

## TASMARC SURVEY INSTRUCTIONS – LEVELLING

(Version - 20120821)

Ideally measurements should be made every two or three months, or immediately after significant storm events. If possible make measurements when the tide is low so as much of the beach as possible is exposed. The line of the profile must be at right angles to the general direction of the beach in the vicinity of the survey mark (SM).

Enter the following information on the booking sheet:

Site name: (eg Primrose Beach North)

Page number:

Survey mark ID: (eg S730/12)

Date:

Start time:

Level & serial number: (eg Leica NA720 5319887)

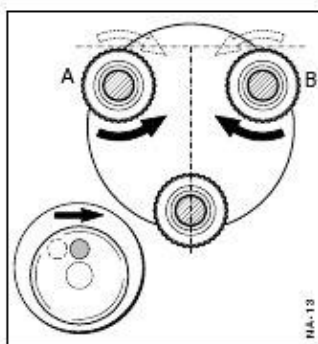
Names of observers: (Initials OK)

Decide which points accurately represent the shape of the beach and mark them with stakes. For example: top of dune scarp, bottom of dune scarp and any point where changes of grade occur. Place the last peg a metre or so short of current sea level or wave action. Include perceived high water mark (HWM). This is the highest point the sea appears to have reached during the last few months. It will usually be represented by the base of the dune scarp or the seaward limit of vegetation. If the SM is close to the top of the dune scarp or HWM (say 5m or less), include a point at a distance of approximately 0.1m seaward of the SM. Normally the first point to be measured will be the top of the dune scarp, or HWM, and the measurements will proceed seawards from there.

Draw a sketch profile of the beach on the space provided on the booking form. Number the points that are going to be surveyed.

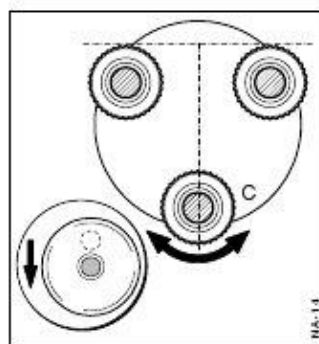
Measure and book the horizontal distance from the SM to all the pegs. For example: SM – 1, SM – 2, 2 – 3, 2 – 4. Always record both point from and point to on the booking sheet.

Set up the level tripod approximately 10m away from the line of the profile. Ensure the legs are firmly pressed into the ground and the top plate is as flat as possible.



**Centring the circular level**

1. Turn foot screws A and B simultaneously in opposite directions until bubble is in the centre (on the imaginary "T").



2. Turn foot screw C until bubble is centred.

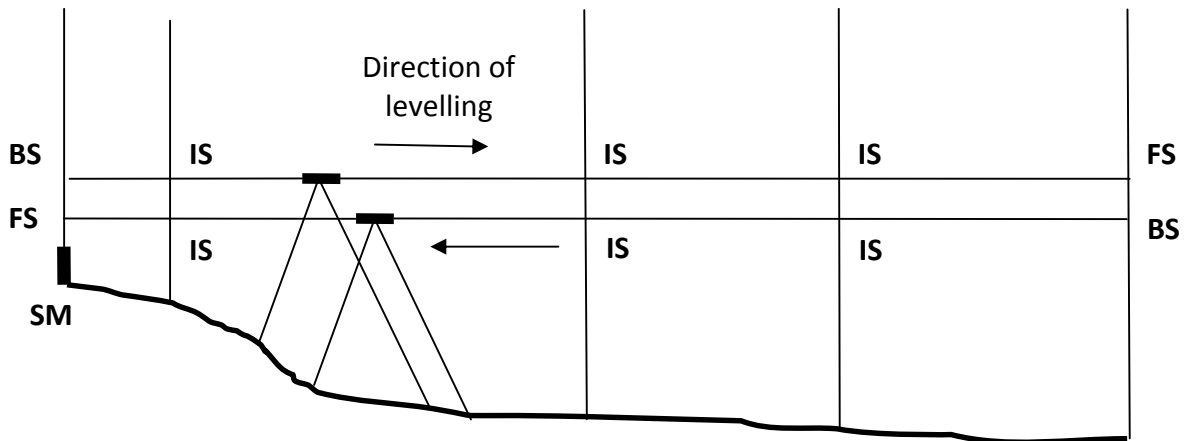
Screw on the level and level it as per the diagram. Think of it as having 2 "T" shaped axes. When you turn foot screws A and B the bubble will follow your left thumb. Ensure the line of sight is above the SM.

Focus the level on a distant object and focus the cross hairs so they are clear and do not move when you move your eye in front of the eyepiece.

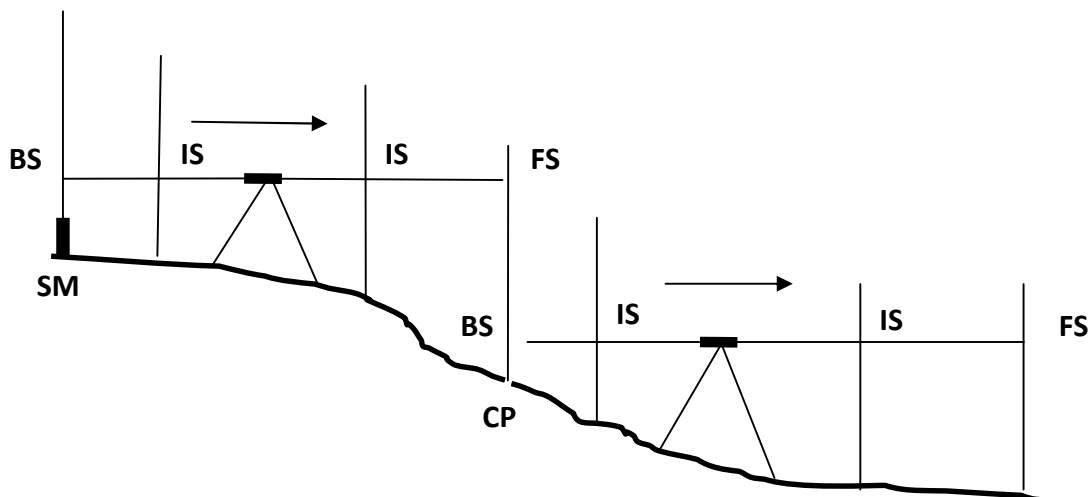
Check that the SM and whole profile can be measured from the set-up position. If not, establish a firm staff change point at

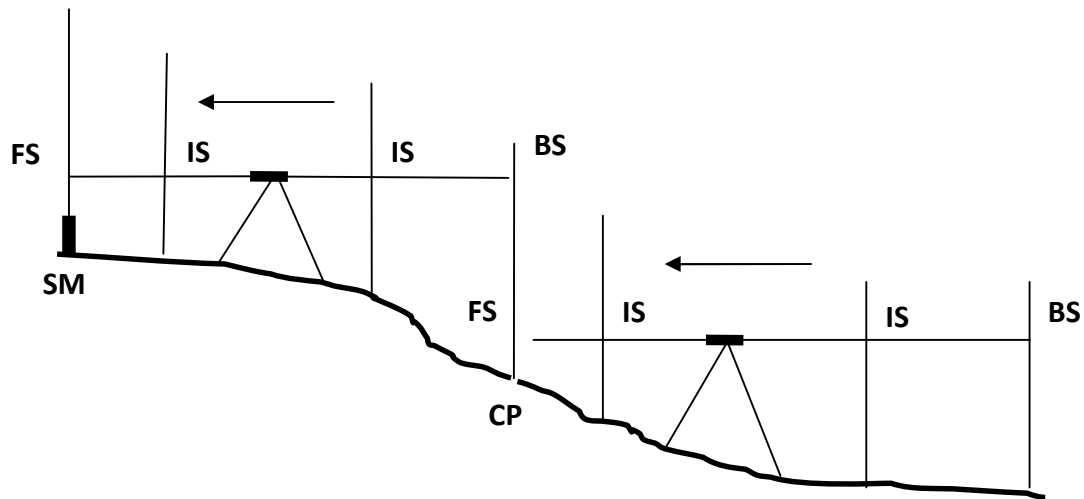
ground level beside one of the stakes within range of the staff. This can be a peg or a rock, or the sand if it is firm.

The first staff reading will always be a back sight on the SM. If there is no change point subsequent readings will be intermediate sights until the last point near the water is reached. Record this as a foresight and ask the person holding the staff to remain in place. Reset the tripod enough to make it necessary to re-level the level. Record the next sight as a backsight on the same point, write it on the same line as the foresight. Repeat the intermediate sights back up the beach until the SM is reached. Record this as a foresight.



If a change point has been established along the profile because it all cannot be measured from the first set up, record the first reading on this point as a foresight. Ask the person holding the staff to remain in place. Move the level down the beach to a point approximately half way between the change point and the last point near the water. Record a staff reading on the change point as a backsight, then intermediate sights until the last point near the water is reached. Record this as a foresight and ask the person holding the staff to remain in place. Reset the tripod enough to make it necessary to re-level the level. Record the next sight as a backsight on the same point, write it on the same line as the foresight. Repeat the intermediate sights back up the beach until the change point is reached. Record this as a foresight. Move the level back to near its first position. Record a backsight on the change point, intermediate sights on the profile points, then finish with a foresight on the SM.





Check that the sum of the backsights equals, or is close to, the sum of the foresights. The difference must be less than 5cm.

Take at least 3 photographs looking each way along the beach. Indicate where the profile first intersects the beach and have that point in the left and right foreground. Take another photograph from the seaward end of the profile looking towards the SM. See sample photographs below. Photograph anything considered to be of interest.

Record the number of photos taken and the finish time on the booking sheet.

Sample booking sheets follow.



Sample booking sheet – all measurements from the one set-up

**Tasmanian Shoreline Monitoring and Archiving Project**

Site name:	Preservation Bay	Page:	1
Survey mark:	730/78	Date:	19/06/2010
Time start:	14:00	Time finish:	14:30
		No photos:	2
Level & S/N:	NA720 5594096	Observers:	FW HS RH JM IM



Sketch profile:

Point from	Point to	Distance	SM to	Distance	
SM	1	0.1			
SM	2	3.7			
SM	3	5.5			
SM	4	11.95			
SM	5 HWM	12.8			
5	6	3.3			
6	7	10.7			
6	8	23.45			
Staff location	Backsight	Intermediate sight	Foresight	Instrument height	Reduced level
SM	0.01				
1		0.99			
2		0.51			
3		1.05			
4		1.2			
5 HWM		1.72			
6		2.41			
7		3.21			
8	3.99		3.87		
7		3.43			
6		2.53			
5 HWM		1.85			
4		1.32			
3		1.18			
2		0.63			
1		1.11			
SM			0.13		
Total:	4.00	Total:	4.00		

Sample booking sheet – two set-ups necessary, change point established at point 7.

**Tasmanian Shoreline Monitoring and Archiving Project**

Site name:	Turners Beach West		Page:	1	
Survey mark:	730/411		Date:	16/12/2011	
Time start:	10:20	Time finish:	11:40	No photos:	3
Level & S/N:	Leica NA720 5594089		Observers:	NB AP GS +	
Point from	Point to	Distance	SM to	Distance	
SM	1	0.1			
SM	2	2.2			
SM	3	5.2			
SM	4	7.1			
SM	5	10.75			
SM	6	15.2			
6	7	9.3			
7	8	21.9			
8	9	31.85			
9	10	31.8			
Staff location	Backsight	Intermediate sight	Foresight	Instrument height	Reduced level
SM	0.15				
1		0.80			
2		1.13			
3		1.41			
4		1.55			
5		1.63			
6		1.32			
7	1.35		3.32		
8		2.12			
9		2.67			
10	3.32		3.33		
9		2.67			
8		2.12			
7	3.37		1.40		
6		1.37			
5		1.67			
4		1.58			
3		1.40			
2		1.13			
1		0.80			
SM			0.15		
Total:	8.19	Total:	8.2		