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Department of Transport
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Generic Beach Survey Transect Specification

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Prepared for Department of Transport and Major Infrastructure (DTMI)
Prepared by W Gardiner & T Hunt of M P Rogers & Associates Pty Ltd
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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 (TS) review.	DoT
0	14/05/2025	M P Rogers & Associates	Updated with Client comments (TS) and issued for Client use.	DoT
1	6/06/2025	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

Formatting Key

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

1. Required 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.

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Aim / Objectives

[For LGAs with capacity, survey transects of the beach can be captured. The aim of this surveying is to capture the beach profile to analyse ongoing changes to the beach and dune, as well as identifying trends in sediment movement. This specification provides for scaling of individual requirements, for completion in-house by the LGA, or alternatively repurposed as a scope for a consultancy.

The collection of beach transects can be for a range of reasons depending on the aim of monitoring, any developed CMAP and the immediate and long-term requirements of the LGA. The LGA will need to determine the required data and outcomes from the transects to determine the particulars of surveys.

- Collect a database of transects: this would allow for a record of gradual changes and historical conditions to be obtained for future review.
- Collect high frequency transects: this could be used as part of a storm monitoring campaign to determine its short-term effects or in areas that are experiencing significant erosion or accretion to determine sediment movement.
- Collect seasonal transects: this would allow for seasonal change in the beach profile to be captured.
- Collect transects fronting key infrastructure: this would capture buffer distances and ongoing changes to allow for informed management.

Present the required data and outcomes from the survey transects(s) here.]

The aim of a beach survey transects monitoring program is to obtain survey data detailing the position of the beach in key areas of the LGA. These data can be used to identify sediment movements, buffer width, seasonal change and ongoing trends. Beach survey transects involve the capture of beach levels along fixed transects, perpendicular to the shore. The objectives of these beach survey transects are as follows.

- Collect data along the same profiles each time.
- Capture all changes in elevation and grade.
- Capture the location of the water line at the time of survey.
- Determine long-term changes to shoreline position.
- Monitor sediment movement and volumes (in terms of m3/m).

The LGA should capture beach survey transects on at least a seasonal basis for use in ongoing analyses of change. [LGA to confirm requirements and adjust as required.]

Extent

[Provide a map outlining the location of the transects and include the coordinates of each profile.

The location of survey transects is generally selected to represent relevant shoreline sectors, particularly those directly in front of at-risk assets. The locations of transects should consider the impact of local coastal structures. The transects should begin at a fixed point such as a path edge, or if not available, at least 10 m behind the coastal dune crest. The transects should extend out to a depth that can be safely waded approximately 1 – 1.5 m. If previous transects or profiles have been surveyed these could also be used, as these would provide a larger data set to compare. DoT may be able to assist with identifying any previous survey transects along an LGA's coastline.]

The LGA manages approximately XX km of coast, stretching from XX to XX. Within this section of the coast the LGA is monitoring the whole /specific areas of coastline.

Across the LGAs coastline, XX survey transects have been selected. The location of these transects is presented in the following figure and table.

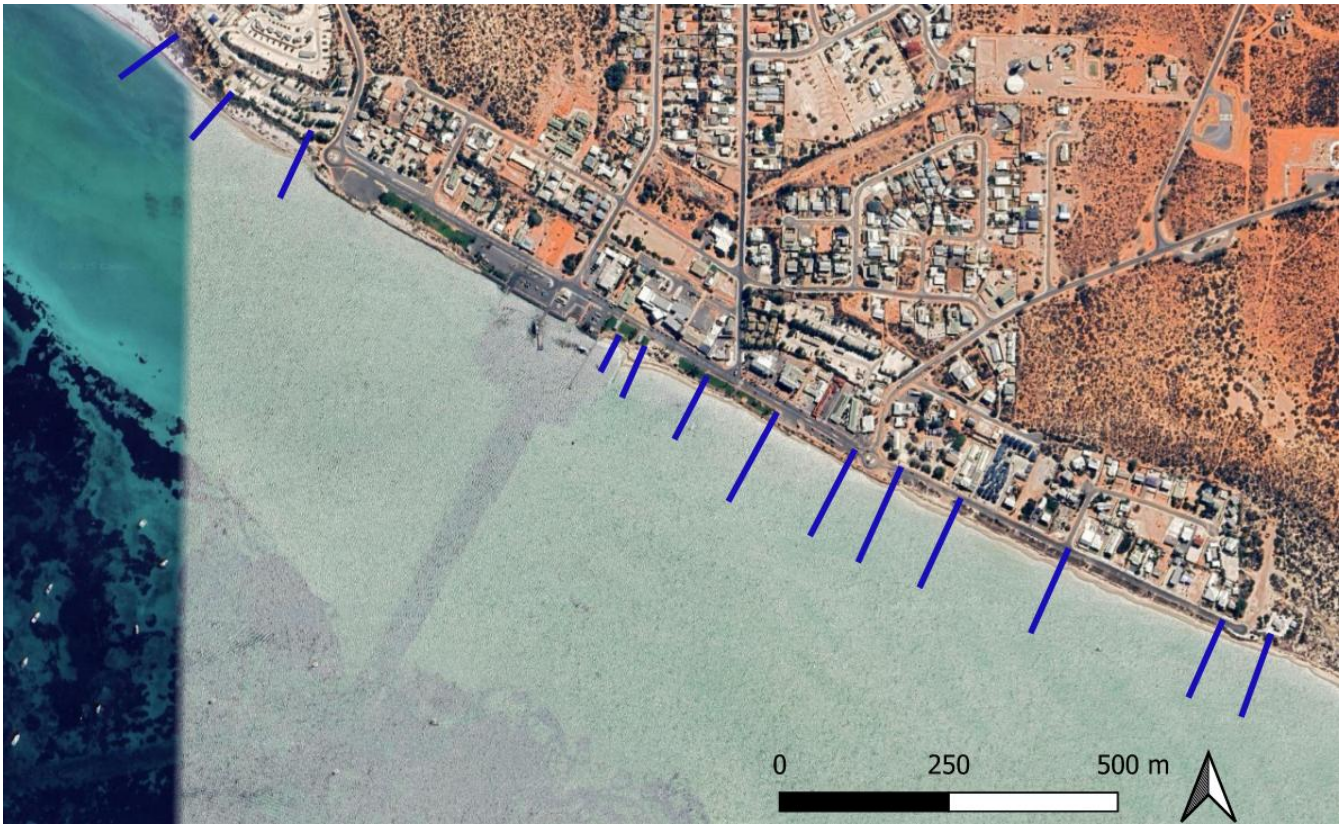

Figure 1 Example Beach Survey Transect Locations. [Example location at Denham from the Shire of Shark Bay CMAP.]

Table 1 Example Beach Survey Transect Locations. [Example location at Denham from the Shire of Shark Bay CMAP.]

Transect Name	Start Location		End Location	
	Easting	Northing	Easting	Northing
SoSB BST 1	153808.94	7127237.41	153772.82	7127120.81
SoSB BST 2	153736.35	7127254.74	153693.74	7127145.71
SoSB BST 3	153503.32	7127349.73	153456.01	7127230.24
SoSB BST 4	153340.68	7127416.95	153288.68	7127289.87
SoSB BST 5	153250.31	7127459.24	153196.14	7127323.51
SoSB BST 6	153180.61	7127481.63	153123.55	7127358.89
SoSB BST 7	153062.72	7127531.19	153000.61	7127404.48
SoSB BST 8	152956.91	7127579.93	152916.46	7127492.56
SoSB BST 9	152862.90	7127620.44	152835.82	7127551.13
SoSB BST 10	152824.26	7127634.52	152802.59	7127587.23
SoSB BST 11	152355.05	7127916.25	152316.58	7127822.64
SoSB BST 12	152234.80	7127967.59	152182.61	7152182.61
SoSB BST 13	152073.28	7127988.19	152149.22	7128049.77

Notes 1. The extents of these transects may need to be individually adjusted to capture the required extent.

Tasks

The tasks outlined in this section detail required components of the survey transects.]

The following tasks are required to be completed by the LGA as part of the survey transects.

1. Task 1 – Confirm transect locations.
2. Task 2 – Undertake beach transect surveys.
3. Task 3 – Data processing, QA/QC and review.

Task 1 – Confirm Transect Locations

[The survey transect locations should be determined by an experienced coastal engineer and detailed in a CMAP. If this has not occurred, then the locations should be based on previous transects, areas of regular ongoing change or fronting key assets. The location and timing of the surveying should be reviewed to confirm that the data will provide required outputs and align with the objectives of the LGA / other monitoring plan.]

The coastal manager is required to review the location of survey transects along the LGA's coastline. The survey transects should be in a location positioned to capture [Insert monitoring requirement, e.g. detailed survey data fronting key assets, provide an understanding of seasonal change in the beach profile]. The review should be conducted once per monitoring season and before Task 2 is undertaken.

Task 2 – Undertake Beach Transect Surveys

[The LGA should aim to have the survey completed by a licensed surveyor with appropriate qualifications, experience and be familiar with the scope and data required. It is noted that not all LGAs have this capacity, so it is recommended that anyone completing the survey be familiar with the equipment and process required to collect data.

The survey should be completed in the Geocentric Datum of Australia 2020 (GDA2020) and the Australian Height Datum (AHD) for the horizontal and vertical datums respectively. If this is not feasible, the surveys should be completed in the same format each time to allow for ongoing comparison.]

The LGA is required to undertake the survey transects as outlined in this scope. The following key components should be considered when conducting the survey.

- The survey will locate all features, and changes in grade, that cross each profile including scarps, berms and drop-offs.
- Ensure the surveys are completed along the same profile to allow for comparison between surveys.
- Conduct the survey during times of lower tides to ensure that as much of the profile is visible as possible during each survey.
- Begin the surveys at least 10 m behind the primary dune's crest or from a fixed point such as a path or key coastal asset.
- Finish the surveys at a depth that can be safely waded, approximately 1 – 1.5 m.
- Use the Geocentric Datum of Australia 2020 (GDA2020) and the Australian Height Datum (AHD) for the horizontal and vertical datums respectively.

Task 3 – Data Processing and Review

[Provide a description of the required outputs from the survey. These will generally be consistent depending on the requirements of the monitoring. The review requirements will depend on monitoring outcomes and experience of staff. This aspect should be scaled to the internal capacity of the LGA.]

The LGA is to process data to allow for internal and external review as required. The required outputs of surveys are presented below. These points aspects should be available in AutoCAD DWG, XYZ text file and PDF format.

- Section plan for each profile.
- 3D spatial data of the survey points.

The internal data review is expected to include the following components.

- Buffer distance / beach width review.
- Estimation of ongoing change.

Further detailed assessment and review should be completed by an experienced coastal engineer with access to all available and relevant monitoring data as part of any analysis.

Methodology

[The beach survey transects can be captured using different equipment that each have individual requirements and methods for capturing survey data. The following methodology is generic and will require modification by the LGA or surveyor to align with their equipment, requirements and processes.]

The beach survey transects are required to be completed in-line with the method proposed below, noting individual requirements of specific survey equipment. The following methodology is expected to capture the required aspects of transect surveying however the detailed requirements of individual survey equipment are not included [the LGA may wish to include this if known].

1. Review and confirm the survey positions.
2. Review any previous survey data and confirm access and extent requirements.
3. Identify survey equipment and be familiar with its use.
4. Confirm and comply with all WHS requirements.
5. Undertake profile surveys along the required alignment.
   - Complete the surveys at a time of lower tide to allow for a larger extent to be captured.
   - Begin the survey at least 10 m behind the most landward (tertiary) dune crest, or from a fixed point such as a path or key coastal asset.
   - Finish the surveys at a depth that can be safely waded, approximately 1 – 1.5 m.
6. Process survey information and prepare section plans for each profile.
7. Review changes and assess buffer distances.

Equipment

[The beach survey transects can be captured using different equipment that each have individual requirements and methods for capturing survey data. Generally, the following items and equipment are required. Noting that equipment may need to be changed and adapted to align with the LGA's requirements.

The equipment discussed does not include any PPE, safety or travel requirements. The LGA will need to consider this accordingly.

The LGA should update the following list with preferred equipment to conduct monitoring.]

The equipment required to complete beach survey transects are outlined below, noting that some items are broad to allow for interchangeability based on specific requirements and capabilities.

- Survey device(s), including any associated program subscriptions and software.
- Storage equipment and requirements [device / program to store and view the captured survey data].
- Device to identify required transect locations (likely included with the survey equipment).

It is noted that safety and transport equipment has not been included and if the LGA requires this, then it should be considered accordingly.

Costs and Personnel

[The beach survey transects can be a relatively low-cost exercise completed by minimal staff members. The exact costs and personnel can be difficult to determine without confirming the extent and number of transects. In general, it should take approximately one day to complete the beach survey transects of an LGA, this is expected to include travel requirements. It is noted that other monitoring or general activities such as photographic monitoring could be conducted at the same time, reducing the direct cost.

The personnel required to conduct beach survey transects is dependent on the requirements of the LGA. It can be completed by one staff member, though safety requirements may require two or more staff members to conduct surveying, especially if staff are entering the water.

The LGA is to consider their requirements, capabilities and extent of their monitoring before determining costs and personnel required to conduct the monitoring.

The following directs generic personnel requirements. The LGA should update this to match their requirements.]

The beach survey transects should be completed by XX staff member(s) in XX hours. It is expected that at each site approximately 30 minutes to an hour is required to capture and record the transects, some sites may require longer due to access restrictions. The travel between sites is expected to take approximately XX across XX kms, parking time has been considered in the above estimates.

(The actual timing and cost would be specific to the LGA and these may need to be determined internally).