Government of Western Australia
Department of Transport
and Major Infrastructure

Empowering a thriving community

Generic Shoreline Mapping Scope

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Prepared for Department of Transport and Major Infrastructure (DTMI)

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Version control

Version No.	Date	Prepared by	Revision or issue descriptions	Issues to
Draft	10/04/2025	M P Rogers & Associates	Combined Draft for DoT review.	DoT
0	15/05/2025	M P Rogers & Associates	Updated with Client comments and issued for Client use.	DoT
1	19/06/2025	DoT	Additional updates from internal review	DTMI

Amendment record

This guidelines document is reviewed to ensure its continuing relevance to the systems and process that it describes. A record of contextual revisions is listed in the following table.

Page No.	Context	Revision	Date

Contents

NOTE **4**
FORMATTING KEY **4**
CONDITIONS OF USE **4**
AIM / OBJECTIVES **5**
EXTENT **5**
BACKGROUND **7**
Background Example 7
TASKS **7**
Task 1 – Undertake Shoreline Mapping 7
Task 2 – Review and Data Supply 8
METHODOLOGY **8**
DELIVERABLES **9**
TIMEFRAME **9**
DOCUMENTS AND FILES TO BE PROVIDED **9**
APPENDICES **10**

Note

[The position of a shoreline is often approximated through mapping the position of the vegetation line or similar lines. This can be used to determine ongoing movement trends of the shoreline and allow for hazard lines, buffers and trigger points to be monitored. The process of mapping the vegetation line is clearly defined through the DoT documents, *Coastal Demarcation Lines for Administrative and Engineering Purposes: Delineation Methodology and Specification* and *Capturing the Coastline* (DoT 2009, 2018).

The Commonwealth Government, through Digital Earth Australia (DEA), maps the average annual shoreline position and rates of change around Australia. This allows users to observe coastal erosion and growth trends as well as mapping of historical coastal changes. This dataset can complement mapping required in this scope, as well as review of previous vegetation line mapping.]

Formatting Key

[Throughout this template three text colours have been used to distinguish between the following items.]

1. Recommended content.
2. [Guidance notes for the user to be deleted prior to use.]
3. Example text to be edited by the user prior to use.

Conditions of Use

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Aim / Objectives

[Shoreline mapping aims to determine the location of the vegetation line, which is used as a relatively stable approximation of the shoreline. The coastal vegetation line is a commonly used indicator of the shoreline as it provides an approximation of the limit of active coastal processes. Comparison of the position of the coastal vegetation line over time can therefore provide details of shoreline movement. State Planning Policy 2.6 requires an understanding of long-term shoreline movement for planning new developments, which historical vegetation lines can help to determine (refer to the Coastal Hazard Assessment scope on DoT's website).

These works aim to capture the position of the vegetation line with possible objectives including the following.

- Determine shoreline movement trends.
- Assess buffer distances to assets.
- Inform coastal hazard assessments.
- Influence future management of the coastline.
- Identify areas at risk.

All are used to influence future management of the LGA's coastline.

The LGA will need to determine the requirements of mapping and update the scope as required.

Present the requirements of the shoreline mapping here.]

Shoreline mapping aims to map the position of the vegetation line along the LGA's coastline through photogrammetry or orthorectified aerial images. The position of the vegetation line will be used for the following tasks.

- Identifying recent and long-term shoreline movement trends.
- Monitoring buffer distances and trigger points.
- Identifying areas currently at risk from coastal hazards.
- Comparison to existing shoreline position data.

Extent

[Provide a map outlining the area to be mapped, typically the whole of the LGA's coastline. The identification of trigger points, areas of concern or erosion hot spots could also be identified within this section.]

The LGA manages approximately XX km of coast, stretching from XX to XX. The vegetation line along the whole coast is to be mapped and assessed. Within the LGA's coastline, the following areas are identified as areas of concern and require vegetation line mapping.

- Area one. [Include the LGA's priority areas.]
- Area two.
- Area three.

The location of these areas can be found in the following figures.

Figure 1 Coastline Mapping Extent. [Example from City of Kwinana CMAP]

[Include other areas.]

The LGA has a CHRMAP (or other coastal management document) which details trigger points for assets at risk. As part of shoreline mapping and analysis, the location of the vegetation line in relation to trigger points will need to be assessed and discussed. These trigger points are outlined in the following table.

Table 1 Example Trigger Points [Example from City of Kwinana CMAP.]

Name	Risk Level	Trigger Point
Trigger 1	Tolerable	Landward of the 500 year ARI inundation event/acute erosion line
Trigger 2	Increasing likelihood of Intolerable risk.	Landward of the 100 year ARI inundation event/acute erosion line but seaward of 500 year ARI inundation line.
Trigger 3	Intolerable. Interim protection may be viable.	Landward of the 50 year ARI inundation event/acute erosion line but seaward of 100 year ARI inundation line.
Trigger 4	Intolerable. Protection is not viable.	Seaward of the 50 year ARI inundation event/acute erosion line

Background

[Provide a brief background of requirements and / or trigger points / areas of concern if required, including information such as how to access any orthorectified areal images, outcomes of the triggers being reached or any other relevant information the LGA can provide.

The background of an example area is included below.]

Background Example

The triggers were established in the City's CHRMAP and CMP to protect the City's key assets. These key assets are located within the priority public areas outlined in the preceding figure. These locations have been experiencing ongoing coastal change including seasonal erosion, and the City plans to monitor these areas for ongoing changes and reductions in buffer distances. This will allow for informed ongoing management and decisions to be made before assets are lost or damaged by erosion hazards.

[Include background on specific areas if required.]

Tasks

[The tasks outlined in this section detail the required components of shoreline mapping.]

The following tasks are required to be completed by the Consultant as part of the shoreline mapping.

1. Task 1 – Undertake shoreline mapping.
2. Task 2 – Review and data supply.

Task 1 – Undertake Shoreline Mapping

[The Consultant should be experienced with the process of mapping the vegetation line along the western Australian coast. DoT has produced multiple documents detailing the process (available on request); these should be followed when mapping the vegetation line.

The scope of shoreline mapping doesn't include the capture of appropriate aerial images, these are often captured and available through Landgate or DoT. The LGA needs to ensure these are captured at the required times and frequency, as well as being made available for the Consultant to use.

It is recommended that the vegetation line position is captured using the Geocentric Datum of Australia 2020 (GDA2020) as the horizontal datum.

The Commonwealth Government through Digital Earth Australia (DEA) has mapped average annual shoreline position and rates of change. This allows users to observe coastal erosion and growth trends as well as mapping of historical coastal change. As part of this scope, it is expected the Consultant review vegetation line mapping by DEA and historical vegetation line mapping by DoT.]

The Consultant is required to undertake vegetation line mapping across the extent outlined in this scope. Mapping should follow the process outlined in *Coastal Demarcation Lines for Administrative and Engineering Purposes: Delineation Methodology and Specification* and *Capturing the Coastline* (DoT 2009, 2018).

The vegetation line should be mapped in the Geocentric Datum of Australia 2020 (GDA2020) horizontal datums.

The Consultant is also required to collect and use DEA Coastline data plus any historical DoT vegetation line data. These data will be compared to the results of vegetation line mapping, with any discrepancies or confirmations noted and provided.

Task 2 – Review and Data Supply

[Describe the requirements of shoreline mapping. This often involves review of the movement of the vegetation line and its location in relation to an asset.

DoT capture vegetation lines at varying intervals, a review of these should be considered when assessing movement trends.]

Once the vegetation line has been mapped the Consultant is to review and analyse the vegetation line location. Review and analysis should include the following aspects.

- Comparison of newly captured vegetation line with historical DoT vegetation lines and DEA Coastline mapping.
- Review of trigger points.
- Review of long-term shoreline movement trends.
- Assessment of emerging shoreline movement trends.
- Identification of at-risk areas (if required).
- Recommendations for ongoing management (if required).

[If the LGA does not have established triggers, the Consultant could be instructed to identify interim trigger points.]

As part of the review process, the Consultant is required to determine trigger points relating to the LGA's assets most at risk from coastal erosion. These trigger points are expected to assist with management of the coastline until appropriate triggers can be determined as part of a CHRMAP or other coastal management document.

Methodology

[The methodology for mapping the vegetation line is provided in DoT documents *Coastal Demarcation Lines for Administrative and Engineering Purposes: Delineation Methodology and Specification* and *Capturing the Coastline* (DoT 2009, 2018) available by request to DoT. These documents detail the preferred method of mapping the vegetation line. It is noted that the vegetation line can be mapped in 2D solely from orthorectified areal images.

The LGA should be cautious when prescribing a methodology as it may lead to additional costs and complications. The following methodology should only be used as a guide.]

The Consultant is to provide a methodology as part of their response to be reviewed by the LGA. The methodology should consider the DoT documents *Coastal Demarcation Lines for Administrative and Engineering Purposes: Delineation Methodology and Specification* and *Capturing the Coastline* (DoT 2009, 2018) while ensuring that the vegetation line is appropriately captured. The methodology may include the following aspects, noting that the following is to be used as a guide only.

1. Receive / procure orthorectified aerial images.
2. Map the position of the vegetation line.
3. Review previous position of the vegetation line(s) from historical DoT vegetation line data.
4. Download, map and review DEA Coastline Data.
5. Determine ongoing or emerging trends in shoreline movement.
6. Assess buffer distances and trigger points.
7. Provide deliverables to the LGA.

Deliverables

[In this section the LGA should consider the requirements of shoreline mapping to ensure they are met within the deliverables.

The LGA is to confirm the requirements of the survey and adjust deliverables as required.]

The Consultant is required to provide the following deliverables.

1. Mapped location of the vegetation line alongside historical vegetation lines and DEA coastline data in electronic (e.g. .SHP) and PDF forms.
2. Assessment of shoreline movement trends.
3. Assessment of buffer distances and trigger points.
4. Identification of at-risk areas.
5. Aerial images (if required).
6. Interim trigger points (if required).
7. Difference plots of changes in shoreline position (if required).
8. (Include any requirements specific to the LGA).

Timeframe

[Use this section to request an estimate of the project's timeline or include a deadline if required.

The timing of the mapping could also be specified here.]

The Consultant is to complete the mapping of the shoreline from the supplied aerials and provide deliverables within XX weeks of the contract award.

Documents and Files to be Provided

[This is where the LGA can provide details of any documents and files that will assist the Consultant in conducting shoreline mapping. Examples of these documents are included below. Ensure to check

web-hosted data sources for your project that may provide useful information, such as DoT's vegetation line dataset DoT-023 from DataWA.]

The following files (and documents) will be provided to the Consultant on the award of the works.

- Orthorectified aerial images.
- Electronic copies of previous vegetation line locations (if non-DoT data). [If applicable.]
- Documents detailing the trigger points and buffer distances (e.g. CHRMAP, foreshore management plans). [If applicable.]
- Any relevant documents or data the LGA has access to.

Appendices

[Include any required documents, these could include any files containing the required extent, previous mapping, documents detailing the trigger points and buffer distances monitoring and DoT documents *Coastal Demarcation Lines for Administrative and Engineering Purposes: Delineation Methodology and Specification* and *Capturing the Coastline* (DoT 2009, 2018).]