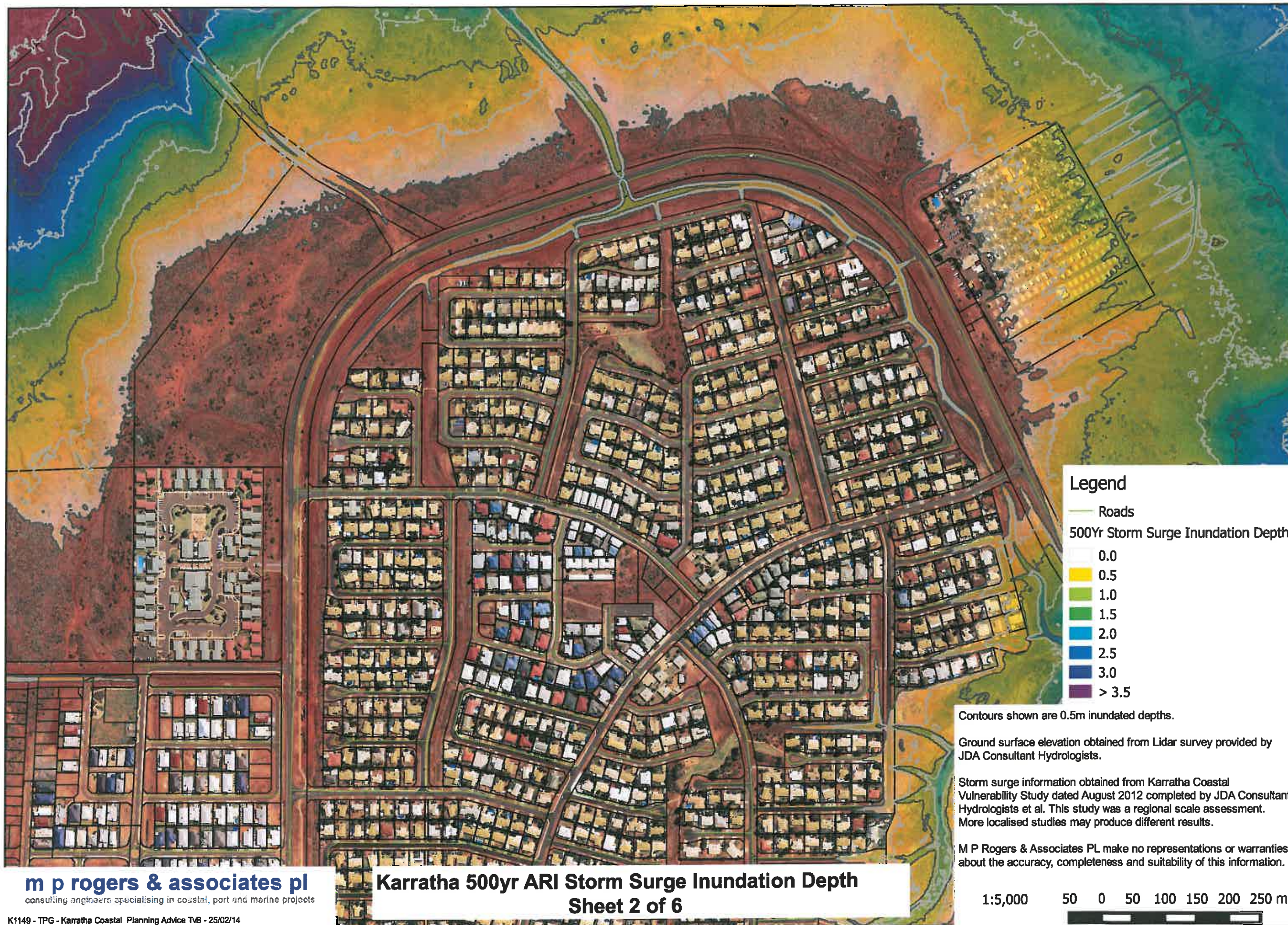
|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Average Recurrence Interval (ARI)</b> | Means a statistical measurement of the likelihood of an event (such as a flood, storm surge or river discharge) occurring, typically based on historic data denoting the average interval between events of a given magnitude over an extended period. and It is used for risk analysis, including determining whether a project should proceed in an area of given risk or the standard to which a structure should be designed.                                                                                                                                                                                                                  |
| <b>Habitable Room</b>                    | Has the same meaning as in the Residential Design Codes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Net Lettable Area</b>                 | Means the area of all floors within the internal finished surfaces of permanent walls, excluding: <ul style="list-style-type: none"><li>- Stairs, toilets, cleaners' cupboards, lift shafts motor rooms, escalators, team rooms, and plant rooms, and other service areas;</li><li>- Lobbies between lifts facing other lifts serving the same floor;</li><li>- Areas set aside as public space or thoroughfares and not for the exclusive use of occupiers of the floor or building; and</li><li>- Areas set aside for facilities or services to the floor or building not for the exclusive use of occupiers of the floor or building.</li></ul> |
| <b>Outbuilding</b>                       | Means an enclosed non-habitable structure that is detached from any dwelling, but not a garage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Risk Assessment</b>                   | Means the overall process or method for evaluating risks associated with a specific coastal hazard and including risk identification, analysis and evaluation, undertaken in accordance with the City's Risk Assessment Matrix contained in the City of Karratha Coastal Hazard Risk Management Adaptation Plan.                                                                                                                                                                                                                                                                                                                                   |
| <b>Storm Surge</b>                       | Means the increase in water level at the shoreline due to the forcing of winds (wind-setup) and atmospheric pressure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Temporary Structure</b>               | Means a non-habitable structure with an expected useful lifespan of less than 30 years or a non-habitable mobile structure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Vulnerable</b>                        | Means land identified in the mapping contained at Appendix B to this policy as being exposed to the risk of a 500-year ARI storm surge event.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## **APPENDIX B**

### **STORM SURGE RISK AREA MAPPING**









#### Legend

— Roads

500Yr Storm Surge Inundation Depth

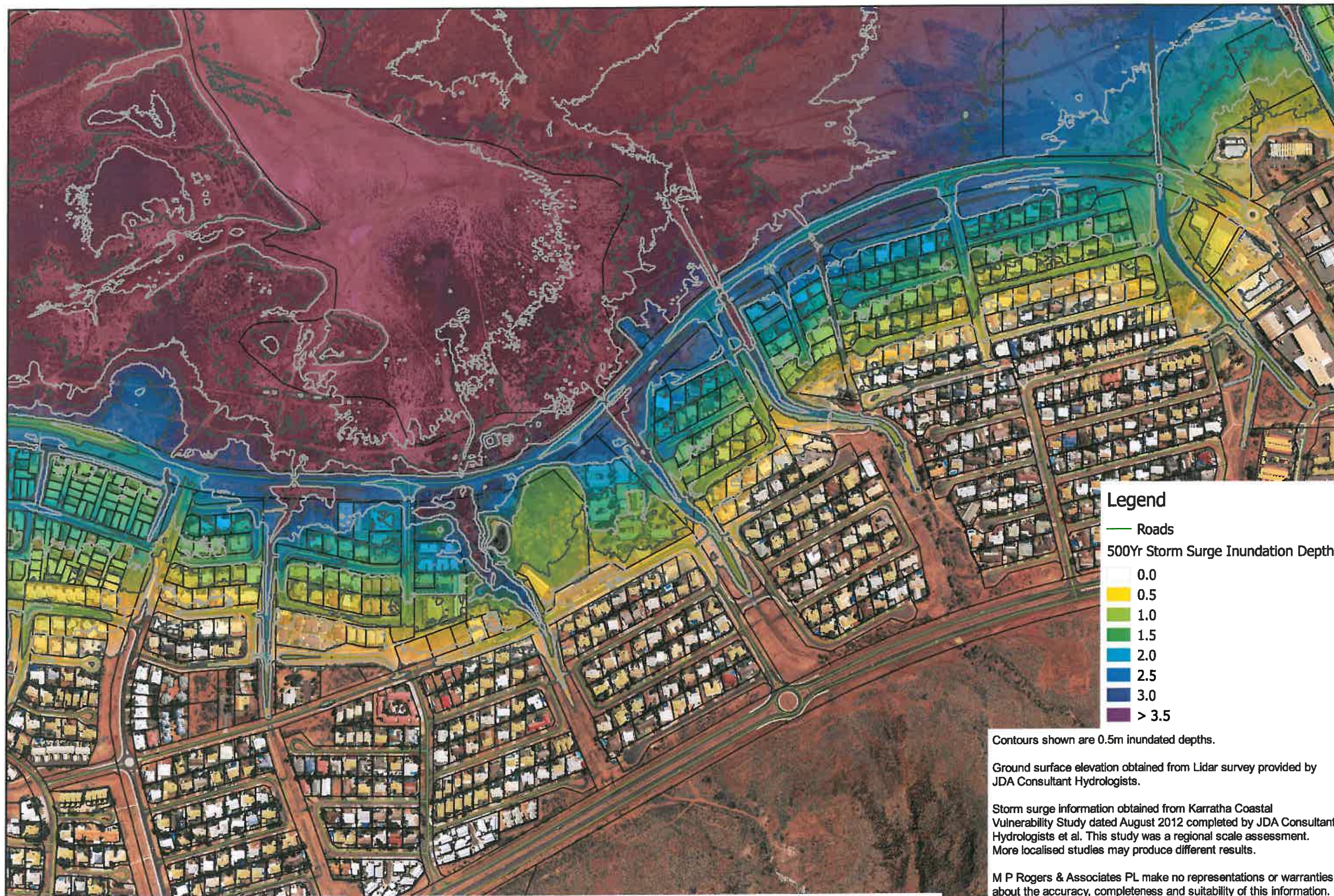
- 0.0
- 0.5
- 1.0
- 1.5
- 2.0
- 2.5
- 3.0
- > 3.5

Contours shown are 0.5m inundated depths.

Ground surface elevation obtained from Lidar survey provided by JDA Consultant Hydrologists.

Storm surge information obtained from Karratha Coastal Vulnerability Study dated August 2012 completed by JDA Consultant Hydrologists et al. This study was a regional scale assessment. More localised studies may produce different results.

M P Rogers & Associates PL make no representations or warranties about the accuracy, completeness and suitability of this information.



# Legend

— Roads

500Yr Storm Surge Inundation Depth

0.0

0.5

1.0

1.5

2.0

2.5

3.0

> 3.5

Contours shown are 0.5m inundated depths.

Ground surface elevation obtained from Lidar survey provided by JDA Consultant Hydrologists.

Storm surge information obtained from Karratha Coastal Vulnerability Study dated August 2012 completed by JDA Consultant Hydrologists et al. This study was a regional scale assessment. More localised studies may produce different results.

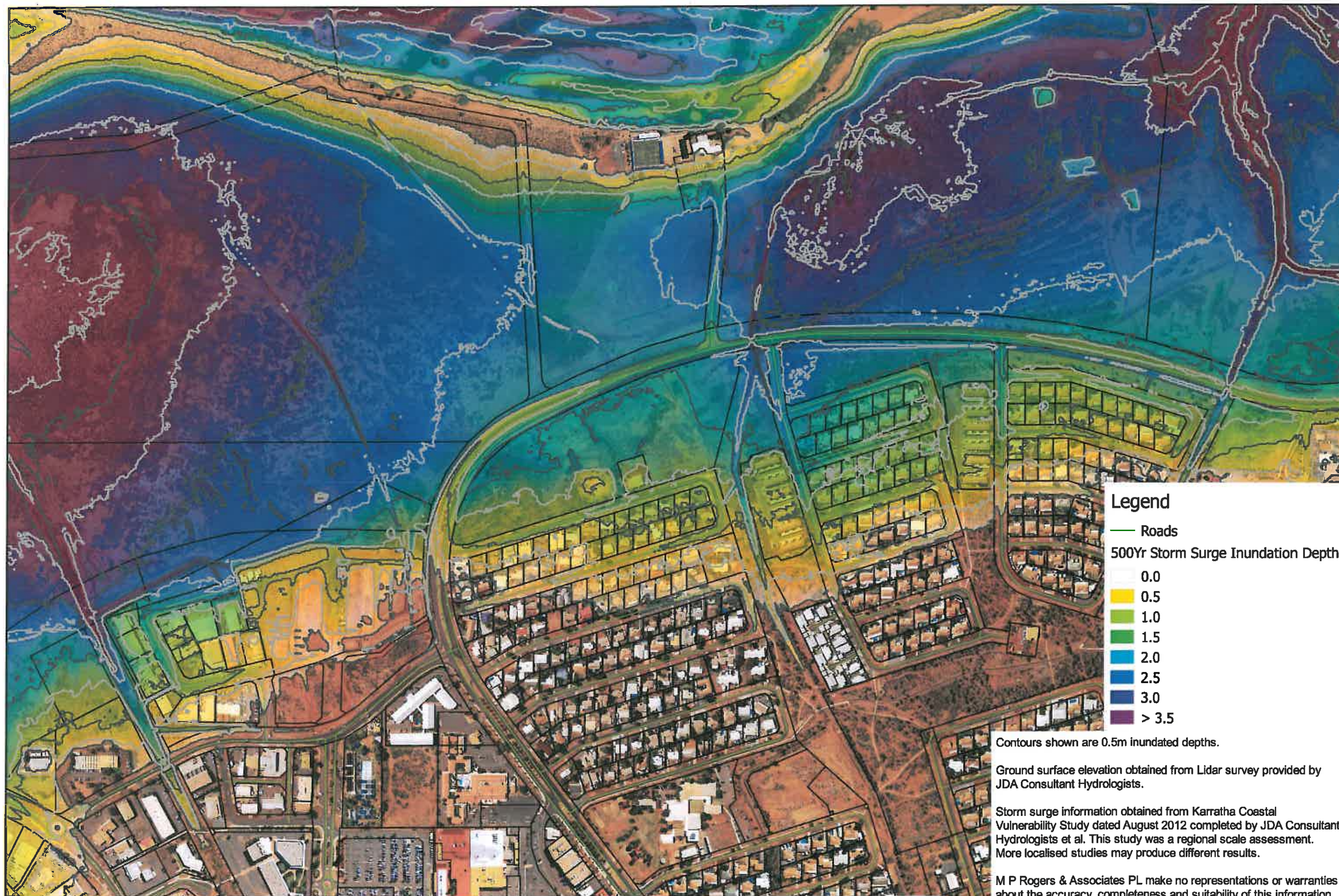
M P Rogers & Associates PL make no representations or warranties about the accuracy, completeness and suitability of this information.

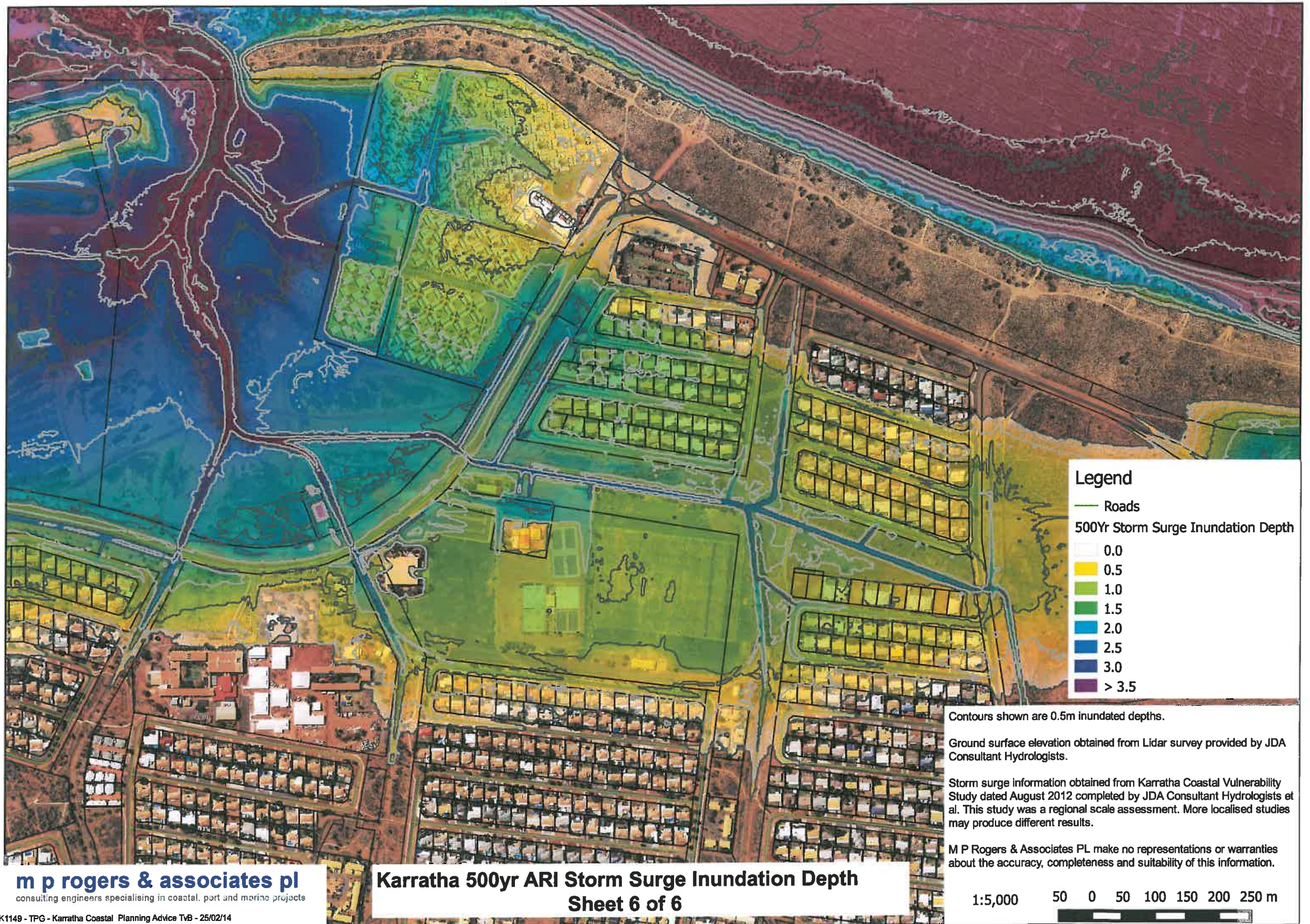
**m p rogers & associates pl**

consulting engineers specialising in coastal, port and marine projects

**Karratha 500yr ARI Storm Surge Inundation Depth**  
**Sheet 4 of 6**

1:5,000 50 0 50 100 150 200 250 m







Data Source: GEMSURGE Modelling 2011

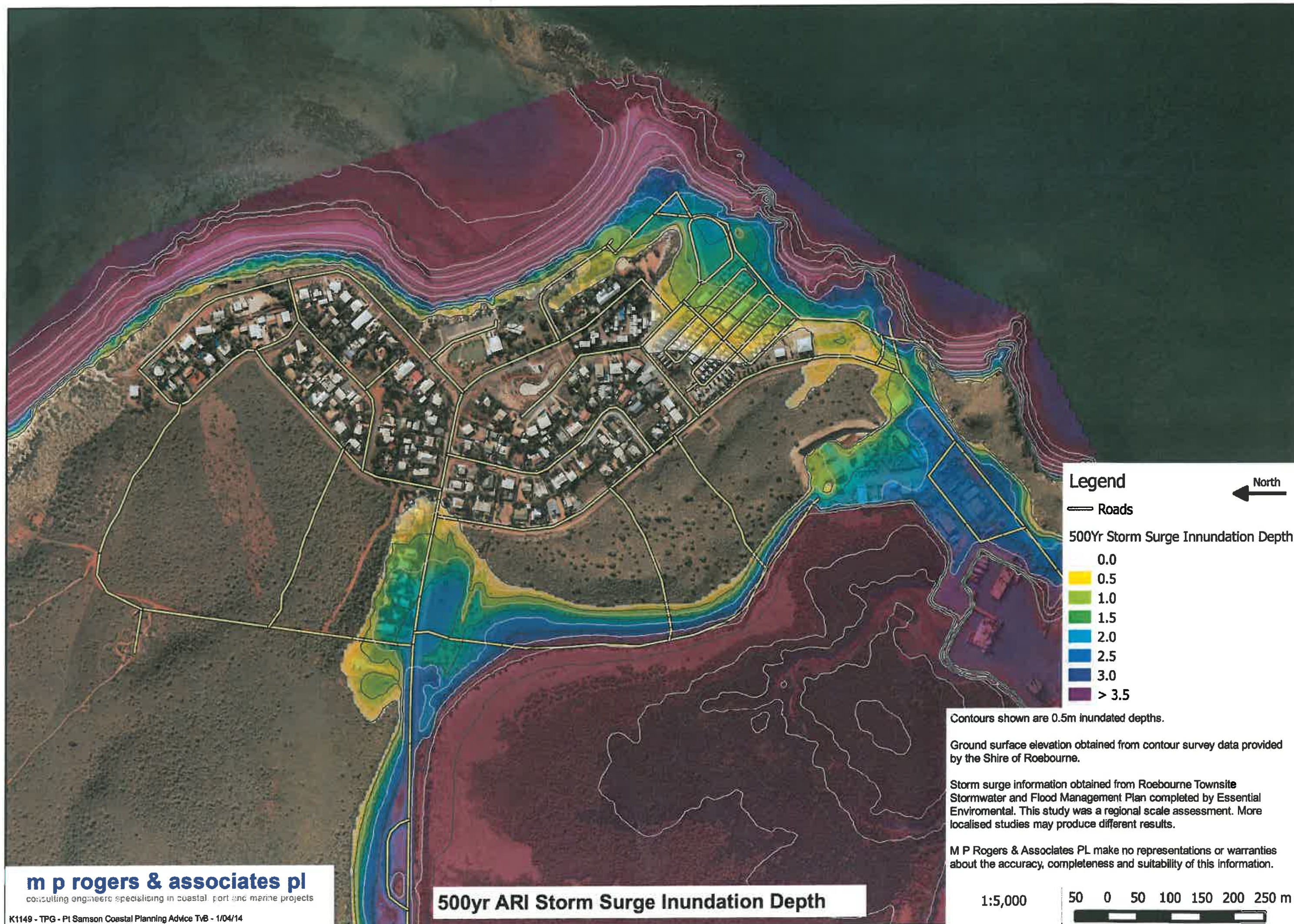


Job No. J4812  
Scale: 1:40,000

0 0.5 1 1.5 2 Kilometers

© COPYRIGHT GEMS PTY. LTD. 2011

LandCorp  
Dampier Coastal Vulnerability Study Report III: Storm Surge  
**Figure 22: 500yr ARI Coastal Inundation - 2110 Climate Scenario**



### Legend

— Roads

500Yr Storm Surge Inundation Depth

0.0  
0.5  
1.0  
1.5  
2.0  
2.5  
3.0  
> 3.5

North  
←

Contours shown are 0.5m inundated depths.

Ground surface elevation obtained from contour survey data provided by the Shire of Roebourne.

Storm surge information obtained from Roebourne Townsite Stormwater and Flood Management Plan completed by Essential Environmental. This study was a regional scale assessment. More localised studies may produce different results.

M P Rogers & Associates PL make no representations or warranties about the accuracy, completeness and suitability of this information.

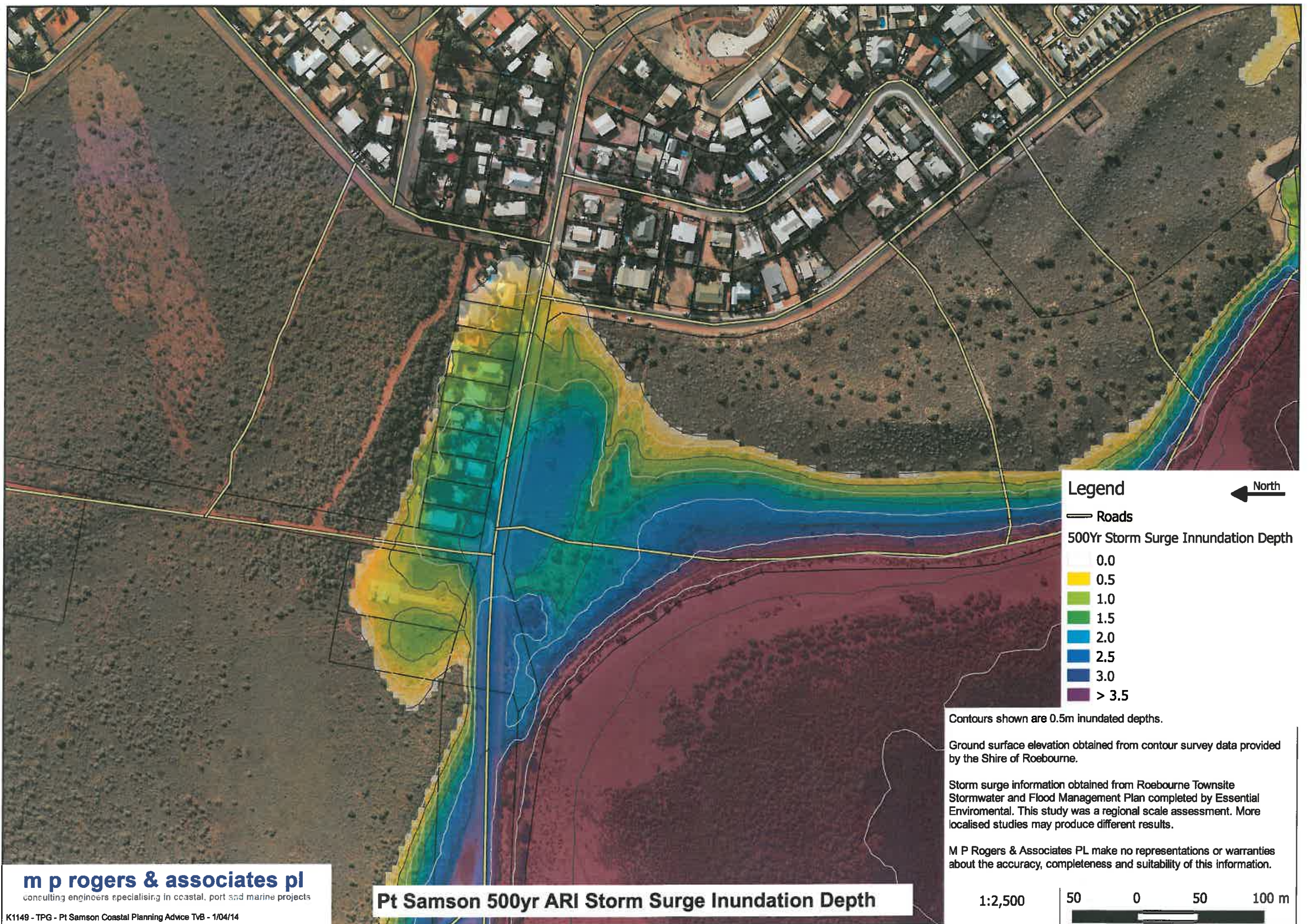
**m p rogers & associates pl**  
consulting engineers specialising in coastal, port and marine projects

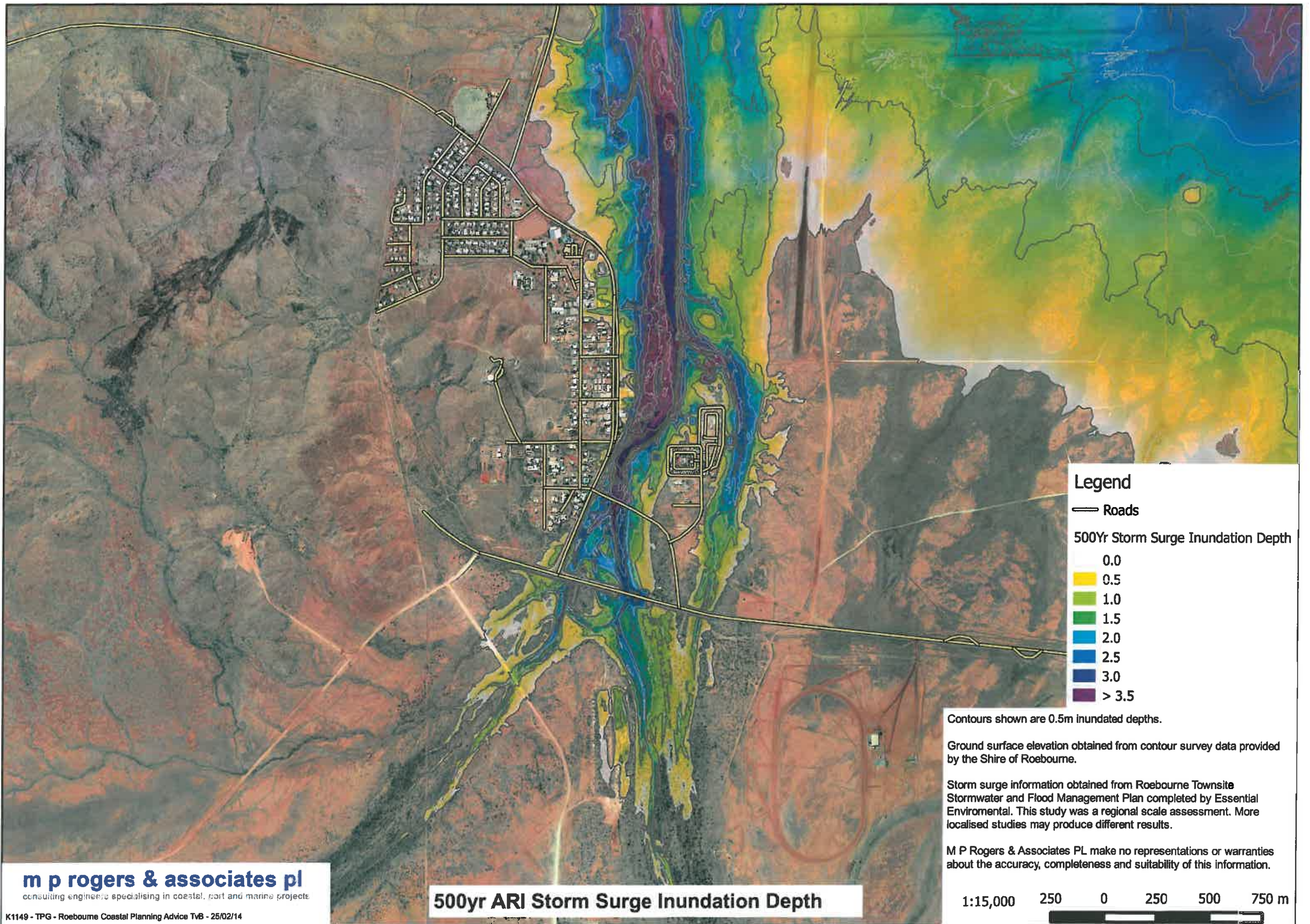
K1149 - TPG - Pt Samson Coastal Planning Advice TvB - 1/04/14

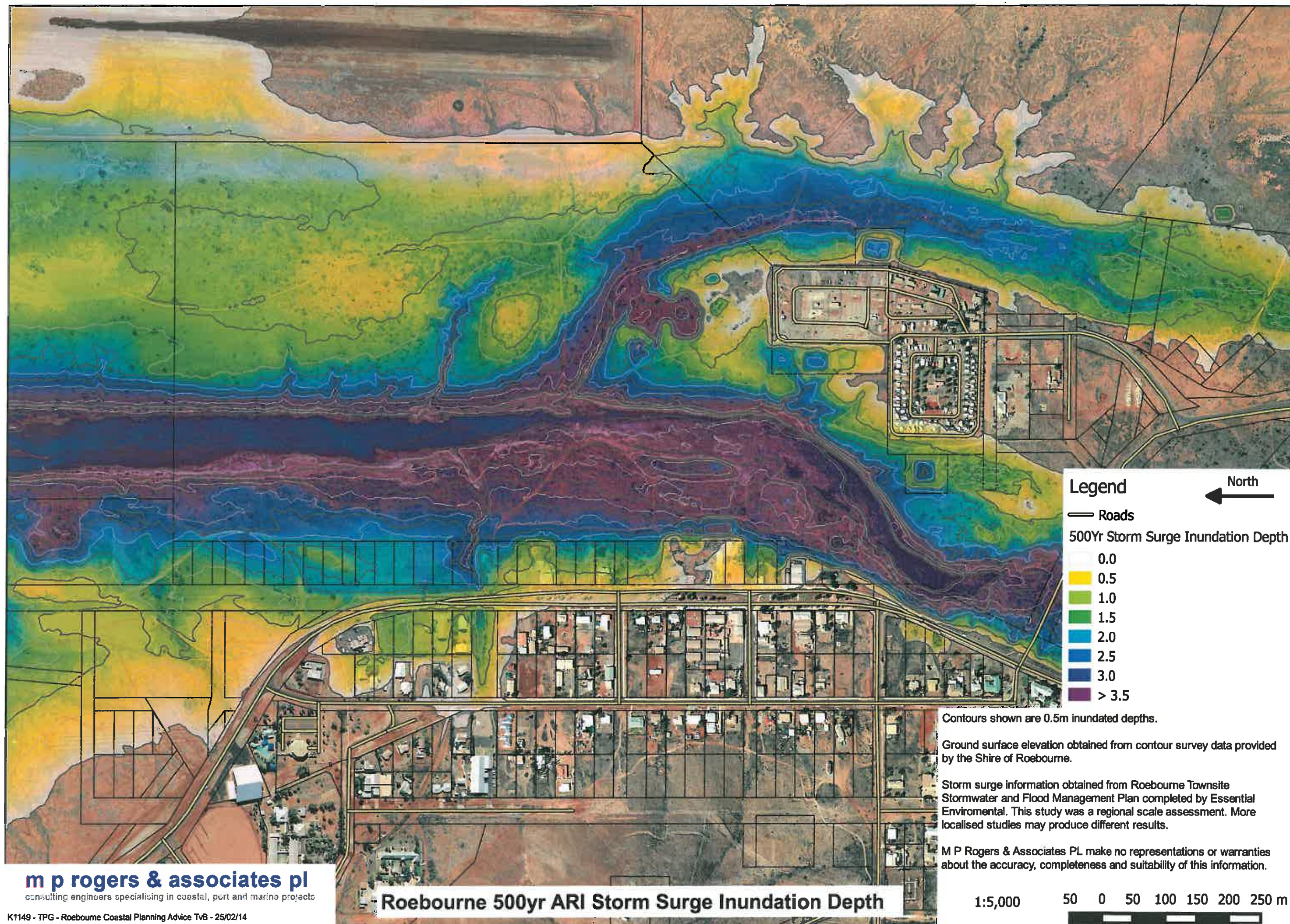
**500yr ARI Storm Surge Inundation Depth**

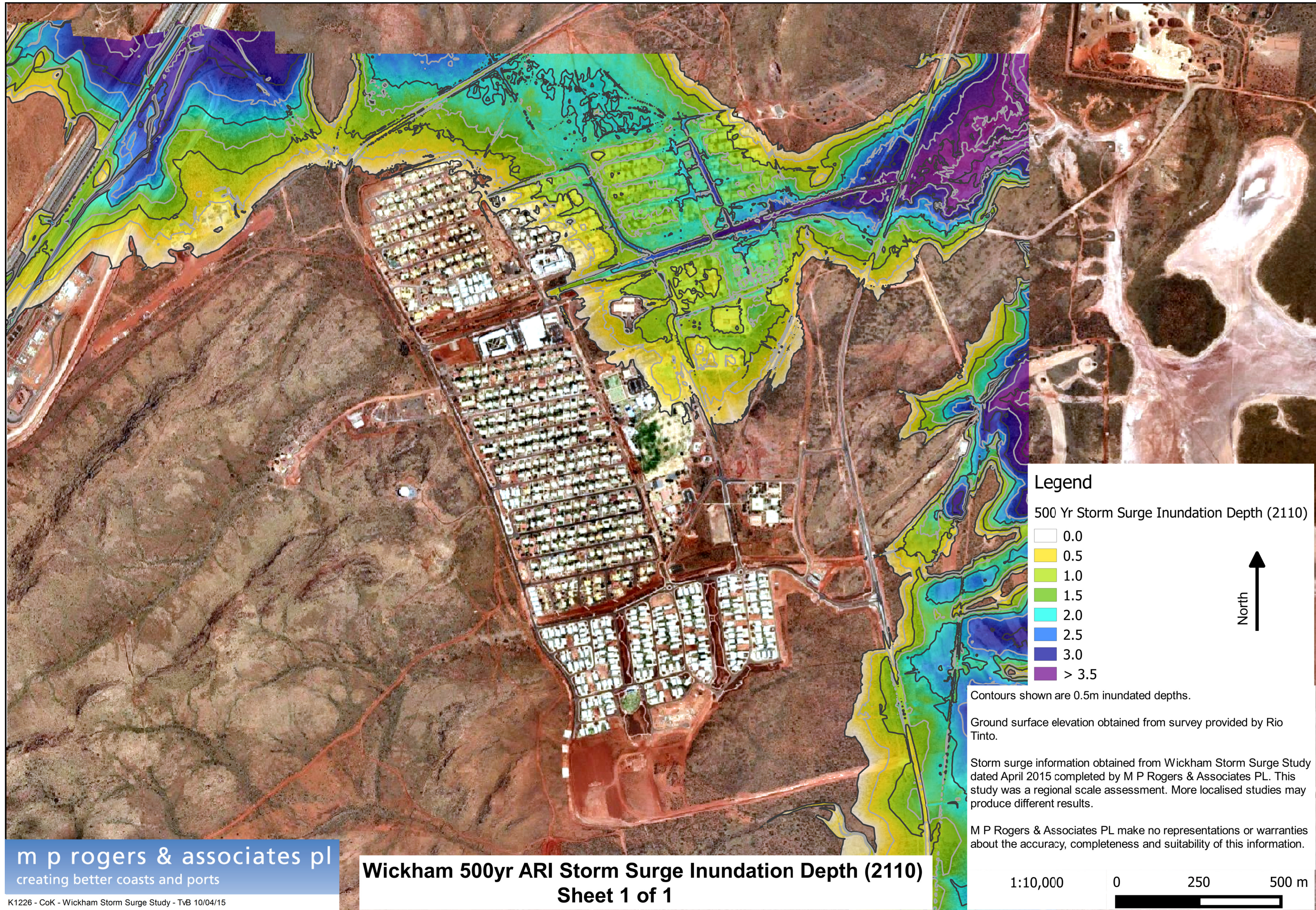
1:5,000

50 0 50 100 150 200 250 m









## APPENDIX C

### RISK ASSESSMENT MATRIX

| Risk Category                                           | Risk Description                                                                                                                                                                                 | Applicable?              | 500-Year ARI Storm Surge |            |               | Treatment Options                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------------------|------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                         |                                                                                                                                                                                                  |                          | Consequence              | Likelihood | Level of Risk |                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Public Safety:</b><br>Emergency Response             | Storm surge flooding comprises emergency response and recovery capacity, resulting in harm to the public.                                                                                        | <input type="checkbox"/> |                          | 1          |               | <p>Maintain and continually improve evacuation plans.</p> <p>Encourage development above the 500-year ARI storm surge level, wherever practicable.</p> <p>Apply construction standards suitable to withstand the forces of a 500-year ARI storm surge event.</p> <p>Implement suitable controls on electricity supply to prevent electrocution during a 500-year ARI event.</p> |
| <b>Public Safety:</b><br>Access and Egress              | Storm surge flooding restricts access to, and egress from, residential lots resulting in harm to the public.                                                                                     | <input type="checkbox"/> |                          | 1          |               | <p>Maintain and continually improve evacuation plans.</p> <p>Encourage development above the 500-year ARI storm surge level, wherever practicable</p> <p>Apply construction standards suitable to withstand the forces of a 500-year ARI storm surge event,</p> <p>Implement Suitable controls on electricity supply to prevent electrocution during a 500-year ARI event.</p>  |
| <b>Private Property:</b><br>Residential                 | Storm surge flooding causes damage to residential property.                                                                                                                                      | <input type="checkbox"/> |                          | 1          |               | <p>Encourage development above the 500-year ARI storm surge level, wherever practicable.</p> <p>Apply construction standards suitable to withstand the forces of a 500-year ARI storm surge event.</p>                                                                                                                                                                          |
| <b>Private Property:</b><br>Commercial                  | Storm surge and stormwater flooding damages commercial property, including accommodation, retail, service stations and industrial premises, and may result in the uncontrolled release of waste. | <input type="checkbox"/> |                          | 1          |               | <p>Encourage development above the 500-year ARI storm surge level, wherever practicable.</p> <p>Apply construction standards suitable to withstand the forces of a 500-year ARI storm surge event.</p>                                                                                                                                                                          |
| <b>Private Property:</b><br>Landscaping / Streetscaping | The proposed development may be affected by the modelled storm surge event, with consequential impacts on City-maintained landscaping and streetscaping adjacent to the site.                    | <input type="checkbox"/> |                          | 1          |               | <p>Consider the potential loss of landscaping to storm surge when planning landscaping in storm surge affected area.</p>                                                                                                                                                                                                                                                        |

## Local Planning Policy 19

### Storm Surge Risk Policy

|                                                                      |                                                                                                                                   |                                     |  |   |                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Public Infrastructure:</b><br>Roads and Transport                 | Storm surge flooding impacts road and transport infrastructure adjacent to, or proposed as part of, the development.              | <input type="checkbox"/>            |  | 1 | Identify alternative emergency access arrangements for properties within the 500-year ARI storm surge affected area.<br><br>Formalise interim access arrangements as soon as practicable where roads have been damaged.<br><br>Install protective measures, where necessary, to safeguard roads and other infrastructure at risk from coastal processes. |
| <b>Public Infrastructure:</b><br>Drainage                            | Storm surge flooding may impact the capability and/or capacity of drainage infrastructure proposed as part of the development.    | <input type="checkbox"/>            |  | 1 | Ensure drains are regularly inspected and cleaned.<br><br>Identify elements of drainage network requiring improvement.<br><br>Schedule upgrades to the drainage infrastructure most critical to network performance.                                                                                                                                     |
| <b>Public Infrastructure:</b><br>Effluent Ponds / Tanks              | Storm surge flooding impacts recycled effluent irrigation ponds and tanks.                                                        | <input type="checkbox"/>            |  | 1 | Tanks constructed within the 500-year ARI storm surge affected area should be designed having regard to the potential of such an event, incorporating mitigation measures.                                                                                                                                                                               |
| <b>Public Infrastructure:</b><br>Emergency Management Infrastructure | Storm surge flooding impacts community emergency management infrastructure.                                                       | <input checked="" type="checkbox"/> |  | 1 | Ensure sufficient capacity of emergency management infrastructure and services to accommodate evacuated households.                                                                                                                                                                                                                                      |
| <b>Environmental:</b><br>Contamination from Development              | Flooding may result in contamination arising from the proposed development on-site (e.g. industrial storage, effluent treatment). | <input type="checkbox"/>            |  | 1 | Ensure identified environmental and contamination issues are addressed in development application, having regard to storm surge risk.                                                                                                                                                                                                                    |
| <b>Environmental:</b><br>Other Exposed Factors                       | The proposed development may expose other environmental factors to storm surge risk (e.g. asbestos, acid sulphate soils).         | <input type="checkbox"/>            |  | 1 | Ensure identified environmental and contamination issues are addressed in development application, having regard to storm surge risk.                                                                                                                                                                                                                    |
| <b>Community:</b><br>Heritage                                        | Storm surge flooding impacts locally registered heritage sites and other important heritage places on the property.               | <input type="checkbox"/>            |  | 1 | Have regard to infrastructure within the 500-year ARI storm surge affected area when planning development at local heritage sites.<br><br>Minimise financial losses arising from a 500-year ARI storm surge event.                                                                                                                                       |

#### TOTAL ASSESSED RISK

(Total score)

#### TOTAL ASSESSED RISK PER CATEGORY

(Being the highest rated risk in each of the relevant categories)

#### Public Safety

#### Private Property

#### Public Infrastructure

#### Environmental

#### Community

This policy takes effect from the date of approval by Council for a period of 5 years.  
It is subject to change and uncontrolled when printed.

## Local Planning Policy 19

### Storm Surge Risk Policy

| Instructions for Completing Risk Assessment Matrix                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Measures of Financial Consequences |                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------------------|---------------------------|
| <ul style="list-style-type: none"><li>Select the risk row(s) applicable to the proposal.</li><li>Assign a consequence rating of 1 – 5, where 1 is Insignificant and 5 is Catastrophic.</li><li>The likelihood rating is at 1 (Low) reflecting the low probability of a 1 in 500-year ARI storm surge event.</li><li>Level of risk = Consequence x Likelihood.</li><li>Where an application involves more than one risk category, the higher risk consequence rating applies.</li></ul> |  | 1. INSIGNIFICANT                   | Less than \$10,000        |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | 2. MINOR                           | \$10,000 - \$100,000      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | 3. MODERATE                        | \$100,000 - \$2,000,000   |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | 4. MAJOR                           | \$2,000,000 - \$5,000,000 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |  | 5. CATASTROPHIC                    | More than \$5,000,000     |

## APPENDIX D

### APPLICANT STORM SURGE RISK CHECKLIST

| Q  | Risk Assessment Question                                                                                                                                                                                   | Check                    |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| 1. | Does the development propose a habitable room or net lettable floor area with a finished floor level below the identified 500-year event storm surge event level?                                          | <input type="checkbox"/> |
| 2. | To what depth would the finished floor level of this room/development be below the 500-year ARI storm surge event level?                                                                                   |                          |
|    | ▪ Between 0m and 250mm?                                                                                                                                                                                    | <input type="checkbox"/> |
|    | ▪ Between 250mm and 500mm?                                                                                                                                                                                 | <input type="checkbox"/> |
|    | ▪ Between 500mm and 1 metre?                                                                                                                                                                               | <input type="checkbox"/> |
|    | ▪ Greater than 1 metre?                                                                                                                                                                                    | <input type="checkbox"/> |
| 3. | Following the completion of the City's Risk Assessment Matrix, the Applicant has assessed the risk to the proposed development as:                                                                         |                          |
|    | ▪ Insignificant to Minor                                                                                                                                                                                   | <input type="checkbox"/> |
|    | ▪ Moderate                                                                                                                                                                                                 | <input type="checkbox"/> |
|    | ▪ Major to Catastrophic                                                                                                                                                                                    | <input type="checkbox"/> |
| 4. | Is the landowner/applicant prepared to accept the level of risk of damage to the proposed development in the event of a 500-year ARI storm surge event?                                                    | <input type="checkbox"/> |
| 5. | Is the landowner/applicant prepared to place a Section 70A notification on title, notifying prospective purchasers of the risk of damage to the property in the event of a 500-year ARI storm surge event? | <input type="checkbox"/> |
| 6. | What mitigation measures, if any, are proposed to address the risk of storm surge?                                                                                                                         |                          |
|    | ▪ The development has been located on the least hazardous portion of the site.                                                                                                                             | <input type="checkbox"/> |
|    | ▪ A storm surge protection wall/barrier is proposed to protect the development from storm surge.                                                                                                           | <input type="checkbox"/> |
|    | ▪ An emergency evacuation plan has been prepared by a suitably qualified consultant.                                                                                                                       | <input type="checkbox"/> |
|    | ▪ The proposed development is deemed to be a low-value (cost) asset.                                                                                                                                       | <input type="checkbox"/> |
|    | ▪ Structures below the identified storm surge flood level are constructed of flood-resistant materials and designed to withstand water forces, as determined by a suitably qualified structural engineer.  | <input type="checkbox"/> |
|    | ▪ The proposal involves a temporary or relocatable structure that could be readily repaired or reinstated at low-cost following the impacts of the identified 500-year ARI storm surge event.              | <input type="checkbox"/> |
| 7. | Other.<br>(Please specify)                                                                                                                                                                                 |                          |

\_\_\_\_\_  
Landowner Signature

\_\_\_\_\_  
Dated

\_\_\_\_\_  
Applicant Signature

\_\_\_\_\_  
Dated