

Shorebird Nest Check High Tide/Storm Surge

Get to know your beach

A general guide for shorebird minders to estimate whether a high tide could reach nests, and to learn how their own beach behaves over time.

Beach profile (fill in once, update as you learn)

- **Beach name:** _____
- **Facing direction (looking out to sea):** _____
- **Onshore wind directions (push water up the beach):** _____
- **Offshore wind directions (hold water back):** _____
- **Sheltered from swell by (islands, headlands, reefs):** _____
- **Swell directions that get in:** _____
- **Exposure:**
 - ☐ Open coast
 - ☐ Partly sheltered
 - ☐ Harbour or estuary
- **Reference tool group uses for tide predictions:** _____
- **Reference port for tide predictions:** _____
- **Typical slope near nests:**
 - ☐ Steep (about 1:5)
 - ☐ Moderate (about 1:10)
 - ☐ Gentle (about 1:20)
 - ☐ Very flat (1:30 or flatter)

How to estimate slope: measure the drop over a set distance. For example, a 0.5 m drop over 10 m is 1:20.

Nest Check: High Tide Risk Checklist

Step 1: Forecast tide

- Predicted high tide: _____ m
- Spring tide (around new or full moon) or red-alert tide?
☐ Yes ☐ No. If yes, be more cautious.

Note: your beach's tide may arrive at a different time or height than the reference port. Track the time difference in observed .vs. predicted high tide to get a correction to apply. Use only one tide prediction source (variations occur between sources).

Step 2: Air pressure adjustment

Rule of thumb: 1 hPa below 1013 raises sea level by about 1 cm, and 1 hPa above 1013 lowers it by about 1 cm.

- Forecast pressure at high tide: _____ hPa
- Adjustment = 1013 – pressure = _____ cm

Step 3: Wind setup

Only count onshore wind for your beach. Adjust the rough estimated impact in this table to match your experience at your beach.

Onshore wind	Open coast	Sheltered or harbour <i>Adjust to match local experience</i>
Light (under 15 km/h)	0–5 cm	0–5 cm
Moderate (15–30 km/h)	5–10 cm	5–15 cm
Strong (30–50 km/h)	10–20 cm	15–30 cm
Gale (over 50 km/h), sustained	20 cm or more	30 cm or more

Shallow bays and long harbours can pile up more water than the open coast, because wind pushes water across a long shallow stretch.

- Wind direction: _____ Speed: _____ km/h
- Wind setup: _____ cm (use 0 if the wind is offshore)

Step 4: Calculate your Still Water Total

Predicted tide + pressure + wind (or + residual) = _____ m

Waves, distance and decision

Step 5: Swell and waves

Swell doesn't raise the average water level much, but waves run up the beach beyond it.

- Offshore swell forecast: height _____ m, period _____ s, direction _____
- Does this direction reach your beach? ☐ Yes ☐ Partly ☐ No
- Estimated wave height at the beach: _____ m

Wave height at the beach	Rough run-up allowance <i>Adjust to match local experience</i>
Under 0.3 m	0–10 cm
0.3–0.6 m	10–25 cm
0.6–1.0 m	25–45 cm
Over 1.0 m	45 cm or more (high risk)

- **Long-period swell (10 s or more):** add about 50%.
- **Steep beaches:** waves surge up further, so use the top of the range.
- **Flat beaches:** waves break further out and lose energy, so use the lower end. But the still water rise travels further horizontally (see Step 7).
- Use whichever is bigger, swell or local wind chop. Don't add both.
- Run-up allowance: _____ cm

Step 6: Calculate Total reach

Still water total + run-up allowance = _____ m

Step 7: Convert to distance up the beach

Horizontal shift $\approx$ vertical rise $\times$ slope ratio

Rise	Steep 1:5	Moderate 1:10	Gentle 1:20	Flat 1:30
10 cm	0.5 m	1 m	2 m	3 m
20 cm	1 m	2 m	4 m	6 m
30 cm	1.5 m	3 m	6 m	9 m
50 cm	2.5 m	5 m	10 m	15 m

- Estimated extra reach: _____ m

Step 8: Compare with nests

- Nest position relative to the last high-tide wrack line: _____
- Distance from the expected reach to the nearest nest: _____ m

Decision

- ☐ **Low risk:** More than 5 m clearance and calm conditions. Monitor as usual.
- ☐ **Watch:** 2–5 m clearance, or conditions are building. Re-check near high tide and alert your coordinator.
- ☐ **Act:** Less than 2 m clearance, or waves are expected in the nest zone. Follow your group's agreed protection procedure and DOCs advice.

Keep in mind: These numbers are guides. If in doubt, take the cautious option and check in with the team.

After high tide: learn your beach

Date	Predicted reach	Actual reach (wrack line)	Wind / swell / pressure	Too high, too low, or about right?

Patterns to look for over a season:

- Which wind or swell directions push water higher than expected?
- Does your beach get more or less setup than these tables suggest?
- Are there low spots, channels or stream mouths where water reaches further?

Keep in mind: These are rough guides. The biggest wave sets matter most. If in doubt, take the cautious option and talk to your team.

Adjust the information in the tables to suit your beach.

Local details help shorebird minders understand how their beach behaves, so they're less likely to be caught by surprise. To build that knowledge over time, think about setting up a simple online form or shared spreadsheet where your volunteers can record their observations. As your records grow, your estimates will get more accurate, and your group will be more confident judging how the beach's behaviour might affect nesting shorebirds.