

TOWN PLANNING SCHEME NO.8 LOCAL PLANNING POLICY DP19 STORM SURGE RISK POLICY

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1. OBJECTIVE

The objectives of this Policy are to:

- 1) **Establish** procedures for the assessment of development applications that relate to land that has been identified as being vulnerable to a 500 year ARI Storm Surge event;
- 2) **Clarify** the circumstances in which 500 year ARI Storm Surge information is required;
- 3) **Guide** applicants in relation to the Storm Surge information required to support development applications depending on the situation of the site and the management measures proposed;
- 4) **Provide** development standards, assessment procedures and decision guidelines for development proposals on land identified as being vulnerable to a 500 year ARI Storm Surge event;
- 5) **Ensure** adequate provision is made for the management of risk for all land identified as being vulnerable to a 500 year ARI Storm Surge event.

2. PRINCIPLES

The purpose of this policy is to:

- 1) Provide guidance on the application of Town Planning Scheme No. 8 (TPS8) in relation to land identified as being vulnerable to a 500 year ARI storm surge event, where possible in the most current mapping maintained and administered by the City; and
- 2) Apply State Planning Policies 3.4 and 2.6 and associated policy guidelines in the assessment of planning applications relating to land identified as being vulnerable to a 500 year ARI storm surge event.

2.1 Scope of Policy

- 2.1.1 This Policy applies to land identified by mapping contained in Schedule 1 as being potentially vulnerable to a 500 year ARI event.
- 2.1.2 This policy also applies to all applications for development approval relating to land otherwise identified as being potentially vulnerable to storm surge.
- 2.1.3 The objectives of this policy will guide Council in its consideration of subdivision applications, Development Plans and Structure Plans. It is recognised, however, that these types of applications will be subject of separate assessment against the requirements of State Planning Policy 2.6 – State Coastal Planning Policy (SPP 2.6).
- 2.1.4 Council has discretion to waive the requirement for an applicant to provide supporting information as required by this Policy where it deems the nature of the proposed development is of a scale and/or nature that does not warrant the provision of such information (for example in the case of an outbuilding, temporary structure or renovation or repair to an existing building where the risk to human life and property is deemed to be 'Insignificant' or 'Minor' after completing the risk assessment matrix contained at Schedule 2 of this policy).

- 2.1.5 While the City of Karratha has taken all possible care in providing founding information, undertaking coastal hazard risk management and adaptation planning and establishing this policy as a guide to current best practice in storm surge risk planning and management, the City will not accept liability for any damage to property or loss of life as a result of storm surge where the subject development has been granted planning approval. The landowner/applicant is responsible for accepting the risk associated with the proposed development or land use.
- 2.1.6 It must be noted that this policy seeks to achieve an acceptable level of risk in relation to the 500 year ARI storm surge event in accordance with State policy requirements. There remains the possibility of an occurrence of a more extreme storm surge event. Consideration of such an event is, however, outside the requirements of State Policy and accordingly has not been factored into policy requirements under this policy.

2.2 Preparation of Planning Applications – The Role of the Development Services Department

Prior to engaging a consultant, or preparing an application on behalf of a client, it is recommended that you first confirm with Development Services what City approvals are required and obtain all relevant information.

Whilst Development Services is not in a position to prepare applications, including those for planning approval, building permits, private certification, applications for the registration of a lodging house or applications to construct or install an apparatus for the treatment of sewerage, it is often beneficial to seek feedback when preliminary plans have been prepared to ensure all relevant information is submitted and that fundamental or mandatory requirements have been met.

Applications for which further information is required will take longer to process. Development Services can be contacted on 9186 8580.

2.3 What requires assessment under this Policy?

- 2.3.1 This policy applies to all land identified as being vulnerable to a 500 year storm surge event as identified by the mapping contained within Schedule 1 of this policy.
- 2.3.2 Where mapping does not cover land that could be vulnerable to storm surge (i.e. Wickham), the development application is to be referred to the Department of Water (or relevant department) to determine whether the subject site is likely to be vulnerable to a 500 year storm surge event and therefore the requirements of this policy.

2.4 Storm Surge Mapping

This policy seeks to provide the best available and most up-to-date mapping and information to inform decision making relating to development and subdivision of land vulnerable to a 500 year ARI storm surge event.

Mapping of the 500 year ARI storm surge event has been undertaken by the City for areas that are subject to significant development pressure, such as the Karratha townsite. This mapping forms a part of this policy and will be maintained and updated by the City as more accurate information becomes available.

The City will rely on the most accurate and up-to-date information and technical advice available for other localities in order to determine whether land is likely to be vulnerable to a 500 year ARI storm surge event. Mapping will be updated and improved as new data is made available.

The maps available form the basis for determining the extent of land vulnerable to a 500 year ARI storm surge event. These maps therefore guide this policy in terms of its application.

2.5 Relationship of Stormwater Overland Flooding to Storm Surge

- 2.5.1 The impact of stormwater events on land the subject of a planning application will be assessed and managed separately to the impact of a 500 year ARI storm surge event, which is the subject of this policy.

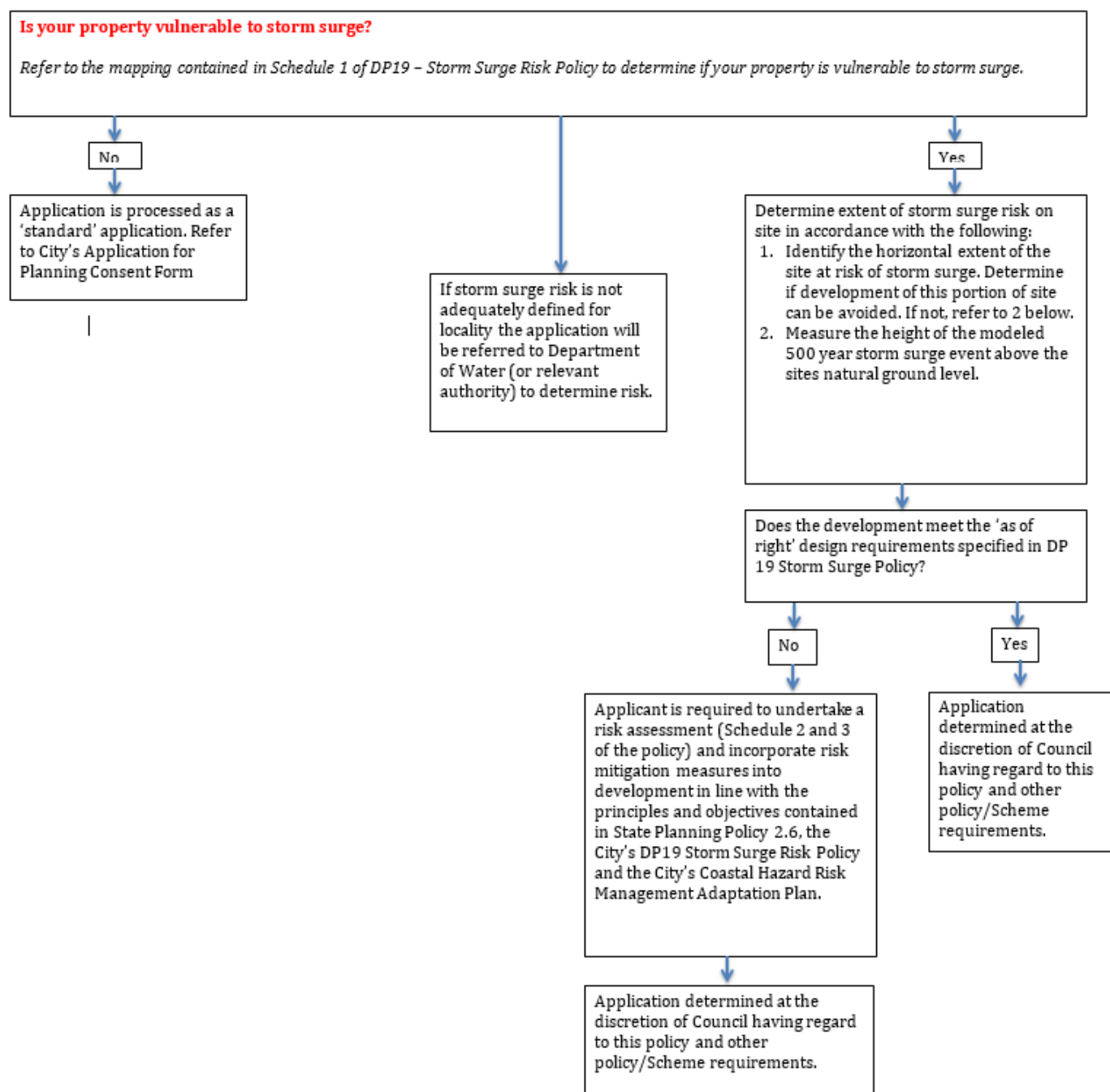
- 2.5.2 An applicant should liaise with the Department of Water to determine the impact of overland flooding on the subject property and to identify appropriate finished floor levels and/or drainage requirements prior to lodging an application for development approval with the City. The Department of Water's written advice should be included as part of the application for development approval.
- 2.5.3 Where the applicant has not consulted with the Department of Water prior to lodging an application for development approval, the City will refer planning applications to the Department of Water for comment where deemed necessary to determine the potential impact of a 100 year ARI stormwater event. The City will refer to stormwater flood mapping, where available, to determine the need to refer planning applications to the Department of Water.

2.6 Application Procedure

The following outlines the procedure for lodging an application within land vulnerable to a 500 year storm surge event:

- 2.6.1 Prior to lodging an application for planning approval, applicants are to refer to storm surge mapping made available by the City to determine if their land would be vulnerable to a 500 year ARI storm surge event.
- 2.6.2 If mapping is not available for a particular locality, the applicant will be referred to the Department of Water (or Responsible Authority) to determine whether a 500 year ARI AHD height can be provided.
- 2.6.3 If advice on the 500 year ARI AHD height is not available for a particular locality, the applicant may be required to provide a storm surge report and mapping to identify the 500 year ARI AHD height for the particular property. The report would need to recommend an appropriate risk management and adaptation response to the modelled storm surge impacts.
- 2.6.2 If the site is not identified as being vulnerable to a 500 year ARI storm surge event, this policy does not apply and the application can be prepared and lodged as a standard planning application subject to typical information requirements and assessment process (refer to Town Planning Scheme No. 8 Application for Development Approval).
- 2.6.3 If the site (or portion of the site) is identified as being vulnerable to a 500 year ARI storm surge event, then the application must either address the 'as of right' criteria contained in Section 5.2 below, or address the performance based criteria contained in Section 5.3 below.
- 2.6.4 Refer to decision tree flow chart (Figure 1) for further guidance.

FIGURE 1 – STORM SURGE APPLICATION ASSESSMENT PROCESS



2.7 Assessment Criteria

When considering applications for planning approval, the City shall have regard to:

- The precinct objective statements for the subject area.
- Any relevant provisions contained in the Scheme.
- The level and nature of adjoining developments to assess the compatibility of the use.
- Any relevant local planning policy.

3. DEFINITIONS AND INTERPRETATION OF THIS POLICY

The following provides definitions for the terminology used within this policy:

‘Average Recurrence Interval’ (or ARI) is:

“A return period also known as a recurrence interval is an estimate of the likelihood of an event, such as an earthquake, flood or a river discharge flow to occur. It is a statistical measurement typically based on historic data denoting the average recurrence interval over an extended period of time, and is usually used for risk analysis (e.g. to decide whether a project should be allowed to go forward in a zone of a certain risk, or to design structures to withstand an event with a certain return period. The following analysis assumes that the probability of the event occurring does not vary over time and is independent of past events.”

‘Habitable Room’:

“Has the same meaning as defined in the Residential Design Codes.”

‘Net Lettable Area’:

“The area of all floors in the internal finished surfaces of permanent walls but excluding:

- All stairs, toilets, cleaners cupboards, lift shafts and motor rooms, escalators, team rooms, and plant rooms, and other service areas;*
- Lobbies between lifts facing other lifts serving the same floor;*
- Areas set aside as public space or thoroughfares and not for the exclusive use of occupiers of the floor or building; and*
- Areas set aside for the provision of facilities or services to the floor or building where such facilities are not for the exclusive use of occupiers of the floor or building.”*

‘Outbuilding’:

“An enclosed non-habitable structure that is detached from any dwelling, but not a garage.”

‘Risk Assessment’:

“means the overall process or method for evaluating risks associated with a specific coastal hazard and includes risk identification, risk analysis and risk evaluation undertaken in accordance with the City’s Risk Assessment Matrix contained in the City of Karratha Coastal Hazard Risk Management Adaptation Plan.”

‘Storm Surge’:

“means the increase in water level at the shoreline due to the forcing of winds (wind-setup) and atmospheric pressure.”

‘Temporary Structure’:

“means a non habitable structure with an expected useful lifespan of less than 30 years or a non-habitable mobile structure’.

‘Vulnerable’:

“refers to land that has been identified in the mapping contained in Schedule 1 to this Policy as being exposed to the risk of a 500 year ARI storm surge event.”

4. CONSEQUENCES

4.1 Applicant or Landowner to accept risk or consequence to storm surge

The landowner and/or applicant is responsible for accepting the risk or consequence as a result of any impact of a storm surge event on the proposed development and/or land use.

5. POLICY PROVISIONS

5.1 'As of Right' Mitigation Measures

5.1.1 If the site (or portion of the site) is identified as being vulnerable to a 500 year ARI storm surge event, then the applicant may incorporate the following 'as of right' design responses within their application for planning approval which are considered to sufficiently address the level of risk associated with storm surge:

- (a) elevating finished floor levels of habitable rooms and net lettable area above the 500 year ARI storm surge event level, in accordance with the following table:

| Height of Storm Surge above Natural Ground Level of Subject Property | 'As of Right' Design Response |
|--|---|
| 0 – 500mm | <ul style="list-style-type: none"> Raise height of the finished floor level for all habitable rooms (dwellings) or net lettable area for a commercial/community building above the identified storm surge level through either: <ul style="list-style-type: none"> Filling of the land; or Structural / building design response (i.e. Elevated 'Queenslander' style housing); or A combination of fill/retaining and stilt construction. |
| 500mm – 1 metre | <ul style="list-style-type: none"> Raise height of the finished floor level for all habitable rooms (dwellings) or net lettable area for a commercial/community building to the height of the identified storm surge level through either: <ul style="list-style-type: none"> Filling of the land*; or Structural / building design response (i.e. Elevated 'Queenslander' style housing); or A combination of fill/retaining (to a maximum of 0.5m) and stilt construction. <p>* Filling of the site between 500mm and 1 metre above natural ground level may be considered on a case-by-case basis however the onus will be on the applicant to demonstrate that this approach will not have a detrimental impact on the amenity of adjoining properties and that the application complies with other relevant policy considerations (i.e. height of retaining wall at boundary, building height and privacy setbacks that comply with the Residential Design Codes and relevant local planning policies).</p> |
| 1m – 2m + | <ul style="list-style-type: none"> Raise height of the finished floor level for all habitable rooms (dwellings) or net lettable area for a commercial/community building above the identified storm surge level through a structural / building design response (i.e. Elevated 'Queenslander' style housing); or A combination of fill/retaining (to a maximum of 0.5m) and stilt construction. |

- (b) or by locating the development on a portion of the site that would not be vulnerable to a 500 year ARI storm surge event.

- (c) Where filling is proposed, suitable retaining is required to prevent erosion and undermining of the substrate and foundations beneath the dwelling.

5.2 Performance Based Approach

- 5.2.1 Should an applicant choose not to incorporate the ‘as of right’ design responses outlined in Section 5.1 above, the applicant will be required to complete the risk assessment matrix contained at Schedule 2 of this Policy in order to define the level of risk relating to the proposal and determine appropriate mitigation measures to ensure an acceptable level of risk is achieved.
- 5.2.2 Once the risk assessment matrix has been completed, the applicant and landowner will then be required to complete, sign and attach the Applicant’s Risk Checklist contained at Schedule 3 to this policy. This is to ensure that the landowner/applicant acknowledges and accepts the level of risk in relation to the proposed development or land use and takes responsibility for appropriately mitigating that risk.
- 5.2.3 Based on the assessment undertaken by the applicant in clauses 5.2.1 and 5.2.2 above, the City will assess whether the level of risk and the proposed mitigation measures represent an acceptable approach for the proposed development, based on the following principles:
- (i) the level of risk in the categories of ‘Public Safety’, ‘Public Infrastructure’, ‘Environmental’ and ‘Community’. If the level of risk in either of these categories has been assessed as being moderate or higher, then the City will have the discretion to refuse the development; and/or
 - (ii) the level of risk in the ‘private property’ category. If the landowner and/or applicant is willing to accept the level of risk, then the City may apply its discretion to approve the development. If the level of risk has been assessed as being higher than moderate, then the City will have the discretion to refuse the development; and/or
 - (iii) the type of mitigation measures proposed and whether these achieve an acceptable level of risk; and/or
 - (iv) whether the applicant has agreed to accept a section 70A notification being placed on the title to notify prospective purchasers of the risk. If the applicant has agreed to accept this condition, then the City will have the discretion to approve the development.

5.3 Mitigation Measures

- 5.3.1 Where a site is either fully or partially identified as being within the 500 year ARI Storm Surge event area, the City may consider imposing a range of mitigating measures, as follows:
- (a) locating the development on the least hazardous portion of the site;
 - (b) a storm surge protection wall or barrier to the satisfaction of relevant authorities;
 - (c) a report prepared by a suitably qualified consultant which assesses the risk of storm surge to the subject property and which identifies appropriate mitigation response/s for the proposed development;
 - (d) Section 70A notifications on Title advising prospective purchasers that the land is identified as being vulnerable to storm surge inundation. This condition may be imposed on the development where the finished floor level of part of the habitable or net lettable area of the building is located below the modelled 500 year ARI Storm surge inundation contour or at the discretion of Council where the land is considered to be significantly at risk of storm surge inundation;

- (e) where an application proposes a public building, facility or other structure that may be perceived to be a public congregation space that is not intended to be used as an evacuation shelter, the City may impose a requirement for the applicant to place and maintain a sign on site visible from the public realm advising that the building may be vulnerable to flooding during a storm surge event and should not be used as an evacuation shelter during such an event;
- (f) an Emergency Evacuation Plan prepared by a suitably qualified consultant where the scale and/or nature of the development warrants such a response in the opinion of the City;
- (g) other measures as set out in relevant State Planning Policies and related guidelines; and/or
- (h) other measures as identified by a certified coastal/marine engineer and approved by relevant agencies.

The suitability of the above mitigating measures will be determined on a case-by-case basis by the City of Karratha in consultation with relevant agencies such as the Department of Water, Department of Transport, Department of Planning and any other relevant agency, as appropriate.

- 5.3.2 An applicant should be aware that while the 'As of Right' mitigation approaches outlined in section 5.1.1 of this policy permit non-habitable and non-lettable rooms or structures to be located below the identified 500 year ARI storm surge event level, the applicant should give consideration to locating such rooms and structures at or above the 500 year ARI storm surge event level if they want to minimise the risk to that room or structure from a major storm surge event.

5.4 Other Design Considerations

- 5.4.1 The City shall have regard to the following additional design considerations for buildings proposed on land identified as being vulnerable to 500 year ARI storm surge inundation:

- (a) Ensure footings are appropriately designed to prevent undermining by scour;
- (b) Ensure the building is designed to handle structural loads associated with storm surge flow, waves and debris impact;
- (c) Location of power point sockets and other electrical infrastructure above the modelled 500 year ARI storm surge level;
- (d) Location of effluent disposal vents and systems so that they would not be impacted by 500 year ARI storm surge inundation;
- (e) Ensure that all important services, including electricity, permanent fixtures and plumbing are elevated and / or protected from the impact of waves;
- (f) Not enclose the understory in order to minimize the potential loads on the structure associated with water flow or wave impact. If enclosure is required, then consideration should be given to providing retractable enclosures that can be closed in day to day use, but can be easily opened during a storm surge alert;
- (g) Use minimal profile bracing systems rather than shear walls for lower floor bracing. Lower floor columns and bracings should also be designed to resist potential wave action and the impact of debris, which could include vehicles, boats, caravans and the like. This should be considered in the design in addition to the required wind loads outlined within the relevant standards;
- (h) Ensure foundations and footings are adequate to withstand potential erosive action during coastal inundation;
- (i) Other design measures as considered appropriate by the City and/or on the advice of a referral agency.

5.5 Discretion to Approve/Refuse Applications

- 5.5.1 The City has the discretion to approve or refuse a planning application relating to land vulnerable to a 500 year ARI storm surge event pursuant to the requirements of this policy. Where applicants have not sufficiently demonstrated an appropriate response pursuant to the requirements of this policy, the City has the discretion to refuse the application or approve the application subject to such conditions considered necessary to bring the proposal into compliance with policy requirements.

6. REFERENCES TO RELATED DOCUMENTS

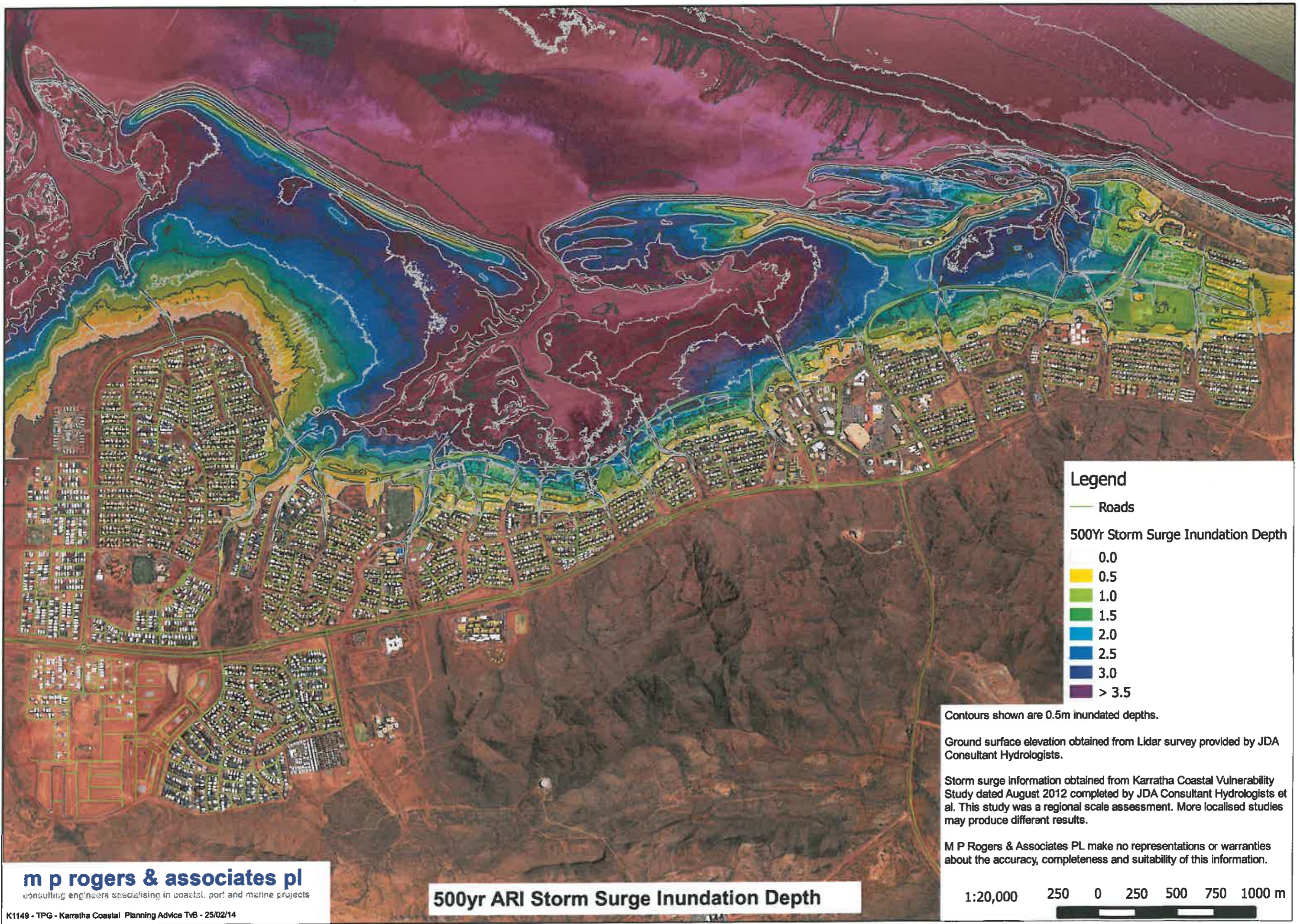
- Application for Planning Consent Form
- Development Services Fees and Charges Information Sheet BS-0005
- Town Planning Scheme No. 8
- *Residential Design Codes of Western Australia 2008*
- State Planning Policy 2.6 – State Coastal Planning Policy
- State Planning Policy 2.6 – State Coastal Planning Policy Guidelines
- State Planning Policy 3.4 – Natural Hazards and Disasters
- Karratha Coastal Vulnerability Study

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|-------------------------|---------------------------|
| Policy Number: | DP19 |
| Previous Policy Number: | N/A |
| Resolution Numbers: | Click here to enter text. |
| Last Review: | Click here to enter text. |
| Next Review: | Click here to enter text. |
| Responsible Officer: | Manager Planning Services |

This Policy takes effect from the date of adoption by Council and shall remain valid until it is amended or deleted.

SCHEDULE 1

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.

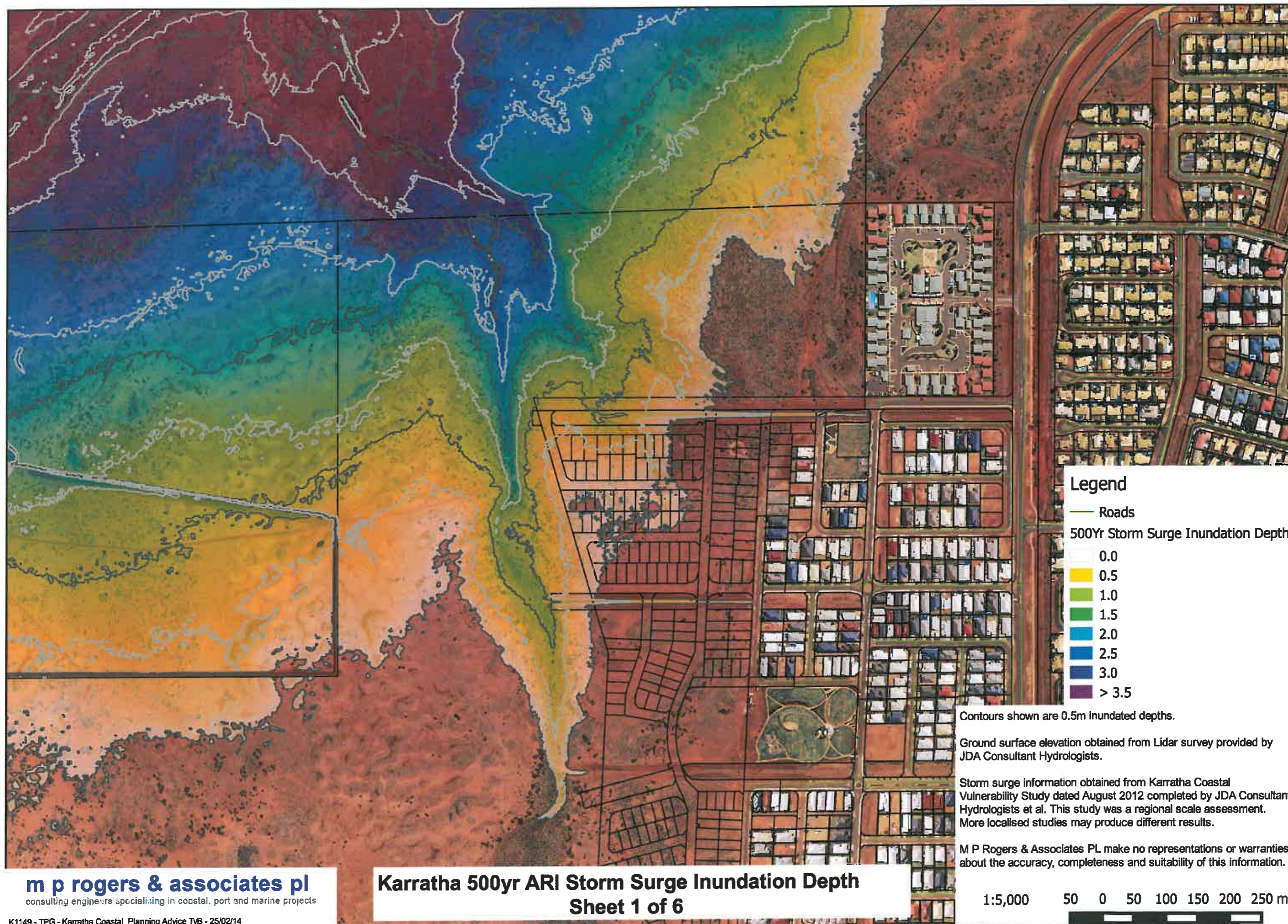
M P Rogers & Associates PL make no representations or warranties about the accuracy, completeness and suitability of this information.

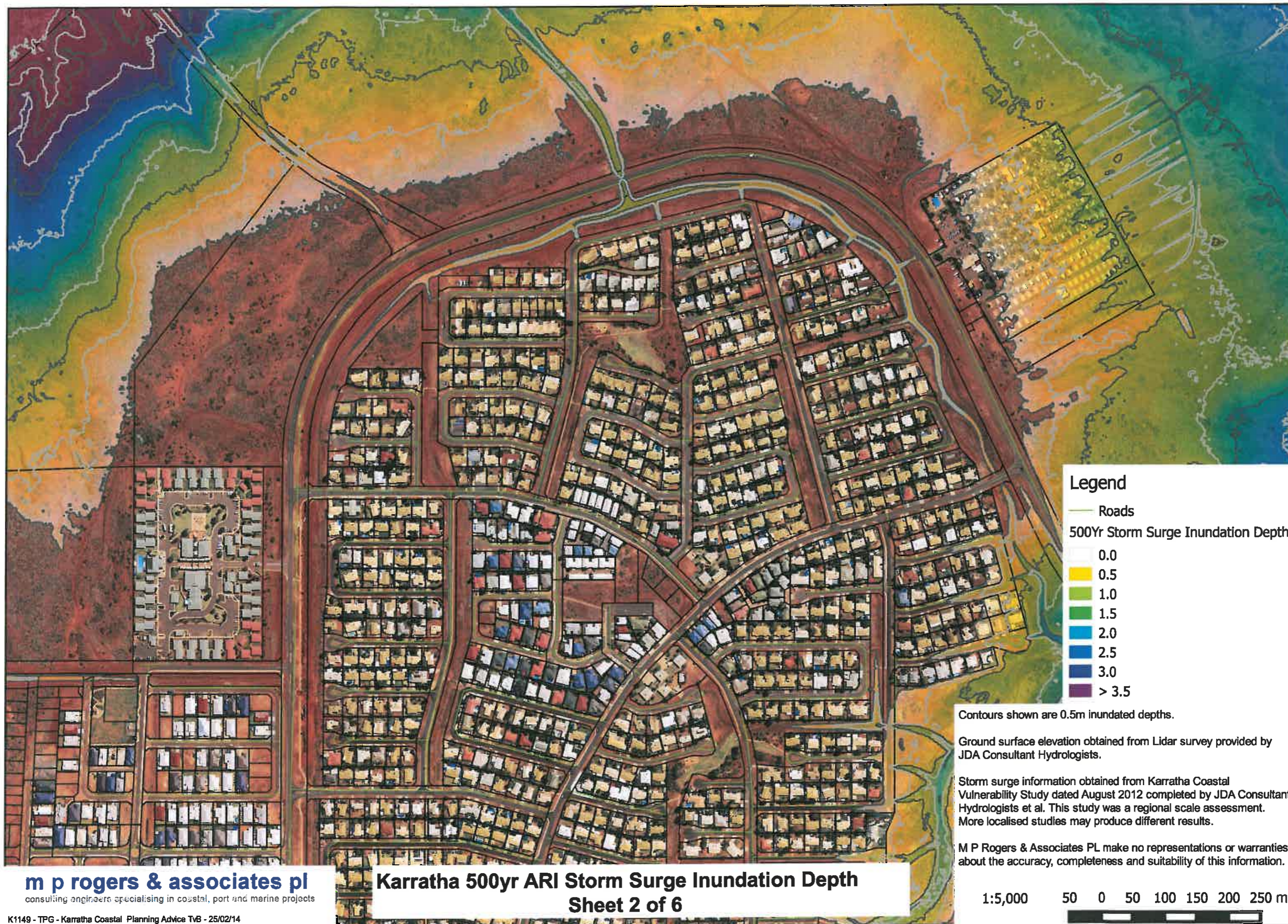
m p rogers & associates pl

consulting engineers specialising in coastal, port and marine projects

500yr ARI Storm Surge Inundation Depth

1:20,000 250 0 250 500 750 1000 m







Legend

Roads

500Yr Storm Surge Inundation Depth

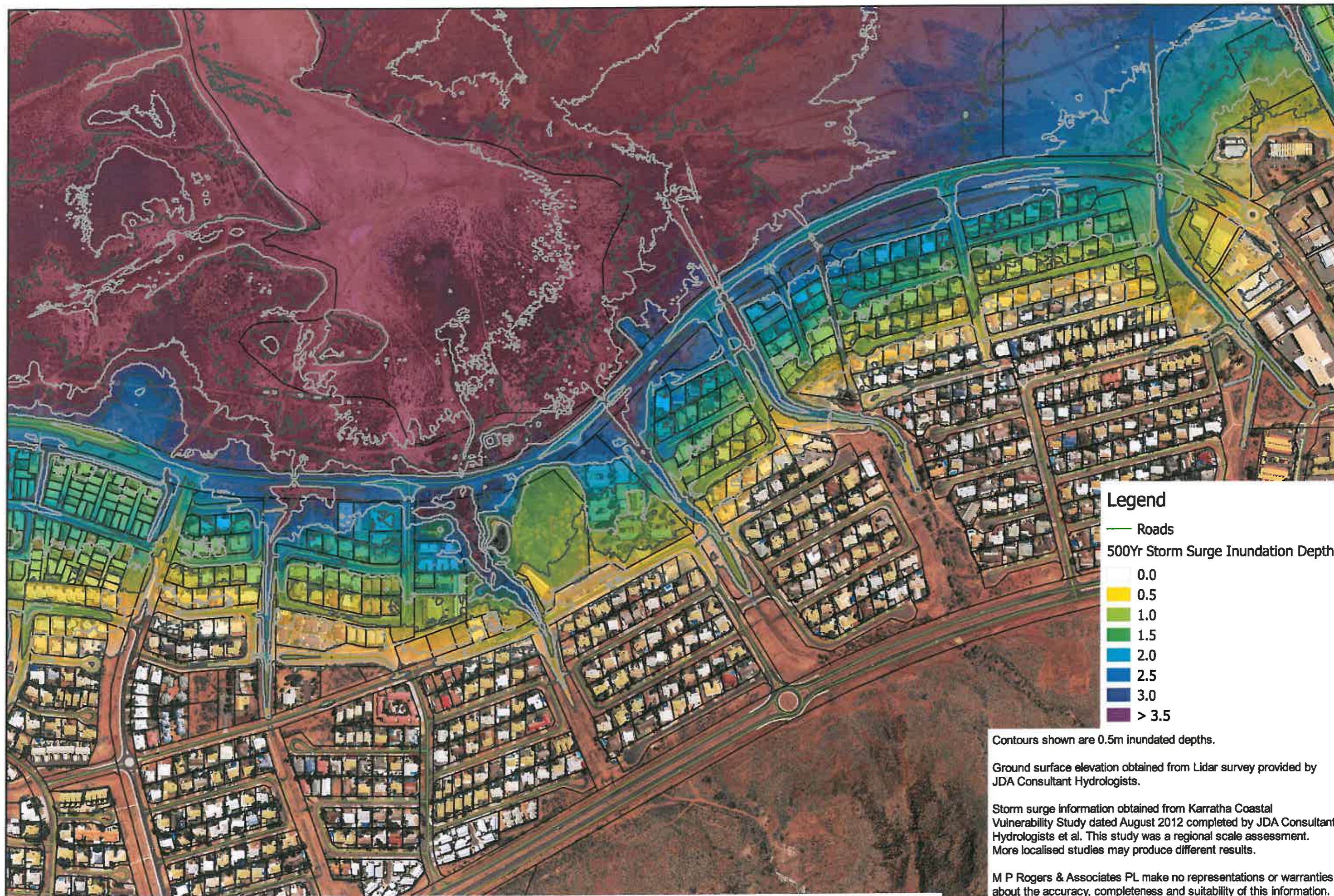
- 0.0
- 0.5
- 1.0
- 1.5
- 2.0
- 2.5
- 3.0
- > 3.5

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.

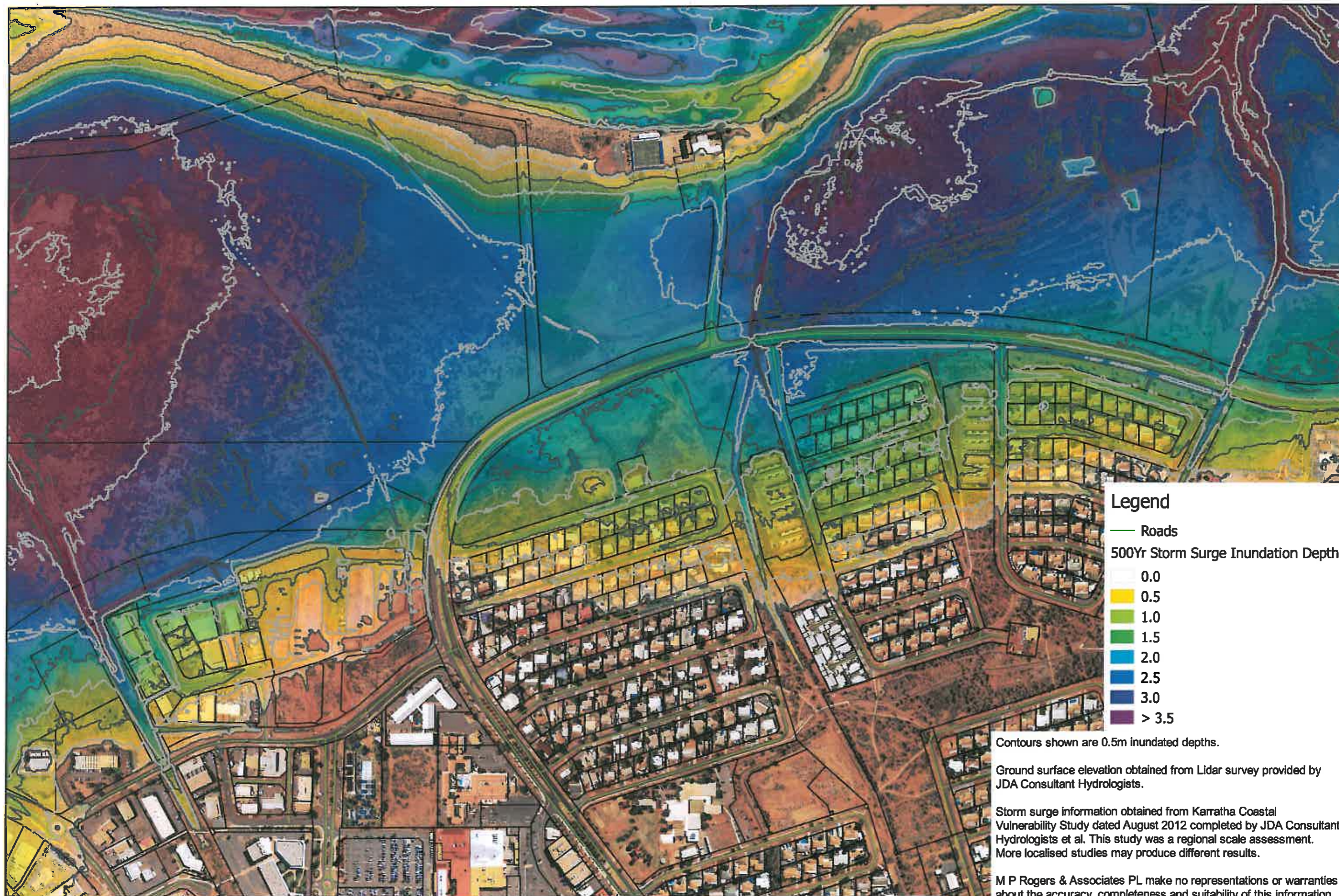
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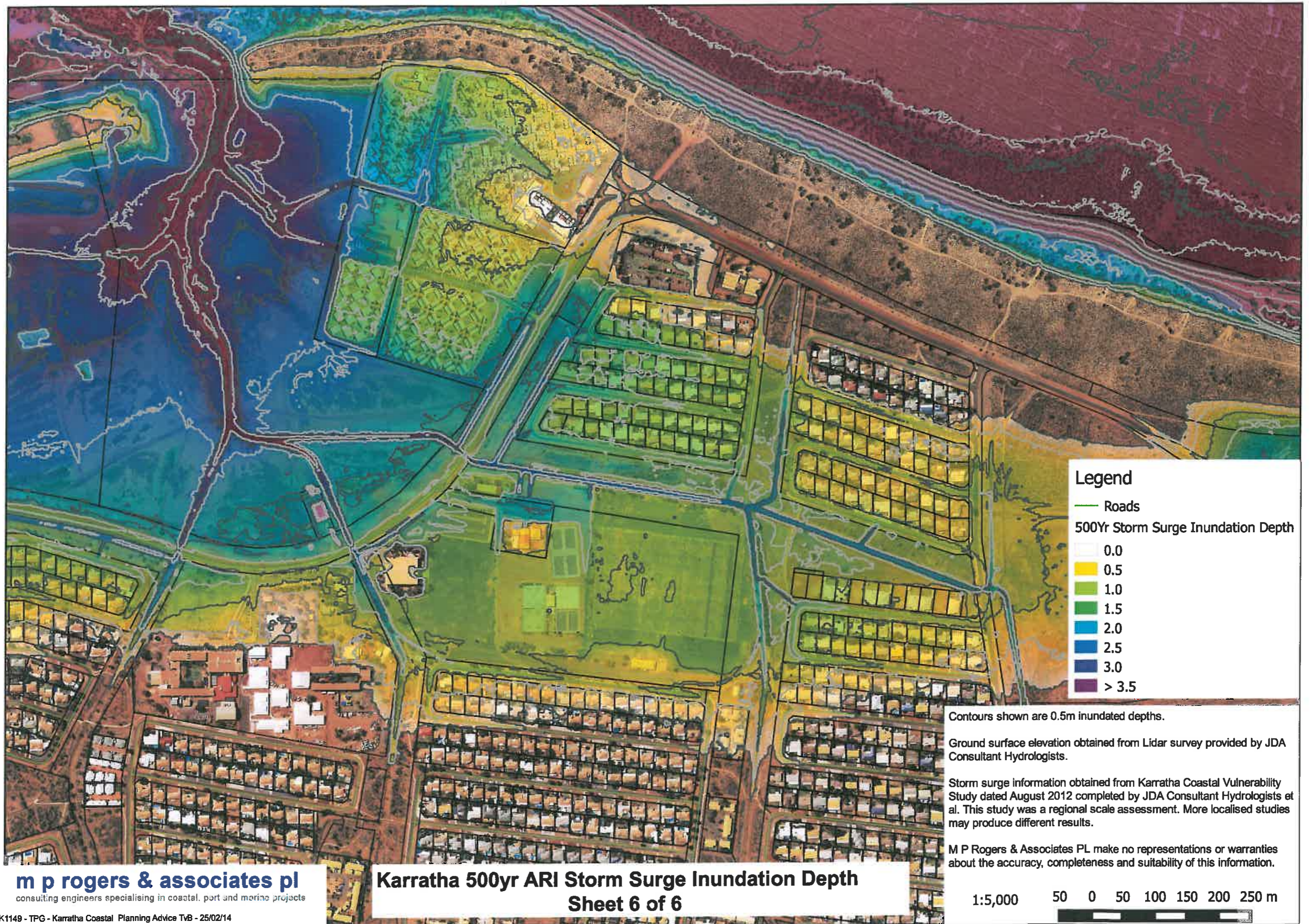
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Karratha 500yr ARI Storm Surge Inundation Depth
Sheet 4 of 6

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







Data Source: GEMSURGE Modelling 2011

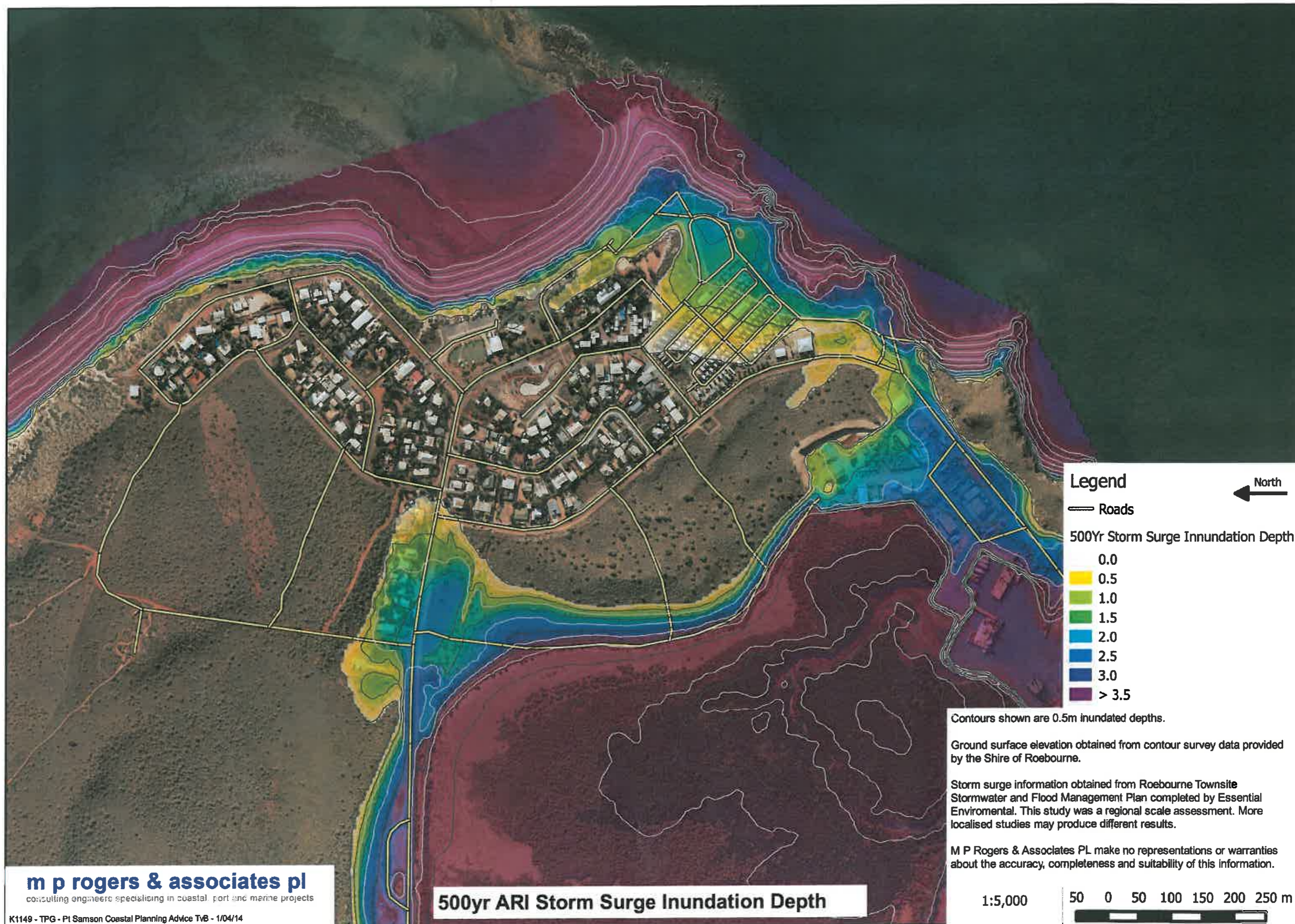


Job No. J4812
Scale: 1:40,000

0 0.5 1 1.5 2 Kilometers

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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.

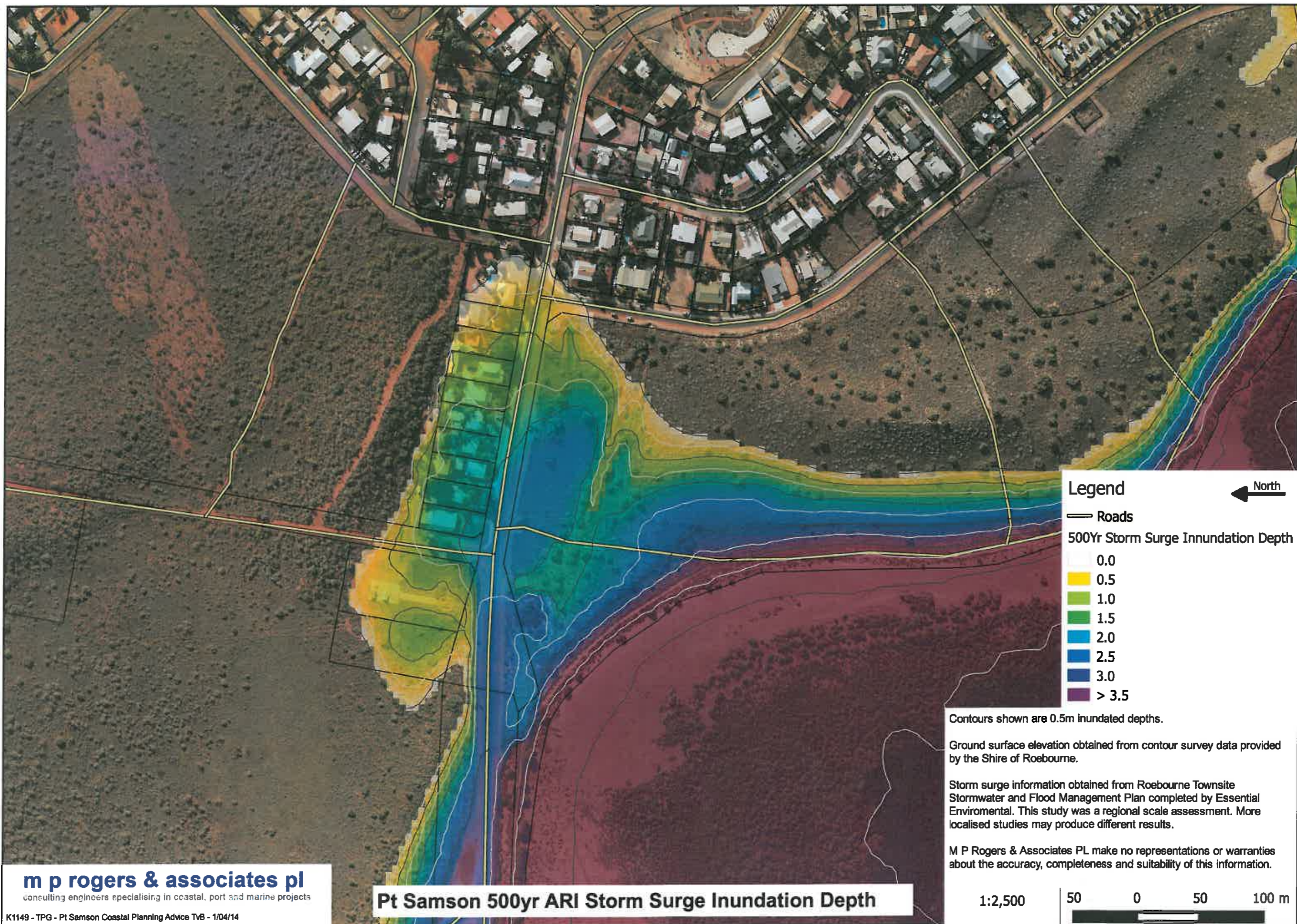
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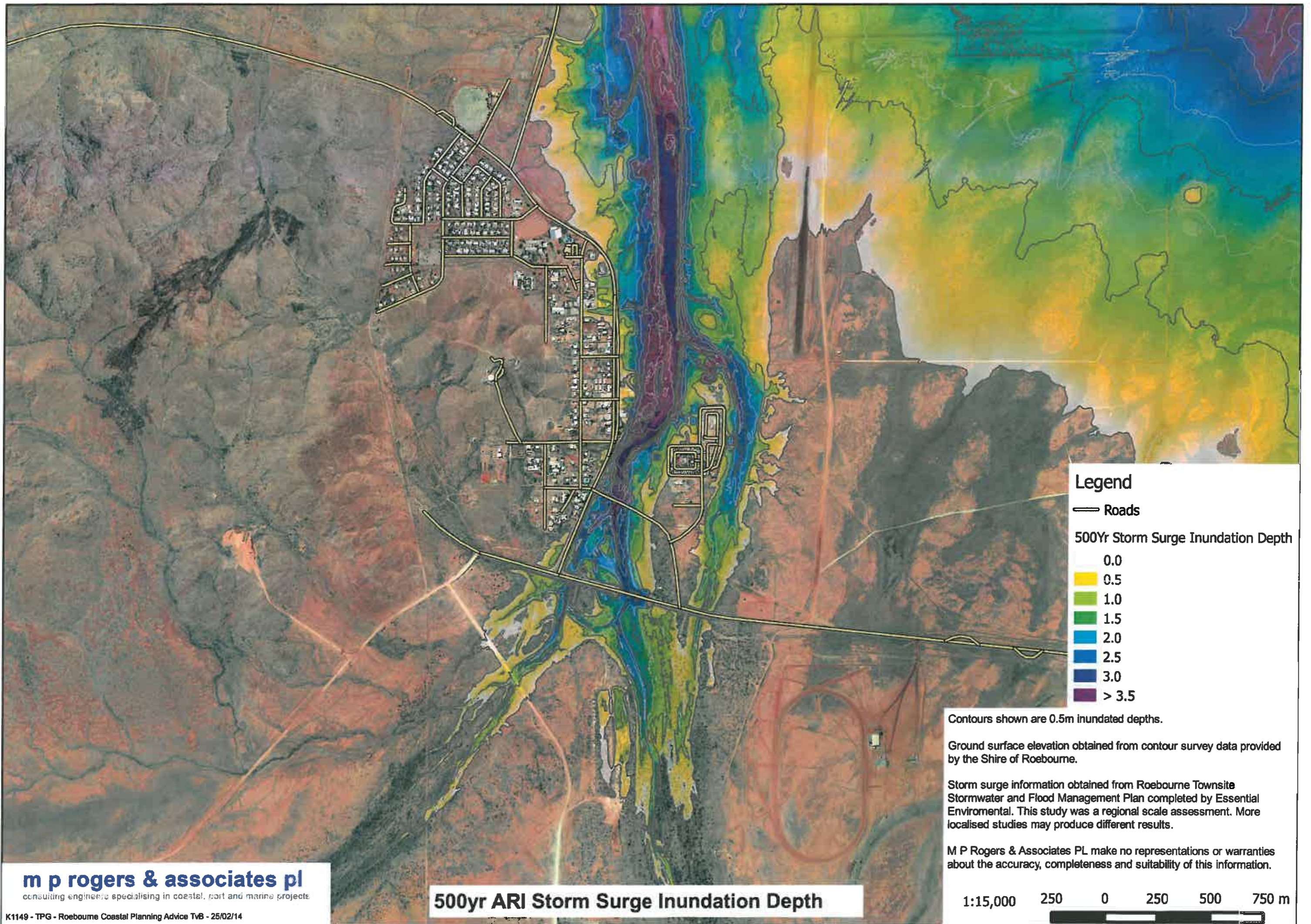
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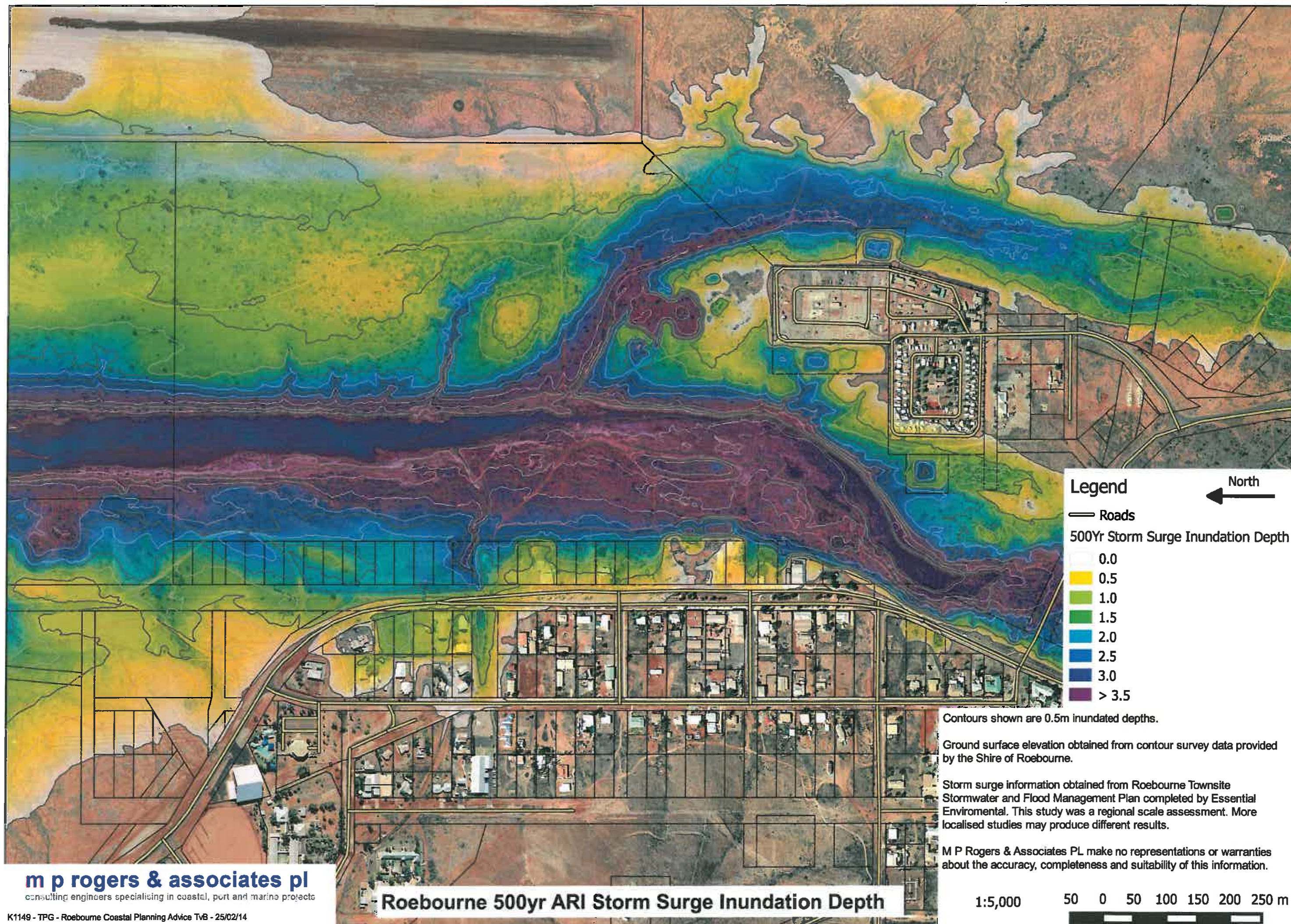
500yr ARI Storm Surge Inundation Depth

1:5,000

50 0 50 100 150 200 250 m







SCHEDULE 2

APPLICANT RISK ASSESSMENT MATRIX

APPLICANT RISK ASSESSMENT MATRIX

| RISK CATEGORY | RISK DESCRIPTION | APPLICABLE TO DEVELOPMENT APPLICATION (TICK) | 500 YEAR ARI STORM SURGE | | | TREATMENT OPTIONS |
|-----------------------|--|--|--------------------------|------------|---------------|--|
| | | | Consequence | Likelihood | Level of Risk | |
| Public Safety | Flooding from a storm surge event resulting in harm to public due to hindered emergency capacity, response and recovery. | | | 1 | | <ul style="list-style-type: none"> • Ensure evacuation plans are as good as they can be • Encourage as many developers to build above 500yr ARI as possible • Suitable construction standards to withstand the force of 500yr ARI storm surge event • Suitable controls on electricity supply to avoid electrocution in 500yr ARI event |
| Public Safety | Flooding from a storm surge event resulting in harm to public due to lack of access / egress from residential lots. | | | 1 | | <ul style="list-style-type: none"> • Ensure evacuation plans are as good as they can be • Encourage as many developers to build above 500yr ARI as possible • Suitable construction standards to withstand the force of 500yr ARI storm surge event • Suitable controls on electricity supply to avoid electrocution in 500yr ARI event |
| Private Property | Flooding from a storm surge event impacts residential property. | | | 1 | | <ul style="list-style-type: none"> • Encourage as many developers to build above 500yr ARI as possible • Suitable construction standards to withstand the force of 500yr ARI storm surge event |
| Private Property | Flooding from a storm surge and storm water event impacts commercial property including accommodation, retail, petrol station and industrial locations resulting in property damage and uncontrolled release of waste. | | | 1 | | <ul style="list-style-type: none"> • Encourage as many developers to build above 500yr ARI as possible • Suitable construction standards to withstand the force of 500yr ARI storm surge event |
| Private Property | The proposed development may impact on the modelled storm surge event impacting on City maintained landscaping and streetscaping adjacent to the development. | | | 1 | | <ul style="list-style-type: none"> • Consider consequences of losing landscaping to storm surge when planning landscaping in storm surge affected area |
| Public Infrastructure | Flooding from a storm surge event impacts road and transport infrastructure adjacent to the development site or proposed by the development. | | | 1 | | <ul style="list-style-type: none"> • Identify alternative emergency access arrangements to properties within 500yr ARI storm surge affected area • Where roads have been damaged, formalise interim access arrangements as soon as possible • Install protection measures where necessary to protect roads and other infrastructure at risk of removal from coastal processes |
| Public Infrastructure | Flooding from a storm surge event will impact the capability and/or the capacity of drainage infrastructure proposed by the development. | | | 1 | | <ul style="list-style-type: none"> • Make sure drains are regularly inspected and cleaned • Identify elements of drainage network that need to be improved • Schedule upgrades on drainage infrastructure most critical to effective drainage network |
| Public Infrastructure | Flooding from a storm surge event impacts recycled effluent irrigation ponds and tanks. | | | 1 | | <ul style="list-style-type: none"> • Tanks constructed inside 500yr ARI storm surge affected area should be built having regard for the possibility of such an event and consideration of mitigation required |

APPLICANT RISK ASSESSMENT MATRIX

| RISK CATEGORY | RISK DESCRIPTION | APPLICABLE TO DEVELOPMENT APPLICATION (TICK) | 500 YEAR ARI STORM SURGE | | | TREATMENT OPTIONS | | | | | | | | | | | | | | | |
|---|---|--|--------------------------|--|---------------|--|----------|----------------------|--------------------|----------|--------------|----------------------|----------|-----------------|-------------------------|----------|--------------|---------------------------|----------|---------------------|-----------------------|
| | | | Consequence | Likelihood | Level of Risk | | | | | | | | | | | | | | | | |
| Public Infrastructure | Flooding from a storm surge event impacts community emergency management infrastructure. | | | 1 | | <ul style="list-style-type: none"> Need to ensure there is sufficient capacity of available emergency management infrastructure and services to accommodate evacuated households | | | | | | | | | | | | | | | |
| Environmental | Flooding could potentially result in contamination as a result of proposed development on site (i.e. industrial storage, effluent treatment). | | | 1 | | <ul style="list-style-type: none"> Ensure identified environmental / contamination issues are addressed in development application and take into account and respond to risk from storm surge | | | | | | | | | | | | | | | |
| Environmental | The proposed development may result in other potential environmental factors being exposed to the risk of storm surge (i.e. asbestos, acid sulfate soils, other). | | | 1 | | <ul style="list-style-type: none"> Ensure identified environmental / contamination issues are addressed in development application and take into account and respond to risk from storm surge | | | | | | | | | | | | | | | |
| Community | Flooding from a storm surge event impacts local registered heritage sites and other important heritage sites on the property. | | | 1 | | <ul style="list-style-type: none"> Be conscious of infrastructure within 500yr ARI storm surge affected area in planning development at local heritage sites Minimise financial losses as a consequence of 500yr 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 | | | | | | | | | | | | | | | | | | | | | |
| INSTRUCTIONS FOR COMPLETING RISK ASSESSMENT MATRIX 1) Applicant to select risk row(s) that are applicable to the proposal. 2) Applicant to assign a rating of 1 - 5 for 'Consequence', with a rating of 1 being Insignificant and a rating of 5 being Catastrophic. 3) Likelihood rating set at low (ie. 1) due to the low probability of a 1 in 500 year ARI storm surge event. 4) Level of risk = Consequence x Likelihood. 5) Should an application have more than one Risk Category the higher risk consequence rating shall apply. | | | | MEASURES OF FINANCIAL CONSEQUENCES <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">1</td> <td style="width: 65%;">Insignificant</td> <td style="width: 30%;">Less than \$10,000</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Minor</td> <td>\$10,000 - \$100,000</td> </tr> <tr> <td style="text-align: center;">3</td> <td>Moderate</td> <td>\$100,000 - \$2,000,000</td> </tr> <tr> <td style="text-align: center;">4</td> <td>Major</td> <td>\$2,000,000 - \$5,000,000</td> </tr> <tr> <td style="text-align: center;">5</td> <td>Catastrophic</td> <td>More than \$5,000,000</td> </tr> </table> | | | 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 |
| 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 | | | | | | | | | | | | | | | | | | | |

SCHEDULE 3

APPLICANT RISK ASSESSMENT CHECKLIST

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 level? | <input type="checkbox"/> |
| 2 | To what depth would the finished floor level of this room/development be below the 500 year 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 | The applicant has completed the Shire's Risk Assessment Matrix and has deemed the risk to the proposed development to be: | |
| | • Insignificant - 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 storm surge event? | <input type="checkbox"/> |
| 5 | Is the landowner/applicant prepared to place a section 70A notification identifying potential purchasers of the risk of damage to the property in the event of a 500 year storm surge event? | <input type="checkbox"/> |
| 6 | What mitigation measures are proposed to address the risk of storm surge, if any? | |
| | • 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 defend the proposed development from the event of storm surge. | <input type="checkbox"/> |
| | • An emergency evacuation plan has been prepared by a suitably qualified consultant and forms part of the application for planning approval. | <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 resistance materials and designed to withstand water forces as determined by a suitably qualified structural engineer. | <input type="checkbox"/> |
| | • The proposal relates to the design of a temporary or relocatable structure(s) that could be readily repaired or reinstated (at low cost) following the impacts of the identified 500 year storm surge event? | <input type="checkbox"/> |
| 7 | Other. Please Specify. | <input type="checkbox"/> |

Landowner Signature

Dated

Applicant Signature

Dated