

|               |                                                                  |       |                                                                                                       |
|---------------|------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------|
| To:           | Rossiter Rd Investments P/L<br>c/o Wayne Armstrong [KLM Spatial] | From: | Glenn Mansell<br>Level 28, 600 Bourke Street<br>Melbourne VIC 3000<br>AUSTRALIA<br>ABN 17 007 820 322 |
| Project/File: | 300204282                                                        | Date: | 18 November 2025                                                                                      |

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**Reference: 145 Rossiter Road Flood Impact Assessment**

## 1 Project Background

Rossiter Rd Investment P/L engaged Stantec to undertake a flood impact assessment (FIA) for the proposed land development at 145 Rossiter Road, Koo Wee Rup (the site) in order to meet the flood impact requirement stipulated by Melbourne Water (MW) pre-development advice (Ref no: MWA-1221167). This advice was received on 05/04/2024.

A concept layout of the proposed development is provided in Appendix A. The site is located within the Koo Wee Rup Flood Plain District (KWRFPD) which forms one of Melbourne's largest and most unique floodplains. As defined in the KWRFPD Guidelines (2019), the study area is located in a Zone 2 flood zone and is subject to deep and broad flooding during infrequent flood events.

## 2 Methodology

The summary of the methodology undertaken and inputs for this FIA are outlined below;

- MW provided a single RORB output file 'RORB\_Omahoney\_36h100y.out', and advised to use to establish the existing 1% AEP flooding conditions at the site. The file represents the design hydrographs for the 36 hour rainfall event for the catchment areas shown in Figure 2.
- The file provided by MW was used to inform several inflow hydrographs at various locations (See Figure 1) within the TUFLOW model. The "Concentrated channel outflow at Cora Lynn Flow Split – Downstream – hyd011" data was taken from the output file and applied as a 2D inflow boundary condition to the TUFLOW model within the Yallock Main Drain just south of junction with the Bunyip Main Drain. The peak flow for the Yallock Main Drain at the Cora Lynn split was 372 m<sup>3</sup>/s.
- In addition, other inflows from the following tributaries were also applied to the TUFLOW model;
  - Murray Rd Drain (Peak Flow 61.03 m<sup>3</sup>/s);

**Reference:** 145 Rossiter Road Flood Impact Assessment

- King Parrot Catchment (Peak Flow 134.7 m<sup>3</sup>/s);
- Musk Creek Catchment (Peak Flow 90.47 m<sup>3</sup>/s)
- A tail water level of 3.3 metres AHD was set as a downstream boundary condition at the Koo Wee Rup bypass as per MW email dated 18/06/2025,
- A TUFLOW model with HPC scheme was adopted with Sub grid sampling (SGS) distance of 2m for the original 6m model grid 2D domain.
- 2017/2018 LiDAR<sup>1</sup> information was used to inform the topography in the TUFLOW model.
- A site visit was undertaken on 27<sup>th</sup> August 2025 to gather information that was used ensure the accurate representation of critical hydraulic structures at the Koo Wee Rup Road over Southern Boundary Drain.
- Based on above information, an existing TUFLOW model was built to understand the existing flooding situations within the study area. In addition, we undertook a high level validation of flows across number of sites to ensure the model results are sensible enough. This was done at Cora Lynn split levee by comparing overtopping depth to weir equation. Similarly, the channel capacity of the Southern Boundary Drain at Koo Wee Rup Road was also estimated at high level.
- Ultimately the proposed design encompassing the preferred mitigation option was tested in TUFLOW to understand the residual flood impacts.

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<sup>1</sup> Victorian Government (2025). Department of Environment, Land and Water Planning (DELWP).

Reference: 145 Rossiter Road Flood Impact Assessment

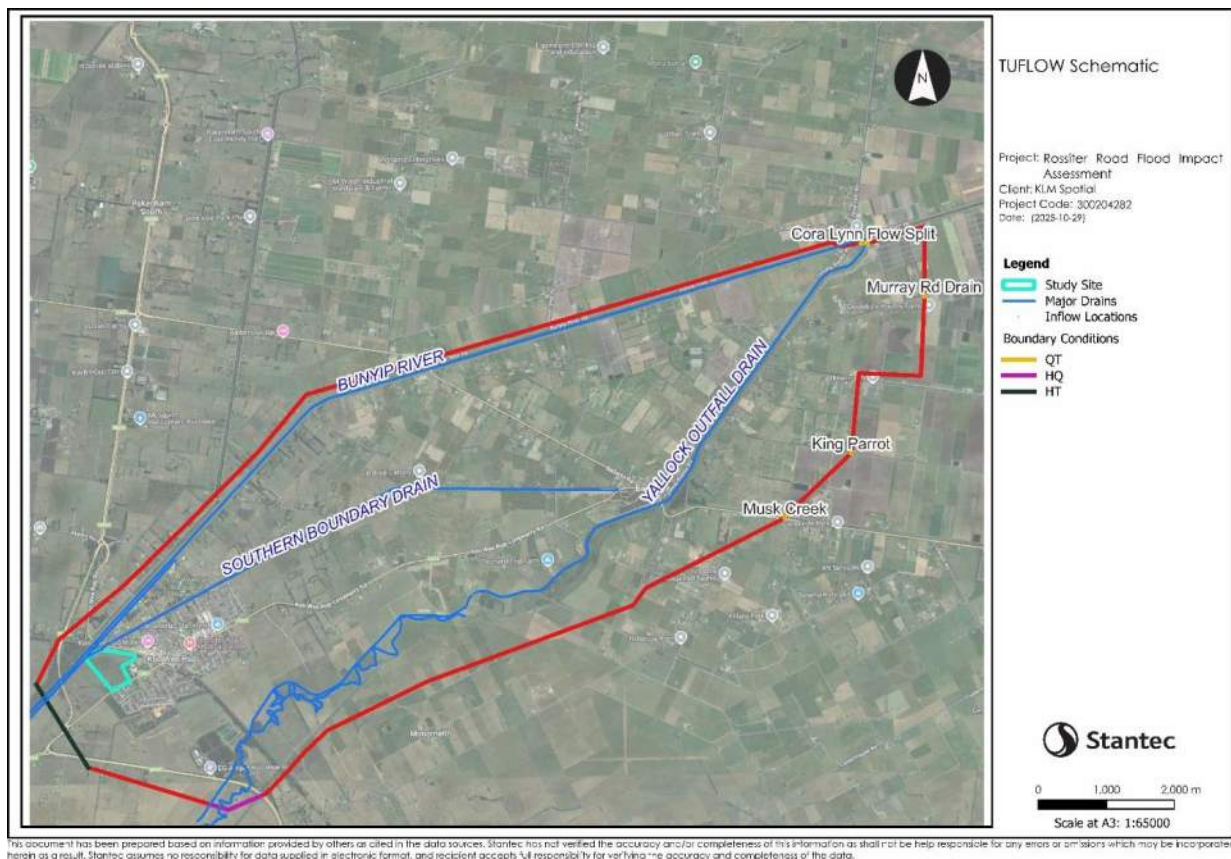
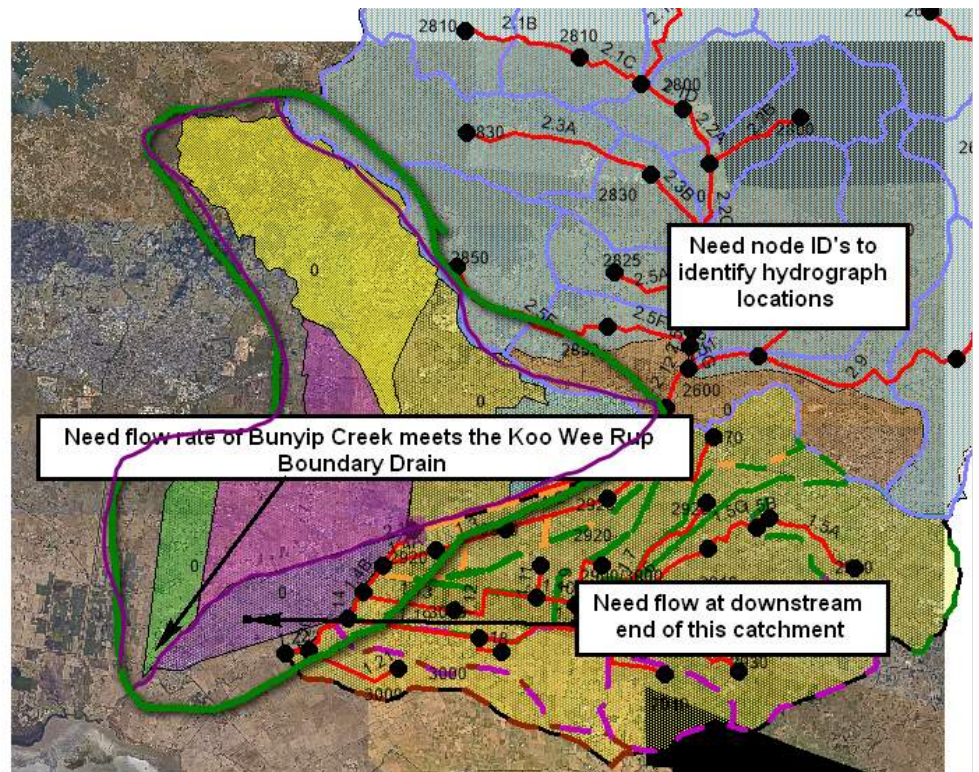


Figure 1 TUFLOW schematic for the study area

- Following correspondence and discussion between Stantec (Glenn Mansell) and MW (Aijaz Memon), MW provided further clarifications, information and requests via email dated 3 July 2025 as follows;
  - MW Comment: The applicant is required to extend model boundary up to Cora Lynn Split to include total flows of the Bunyip catchment (excluding 110m<sup>3</sup>/s that flows through Bunyip River) ) and allowing model to split flows for subject property.
  - MW Comment: Considering levee system along McDonald Drain, the 1%AEP flows from the northwest runs along levee system and drain back to McGregor and McDoland Drain at upstream of South Gippsland highway. That's means the flow northwest Catchments of the Bunyip System (as highlighted with magenta polygon) would not contribute flooding at the subject property. Refer figure following plan.

**Reference: 145 Rossiter Road Flood Impact Assessment**



3. Stantec Request: Need node ID: MW Response: it is provided previously. Please check at your end.
  4. Stantec Request: Need flow rate of Bunyip Creek meets Koo Rup Drain (Bunyip River capacity is 110m<sup>3</sup>/s)
  5. Stantec Request: Need flow at downstream end of this catchment (see figure above) ( Hydrograph is provided to show total catchment flows at Yallock Cut) . MW Response: This flow may not be required if downstream flood level is considered as a boundary condition.
- Based on the MW advice provided via email dated 3 July 2025, the inflow hydrograph at the Yallock Main Drain was derived by taking the Hydrograph at the Cora Lynn split indicated in the RORB model and subtracting 110m<sup>3</sup>/s. The resultant hydrograph was applied in the Yallock Main drain downstream of the bifurcation of the Bunyip Creek and the Yallock Main Drain.
  - Local catchment inflows (i.e. within the KWR flood protection zone) over the model domain were not represented in the TUFLOW model as no relevant hydrograph was available in the provided 'RORB\_Omahoney\_36h100y.out' file. The provided RORB subareas are illustrated in Figure 2, which does not include the subareas west of the Yallock Main Drain within the TUFLOW model domain.
  - TUFLOW modelling based on the hydrology provided indicated an overtopping flow at Cora Lynn of approximately 61m<sup>3</sup>/s and a combined peak flow of approximately 23 m<sup>3</sup>/s in the two

Reference: 145 Rossiter Road Flood Impact Assessment

drains just downstream of Koo Wee Rup (KWR) Road upstream of the site. Based on the expected attenuation of flow between Cora Lynn and KWR Road (a distance of approximately 12.5 kms), restriction of flows at KWR Road, and in the absence of information on additional runoff from the local catchment (i.e. area within the KWR flood protection zone) the indicated flow of approx. 23m<sup>3</sup>/s is considered realistic.

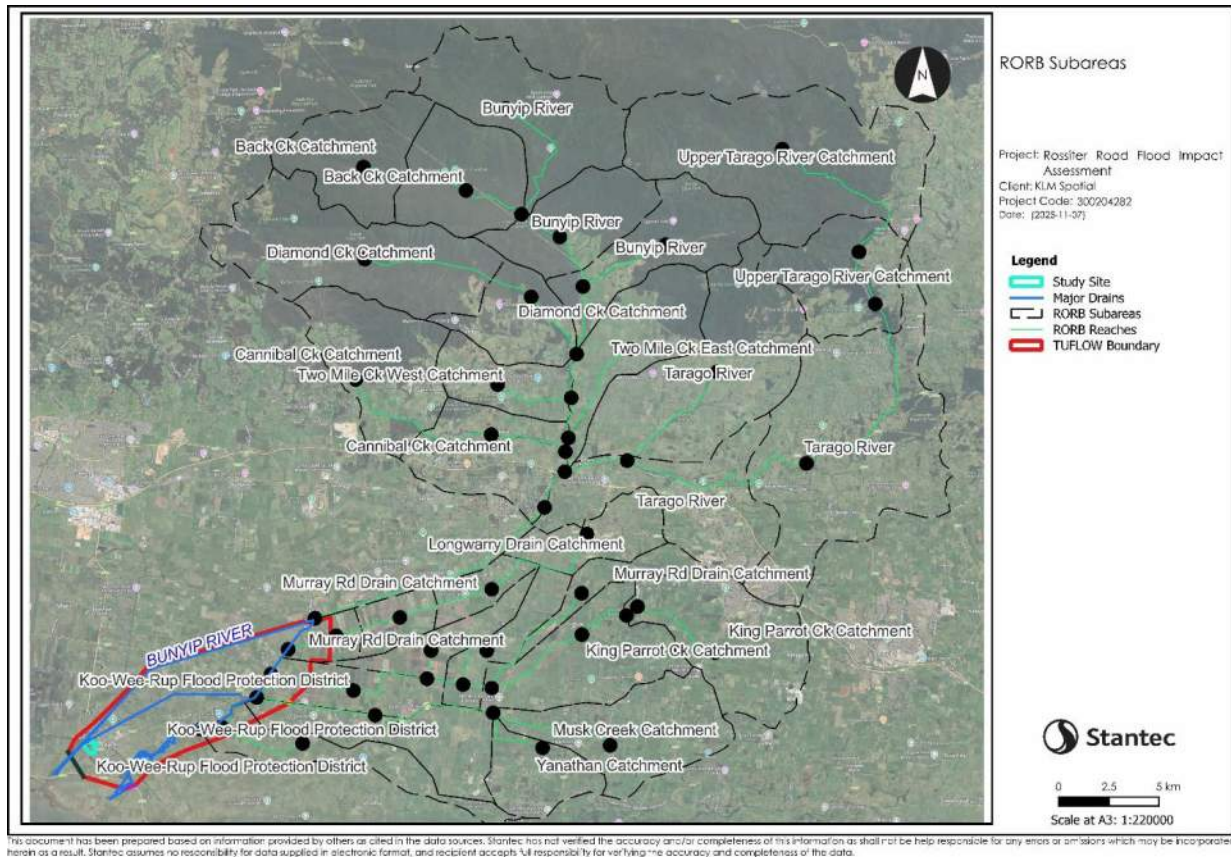


Figure 2 RORB Catchment Areas

## 3 Results

### 3.1 Existing conditions

The existing flooding conditions at the site area are illustrated in Appendix B. The analysis indicates a maximum flood depth is approximately 500 mm within the site with a relatively small peak velocity of up to 0.3 m/s. The majority of the area within the site and neighbouring properties (Area of Interest or AOI) had a hazard category of H1 (generally safe for vehicles, child and elderly) based on ARR 4.2 classifications with some isolated areas of Hazard category 3 (unsafe for vehicles, child and elderly). As the AOI is mainly farmland, it will not pose any direct public risk. It was also observed that the existing channel along the southern boundary of the site causes a large area of inundation by conveying

Reference: 145 Rossiter Road Flood Impact Assessment

overtopping from the MW channel to a localised low point located in the adjoining property south of the AOI.

## 3.2 Proposed condition with preferred option

The proposed design surface, informed by Stantec and provided by KLM Spatial on behalf of the client (denoted as TIN 6), was analysed in the TUFLOW model which included a combination of areas of filling (denoted red) and excavation (denoted blue) to offset the loss of floodplain storage on-site following development as well as additional mitigation measures such as the proposed bund as shown in Figure 3. The proposed bund and consequent prevention of runoff flowing into the existing channel along the southern side of the site eliminated the flooding into the localised low point which eliminated a large area of existing flooding shown by green extent (was wet now dry) (Refer Figure 4), with only a minor increase in flood levels in a small localised area downstream.

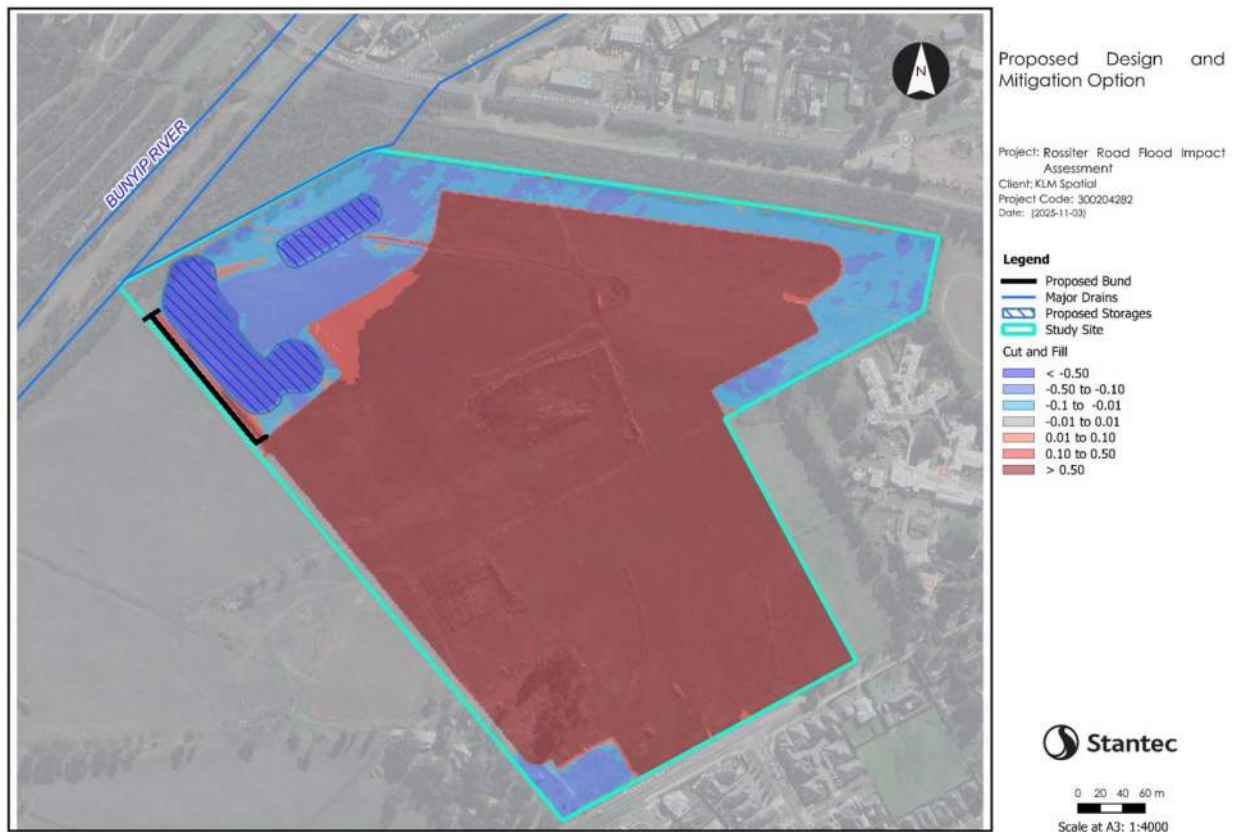


Figure 3 Proposed Design and Mitigation Options

The 1% AEP peak flood level within the AOI varies between 4.1 to 4.25m AHD. Analysis of the 1% AEP peak flood impact shown in Figure 4 illustrates that there will be negligible impacts of  $\pm 10$  mm downstream of the study area. Any increase in impact between 10 to 50 mm are contained within MW drains west of the site with localised increase of less than 20 mm along the banks of the drain downstream of the site. It should also be noted that the proposed development will provide additional

Reference: 145 Rossiter Road Flood Impact Assessment

benefit to the adjoining downstream property where the overtopping from the MW drain via the existing channel previously caused an area of inundation that has now been eliminated Refer Figure 4 below).

The velocity and hazard plot is provided in Appendix B, which shows velocity and hazard comparable to existing conditions. The high hazard categories of H5 and H4 are limited to the wetland and frog habitat pond that are inclusive of permanent water pools necessary for runoff treatment and fauna habitat respectively.

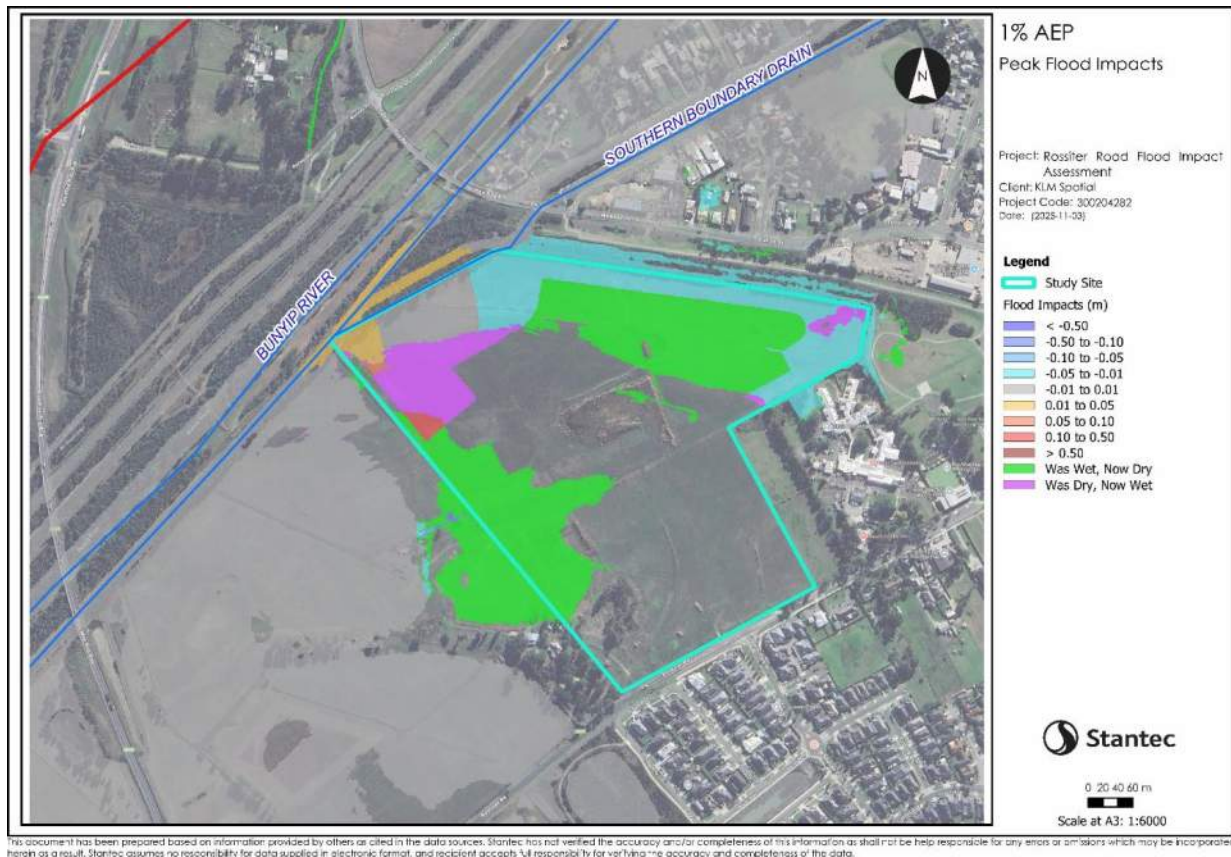


Figure 4 Flood Impacts for 1% AEP

## 4 Conclusion

The provided RORB model output file, tailwater conditions and other advice provided by MW were used to setup upstream and downstream boundary conditions for the TUFLOW model.

The model extends north to just downstream of Cora Lynn, where flow splits between the Bunyip River and the Yallock Main Drain. Some floodwater overtops the Yallock Main Drain western levee at Cora Lynn which is lower than the levee on the adjacent eastern side.

The existing conditions model shows water depth of up to 500 mm within the site.

**Reference:** 145 Rossiter Road Flood Impact Assessment

The proposed development surface and mitigation options will result in negligible impacts compared to existing conditions, with localised increase in impact greater than 10 mm along the banks of the drain. These impacts will be offset by other significant areas of improvement to flood conditions on adjacent land and formalised containment areas within the subject site itself, creating better conditions for control and management of flood impacts.

Some increases are noted in the MW channels adjacent to the site but these increases are restricted to the southern side of Koo Wee Rup Road.

This FIA has provided prima facie evidence that the proposed development at 145 Rossiter Road, Koo Wee Rup can proceed based on the design TIN provided by KLM Spatial on 22<sup>nd</sup> October 2025 (known as TIN 6), whilst also satisfying the requirement of MW that there shall be no worsening of flooding on neighbouring properties as a result of the development.

Yours sincerely

**Stantec Australia Pty Ltd**



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PE0007580

Attachment A: AttachmentB

c.

CONCEPT SKETCH 21  
145 Rossiter Road Koo Wee Rup



- LEGEND:
- 17 (20%) LOTS 600m<sup>2</sup> - 699m<sup>2</sup>
  - 55 (64%) LOTS 700m<sup>2</sup> - 999m<sup>2</sup>
  - 14 (16%) LOTS 1000m<sup>2</sup> & ABOVE
  - WATER RETENTION
  - VEGETATION PROTECTION RESERVE
  - PRECINCT BOUNDARY
  - LOT BOUNDARY
  - 50m G&F WORKS BUFFER
  - PEDESTRIAN ACCESS
  - 6.1m PAVED ROAD (LIFESTYLE VILLAGE)
  - 4.5m PAVED ACCESS (LIFESTYLE VILLAGE)
  - COMMUNITY CENTRE
  - BANDICOOT CORRIDOR
  - PUBLIC OPEN SPACE
  - LANDSCAPE BUFFER
  - GROWLING GRASS FROG HABITAT
  - DEFENDABLE SPACE
  - 500m OPEN SPACE WALKABILITY
  - SHARED PATH
  - 1.8m FOOTPATH
  - 1.5m LIFESTYLE VILLAGE PATH
  - EXISTING DRAINAGE ALIGNMENT

PARCEL DETAILS

|                              |                    |                    |                   |
|------------------------------|--------------------|--------------------|-------------------|
| TOTAL SITE AREA:             | 24.37ha            | SALEABLE LAND:     | 6.634ha           |
| ROAD RESERVES:               | 3.098ha            | N.P.A.:            | 9.732ha           |
| VEG. PROTECTION RESERVE:     | 3129m <sup>2</sup> | LOT YIELD:         | 86                |
| LANDSCAPE BUFFER:            | 5645m <sup>2</sup> | AVERAGE LOT SIZE:  | 771m <sup>2</sup> |
| BANDICOOT CORRIDOR:          | 2.276ha            | VILLAGE SITE AREA: | 7.419ha           |
| GROWLING GRASS FROG HABITAT: | 1.845ha            | VILLAGE YIELD:     | 165               |
| DRAINAGE RESERVE:            | 1.418ha            |                    |                   |
| PUBLIC / OPEN SPACE:         | 8000m <sup>2</sup> |                    |                   |

RESIDENTIAL NOTES:

ONLY ONE CROSSOVER PER LOT.  
FRONT FENCES TO BE NO MORE THAN 1.2m IN HEIGHT.  
FENCES ON SECONDARY ROAD FRONTAGE OR WITH SIDE BOUNDARY ADJACENT TO OPEN SPACE TO BE 1.8m TALL FOR NO MORE THAN 50% OF BOUNDARY LENGTH, BALANCE OF FENCE TO BE LESS THAN 1.2m. AS PER TYPICAL DESIGN GUIDELINES APPLIED BY MCP.  
ACCESS FOR LOT 2 ON P5321029K AND ADJACENT PUBLIC OPEN SPACE TO BE DELIVERED AS PART OF DEVELOPMENT.



VILLAGE NOTES:

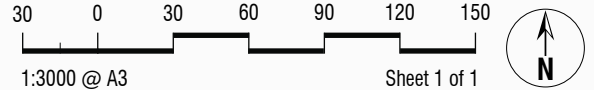
WHERE THE VILLAGE ABUTS ROADS AND RESIDENTIAL LOTS SETBACKS ARE AS FOLLOWS: FRONT SETBACK TO BE 3m, SIDE SETBACK TO BE 1.2m AND REAR SETBACKS RANGE FROM 3m TO 5m, GARAGES TO BE SETBACK 5m.  
TYPICAL 1.8m COLOURBOND FENCING BETWEEN DWELLINGS.  
UNITS ADJACENT BANDICOOT CORRIDOR WILL BE DESIGNED TO PROVIDE PASSIVE SURVEILLANCE OF ADJACENT OPEN SPACE, ALSO INCLUDING LOWPERMEABLE BOUNDARY FENCING.  
TOTAL BUILDING SITE COVERAGE FOR THE VILLAGE IS 32.8% (INDICATIVE).  
PRIVATE OPEN SPACE 20m<sup>2</sup> (INDICATIVE) SUBJECT TO DWELLING DESIGN.  
\* OPPORTUNITY FOR OPEN SPACE WITHIN THE DEVELOPMENT.

- 58 TYPE A UNITS (12m X 19m)  
62% SITE COVERAGE (INDICATIVE)
- 60 TYPE B UNITS (12m X 19m)  
68% SITE COVERAGE (INDICATIVE)
- 47 TYPE C UNITS (12m X 19m)  
64% SITE COVERAGE (INDICATIVE)
- \* TYPICAL DESIGN ONLY - ARCHITECTURAL PLANS TO BE PROVIDED IN PLIE COURSE

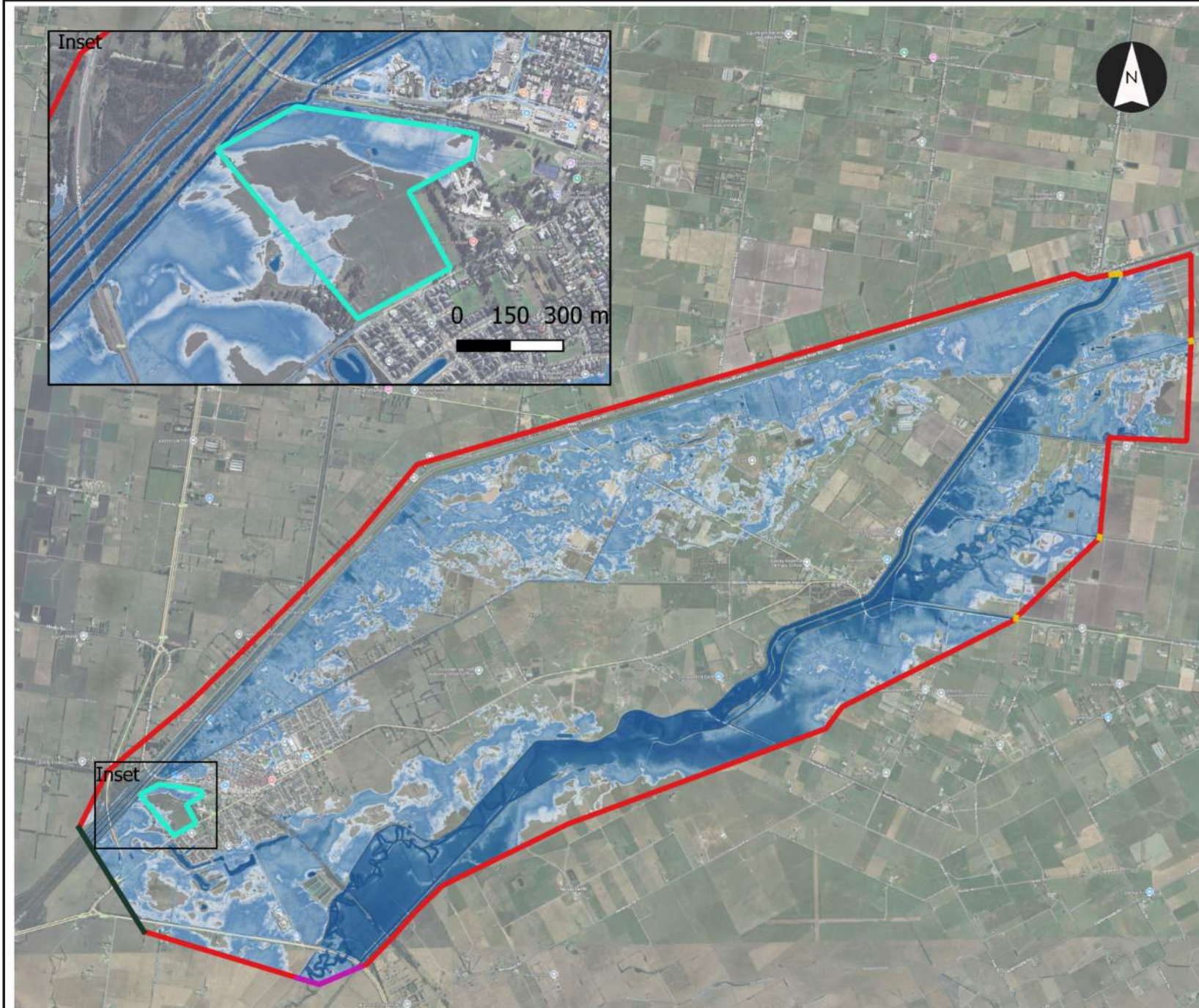
TITLE INFORMATION SHOWN HEREON IS BASED ON KLM SPATIALS RE-ESTABLISHMENT SEE DRAWING 10323 REQ1 V1 DATED 17-05-2021.

PROPOSED DEVELOPMENT LAYOUT SUBJECT TO FURTHER INVESTIGATION ON SITE CONSTRAINTS RELATING TO ENVIRONMENTAL AND SERVICEABILITY. KLM SPATIAL CAN THEREFORE ACCEPT NO RESPONSIBILITY FOR RELIANCE ON THIS PLAN FOR ANY FINANCIAL DEALINGS INVOLVING THE LAND.

Nearmap PHOTOMAP FLOWN: 05/05/2024



REF: 10323 CS21 Version: 1 Date: 06-11-2024



1% AEP

Peak Flood Depths  
Existing Conditions

Project: Rossiter Road Flood Impact Assessment  
Client: KLM Spatial  
Project Code: 300204282  
Date: (2025-10-29)

**Legend**

 Study Site

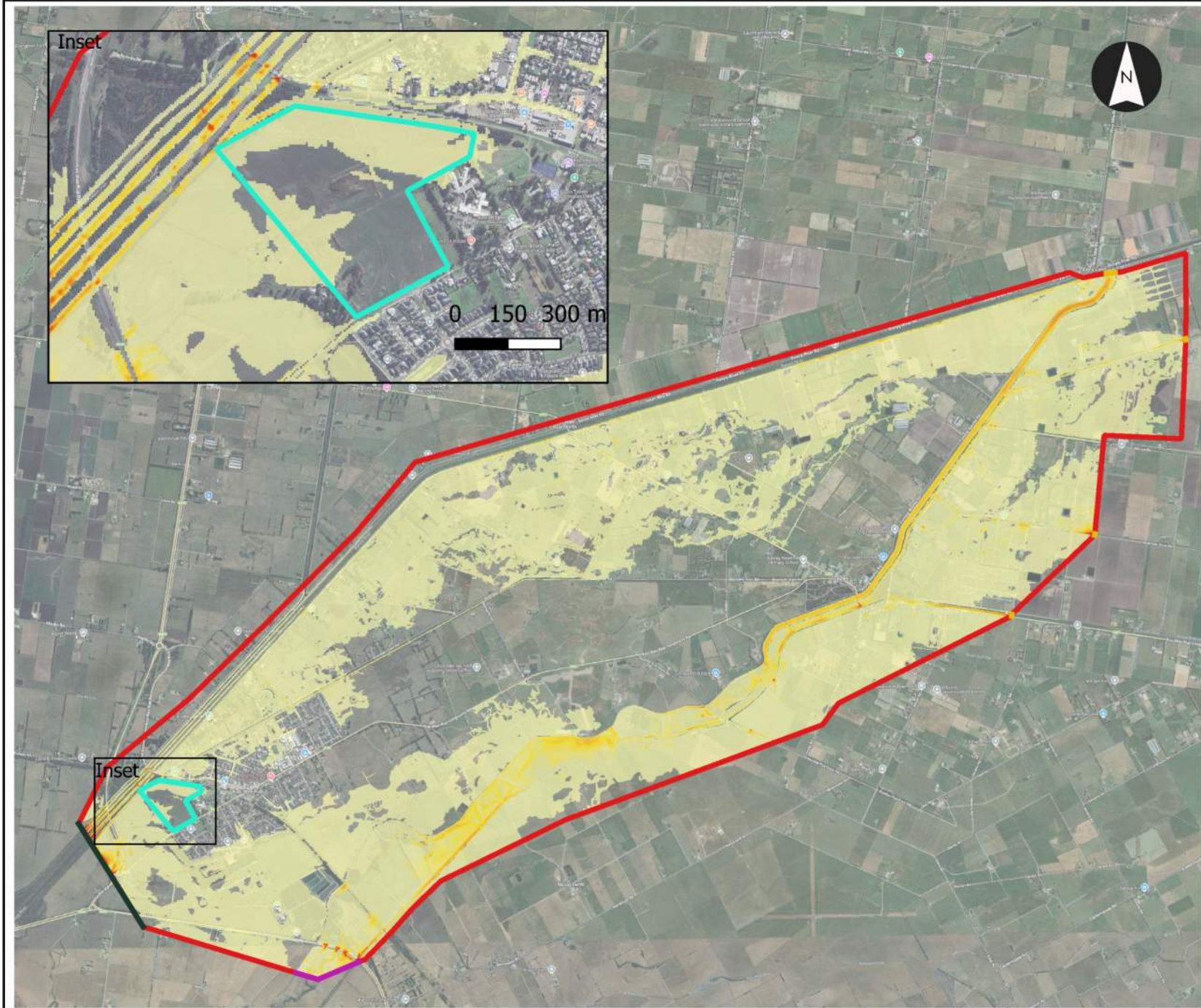
Peak Flood Depths (m)

-  <= 0.05
-  0.05 - 0.10
-  0.10 - 0.25
-  0.25 - 0.50
-  0.50 - 1.00
-  >1



0 1,000 2,000 m

Scale at A3: 1:65000



1% AEP

Peak Velocity  
Existing Conditions

Project: Rossiter Road Flood Impact  
Assessment  
Client: KLM Spatial  
Project Code: 300204282  
Date: (2025-10-29)

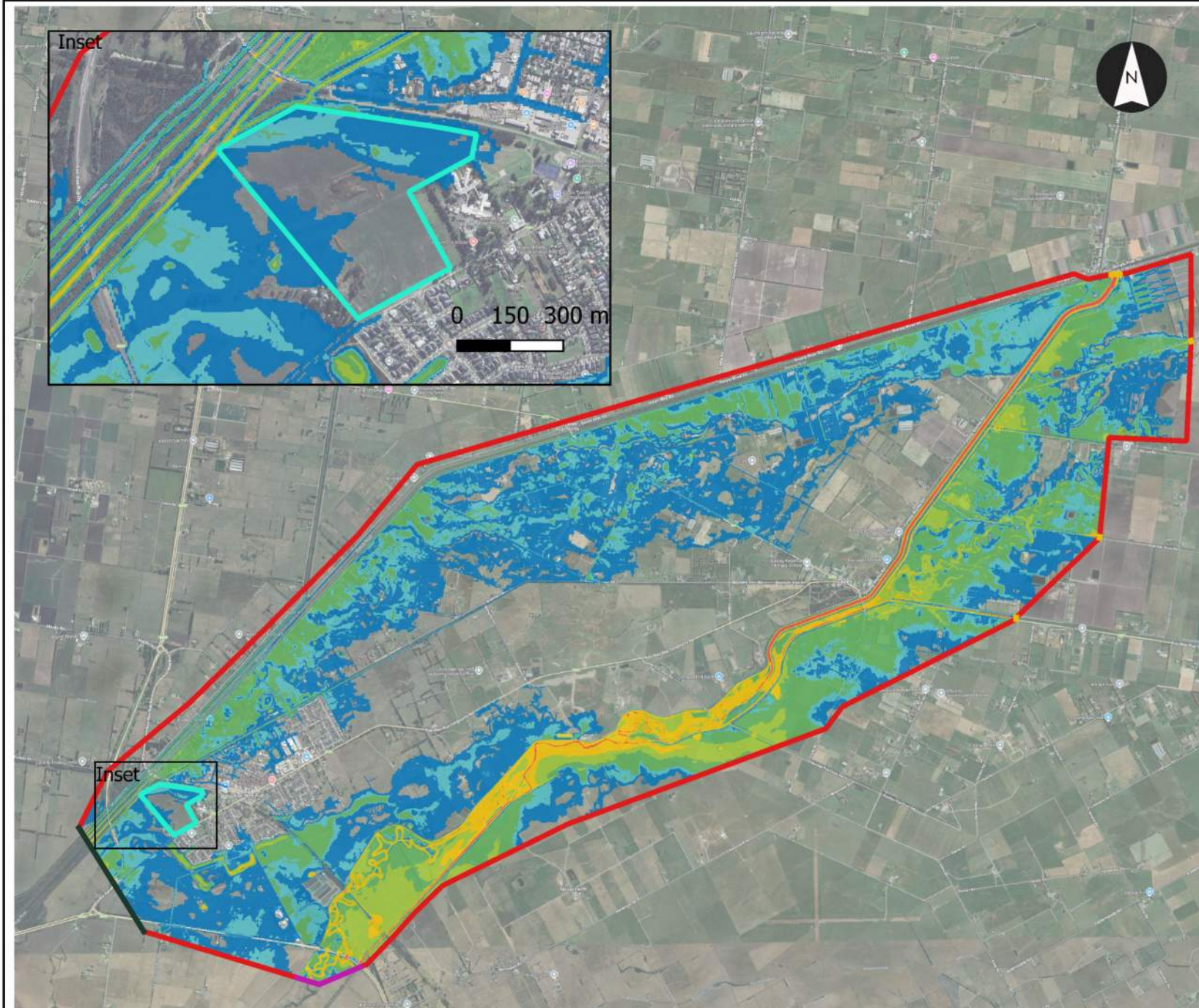
**Legend**

-  Study Site
- Peak Velocity (m/s)
-  <0.50
  -  0.50 - 1.00
  -  1.00 - 1.50
  -  1.50 - 2.00
  -  2.00 - 2.50
  -  >2.50



0 1,000 2,000 m

Scale at A3: 1:65000



1% AEP

Hazard Category  
Existing Conditions

Project: Rossiter Road Flood Impact  
Assessment  
Client: KLM Spatial  
Project Code: 300204282  
Date: (2025-10-29)

#### Legend

 Study Site

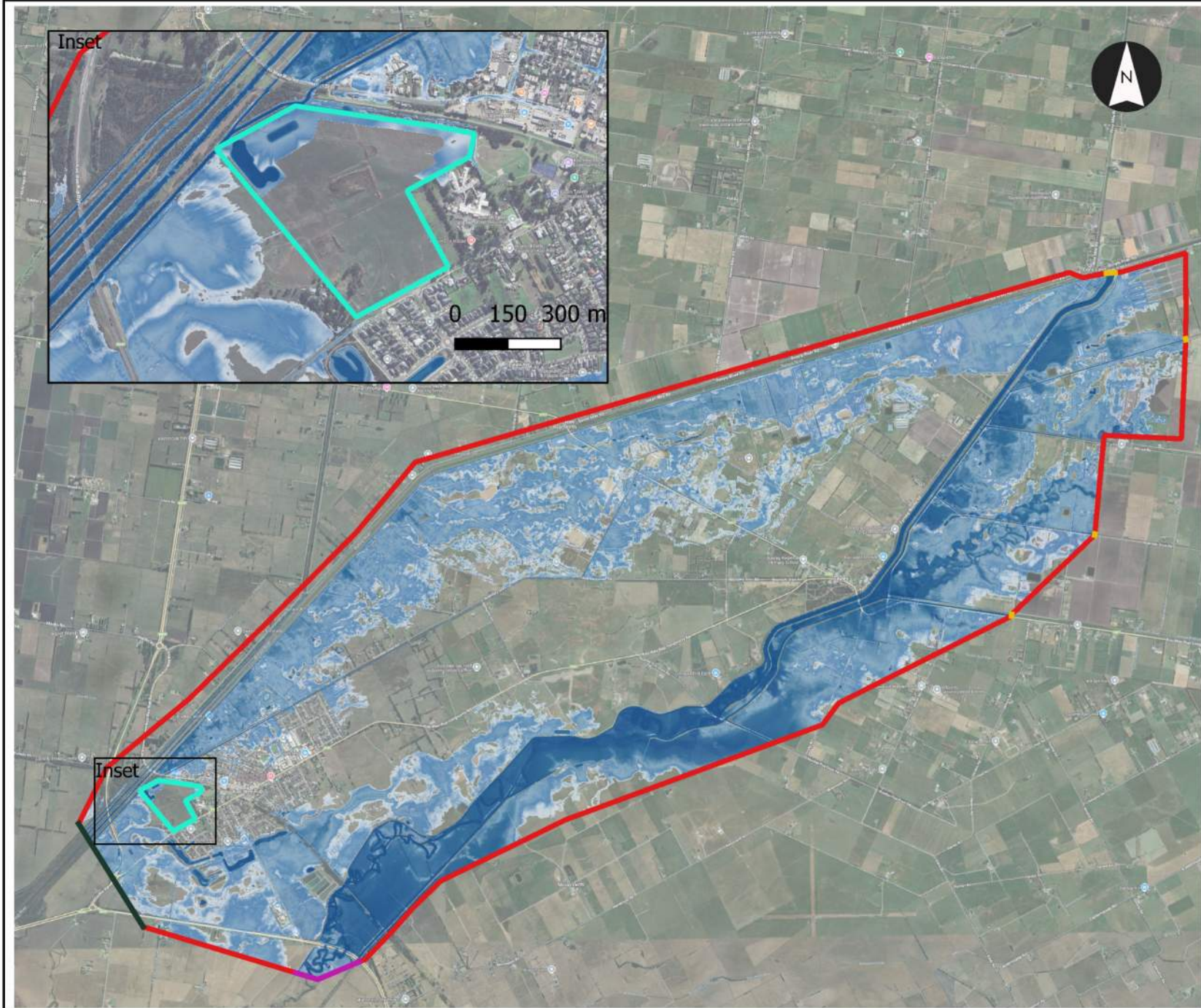
#### Hazard Category

-  H1 - Generally safe for vehicles  
#people and buildings.
-  H2 - Unsafe for small vehicles.
-  H3 - Unsafe for vehicles.  
#children and the elderly.
-  H4 - Unsafe for vehicles and  
people.
-  H5 - Unsafe for vehicles  
and people. #All buildings  
vulnerable to structural  
#damage. Some less robust  
buildings #subject to failure.
-  H6 - Unsafe for vehicles and  
people. #All building types  
considered #vulnerable to  
failure.



0 1,000 2,000 m

Scale at A3: 1:65000



1% AEP

Peak Flood Depths  
Proposed Conditions

Project: Rossiter Road Flood Impact Assessment  
Client: KLM Spatial  
Project Code: 300204282  
Date: (2025-10-29)

### Legend

 Study Site

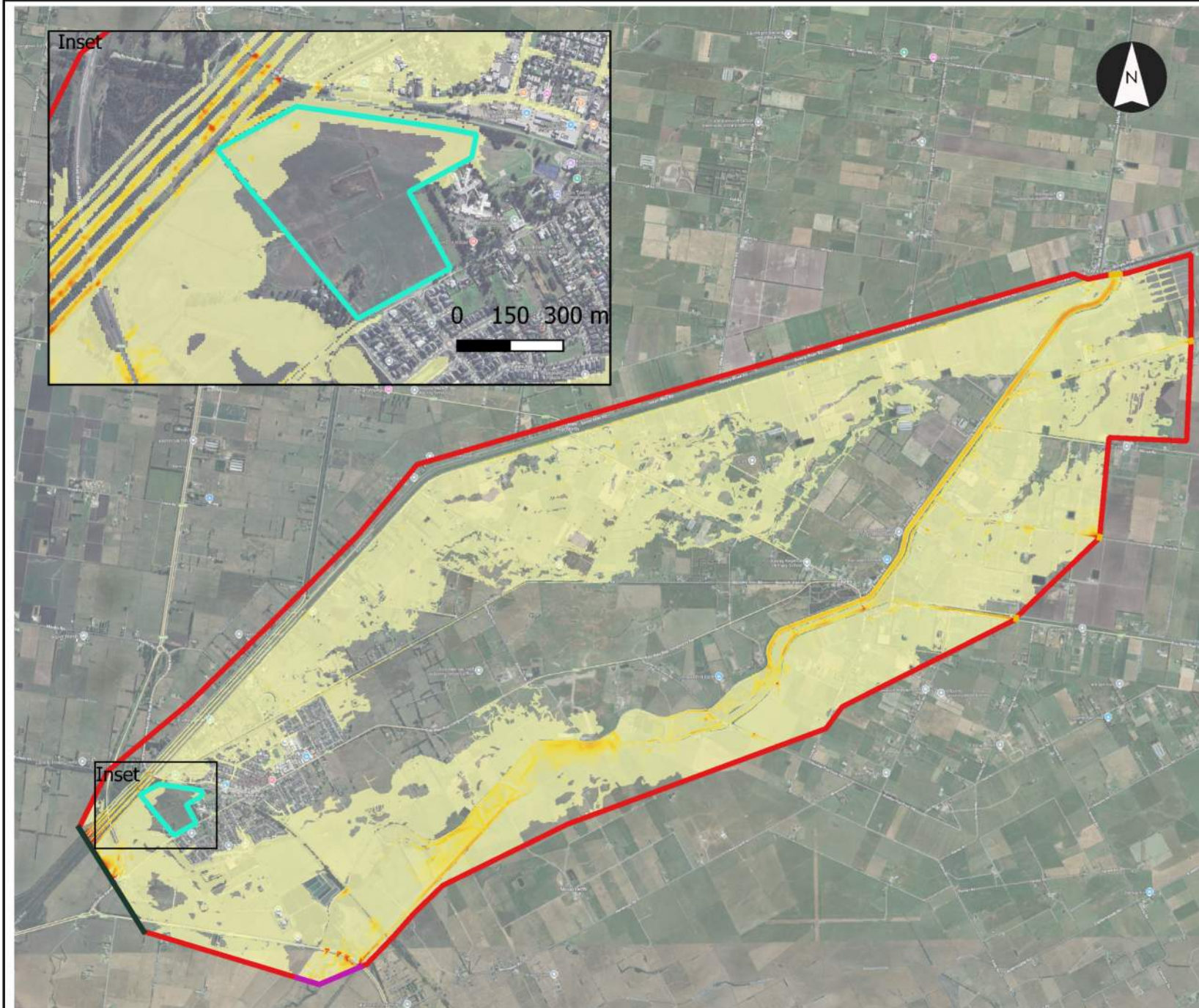
Peak Flood Depths (m)

 <= 0.05  
 0.05 - 0.10  
 0.10 - 0.25  
 0.25 - 0.50  
 0.50 - 1.00  
 >1

 Stantec

0 1,000 2,000 m

Scale at A3: 1:65000



1% AEP

Peak Velocity  
Proposed Conditions

Project: Rossiter Road Flood Impact  
Assessment  
Client: KLM Spatial  
Project Code: 300204282  
Date: (2025-10-29)

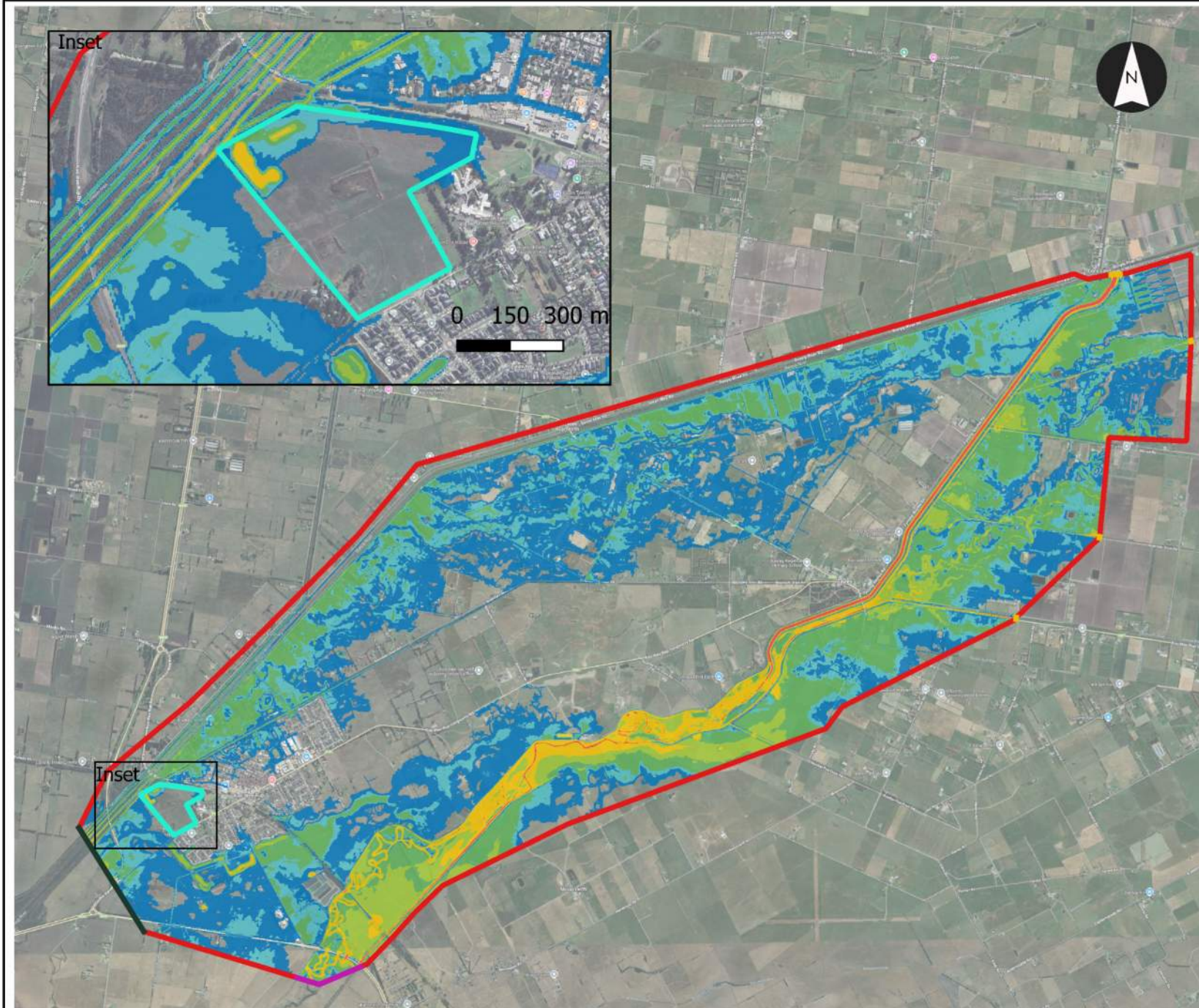
**Legend**

-  Study Site
- Peak Velocity (m/s)
-  <0.50
  -  0.50 - 1.00
  -  1.00 - 1.50
  -  1.50 - 2.00
  -  2.00 - 2.50
  -  >2.50



0 1,000 2,000 m

Scale at A3: 1:65000



1% AEP

Hazard Category  
Proposed Conditions

Project: Rossiter Road Flood Impact  
Assessment  
Client: KLM Spatial  
Project Code: 300204282  
Date: (2025-10-29)

### Legend

Study Site

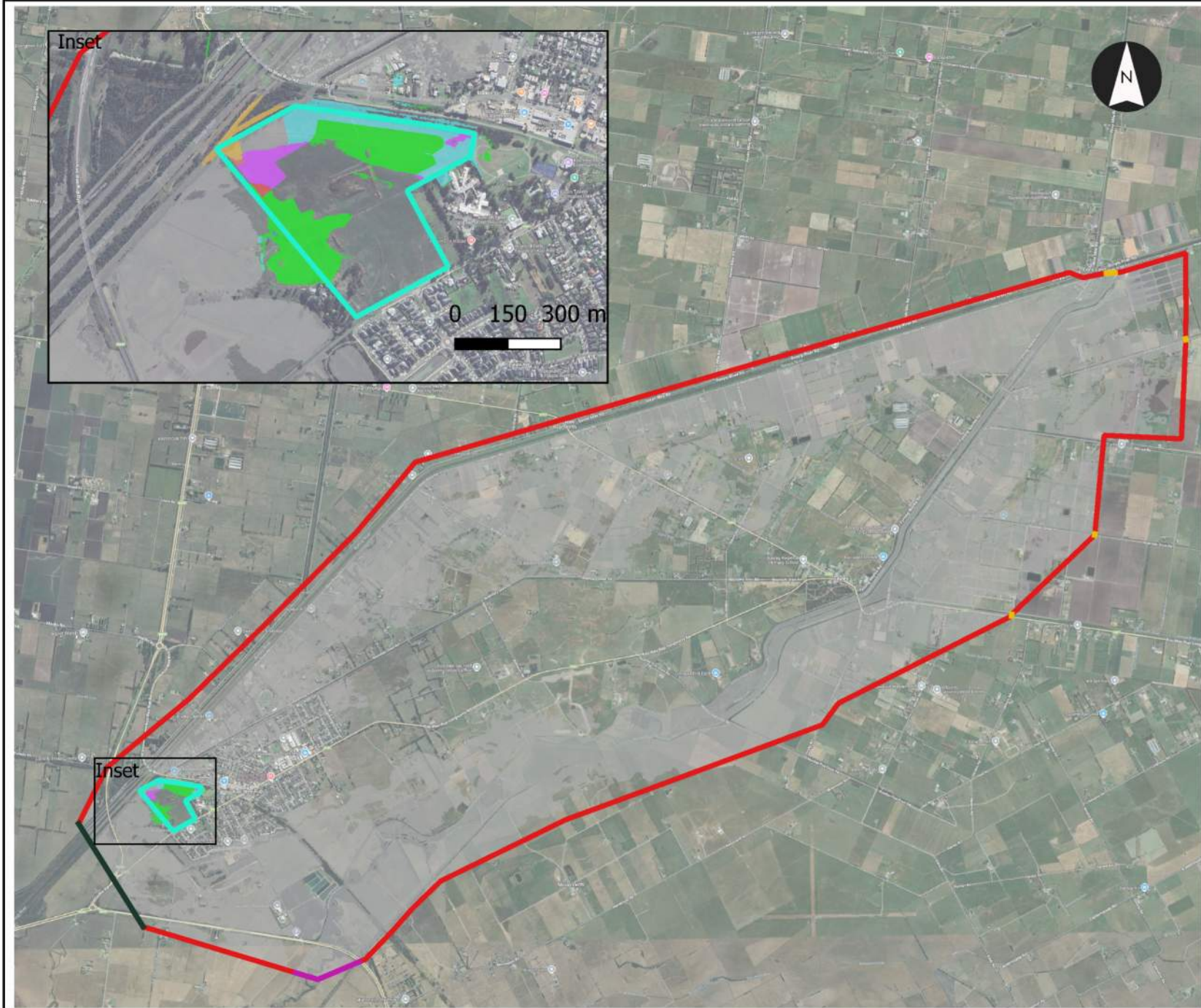
### Hazard Category

- H1 - Generally safe for vehicles  
#people and buildings.
- H2 - Unsafe for small vehicles.
- H3 - Unsafe for vehicles.  
#children and the elderly.
- H4 - Unsafe for vehicles and  
people.
- H5 - Unsafe for vehicles  
and people. #All buildings  
vulnerable to structural  
#damage. Some less robust  
buildings #subject to failure.
- H6 - Unsafe for vehicles and  
people. #All building types  
considered #vulnerable to  
failure.



0 1,000 2,000 m

Scale at A3: 1:65000



1% AEP

## Peak Flood Impacts Proposed vs Existing Conditions

Project: Rossiter Road Flood Impact  
Assessment  
Client: KLM Spatial  
Project Code: 300204282  
Date: (2025-10-29)

### Legend

-  Study Site
- Flood Impacts (m)
  -  < -0.50
  -  -0.50 to -0.10
  -  -0.10 to -0.05
  -  -0.05 to -0.01
  -  -0.01 to 0.01
  -  0.01 to 0.05
  -  0.05 to 0.10
  -  0.10 to 0.50
  -  > 0.50
  -  Was Wet, Now Dry
  -  Was Dry, Now Wet



0 1,000 2,000 m

Scale at A3: 1:65000