

# Coastal Monitoring & CoastSnap

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# Our Coastline Rocks



Marino & Hallett Cove  
Conservation Parks



- 7.2km coastline
- Rocky cliffs & coves
- Coastal heathlands
- Outstanding geology
- Coastal walking trail
- High value coastal real estate.

# Coastal Issues



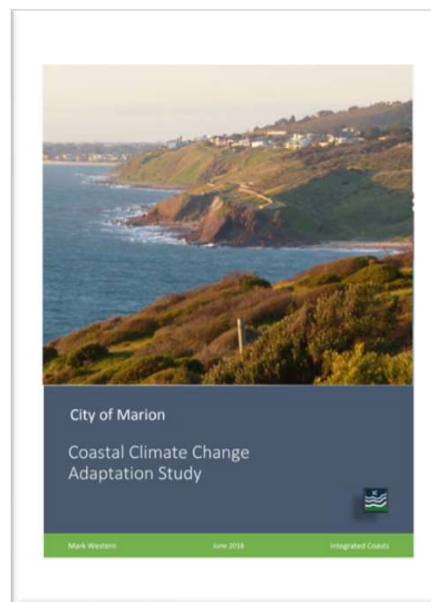
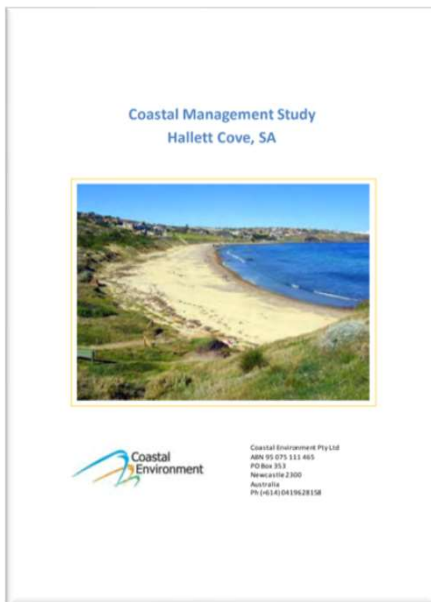
- Landslip / subsidence
- Storm damage from waves
- Cliff top erosion
- Coastal Walkway closures.



# Understanding Our Coast



- City of Marion studies
  - Hallett Cove Beach Study (2012)
  - Coastal Climate Change Study (2018)
- Coastal Monitoring Plan (\$150,000: 2020 – 2024)
  - Nearing end of first two years (matched DEW Funding)
  - Final two years coming up.



# Coastal Climate Change Study



- Development history.
- Historic aerial imagery.
- LIDAR Baseline 2018.
- Modelled scenarios using current sea levels and 1:100 ARI storm events then projected to 2050 and 2100.
- Overlaid information
  - Erodibility of geology
  - Ecological assets
  - Council infrastructure
  - Private infrastructure.



**Field River** 9 May 2016, 5:50pm



**Digital Baseline** February 2018

# Information Gap

Coastal monitoring aims to fill the technical information gap.

Ensures we have timely informed, responses.

Monitoring includes studies of:

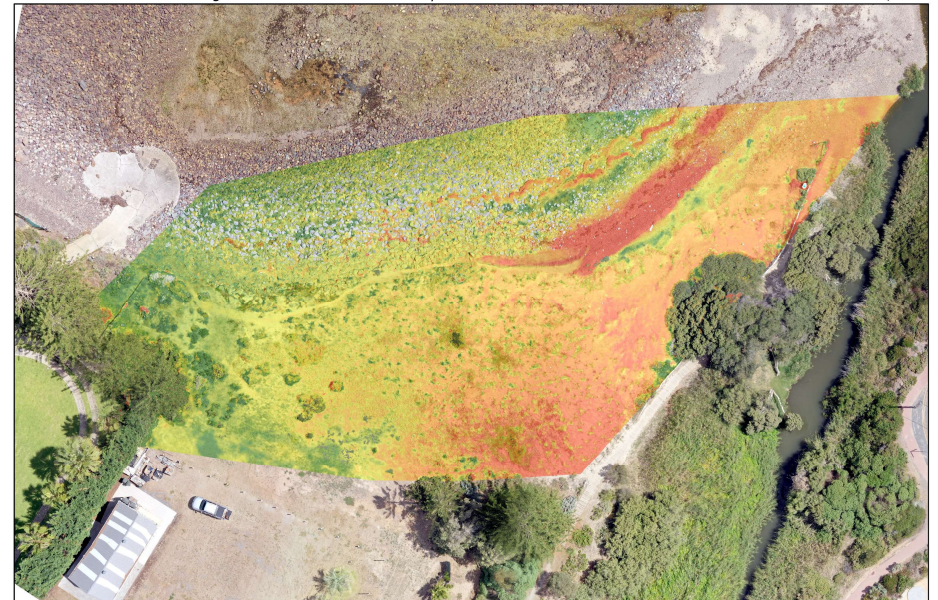
- Coastal terrain (baseline + hotspots)
- Bathymetry
- Storm conditions
- Wave conditions
- Wind conditions
- High tides.



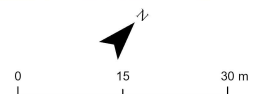
**Hallett Cove Beach** 24 June 2021 3:53pm

Field River Dune Surface Change from 24th-Feb-2021 to 8th-July-2021

Datum: GDA2020 - MGA Zone 54 / AHD



Legend  
Field\_River\_Dune\_Surface\_Change  
Value  
0.681814  
-0.242587



# Council Assets



- Coastal Walkway
- Stormwater outlets and infrastructure
  - Plus cliff tops and gullies
- Road assets
- Open space and reserve infrastructure
  - Heron Way Reserve
- Artwork.



# Coastal Risk

## 2100 Risk to Council Assets



- Annual Coastal Risk Reports (Nov/Dec).
- Full public disclosure of risks in Scoping Study.
- Annual risk reporting to become public.
- Council risks:
  - assessed using Council Risk Management Framework.
  - listed in Corporate Risk Register.
  - adaptation / treatment planning through Asset Management Plans.

## Issues:

- Lack of state-wide coastal hazard assessment & rating in South Australia.
- Private land / environmental impacts (where council role is not clear).



# Regional Approach



- Resilient South Regional Climate Partnership.
- Resilient Asset Management Project (RAMP) \$500k project with multiple partners – coastal climate change will be considered in this project.
- Adelaide Coastal Councils Network.
- LGA Coastal Coordinator – coming soon.



**Adelaide Coastal Councils Network**  
(Logo Coming Soon!)



**Local Government Association**  
of South Australia

# Information Gap



## Community Engagement:

- Varying understanding around the scales of projected change.
- High level of awareness + interest in getting involved.
- Sand at Hallett Cove Beach?
  - Need for a public evidence base.

## Coastal Images:

- Visual changes to beach and shoreline
- Tidal variations
- Storm tides (before, during and after).



# Citizen Science



## Compared Different Options

- **CoastSnap** [www.coastsnap.com](http://www.coastsnap.com)
- **Fluker Post** [www.flukerpost.com](http://www.flukerpost.com)
- **Photomon** [www.nacc.com.au/photomon](http://www.nacc.com.au/photomon)
- **Witness King Tides Project** [www.witnesskingtides.org](http://www.witnesskingtides.org)

## CoastSnap Preferred

Pros	Cons
<ul style="list-style-type: none"><li>✓ Global network</li><li>✓ High public profile</li><li>✓ Backed by large organisation</li><li>✓ Scientifically robust</li><li>✓ User-friendly App</li><li>✓ High community engagement</li><li>✓ No ongoing costs (optional).</li></ul>	<ul style="list-style-type: none"><li>❖ Higher setup cost than other options. (approx. \$2,000 per station + optional extras).</li></ul>

# CoastSnap Video Demo

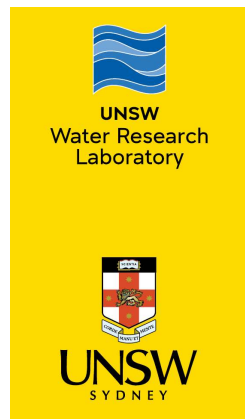
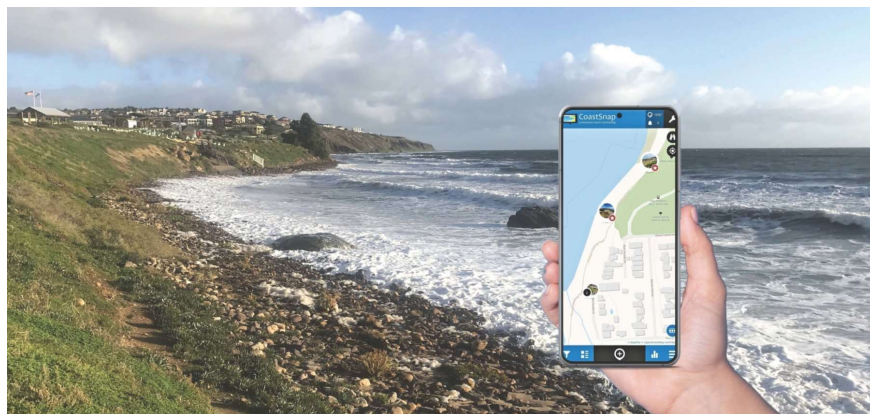


[https://youtu.be/wfo9ZS\\_9zdo](https://youtu.be/wfo9ZS_9zdo)

# Global CoastSnap Network



- Started in 2017.
- >200 monitoring locations in 21 countries.
- >20,000 snaps recorded.
- Continued rapid expansion.



# Five Stations in City of Marion



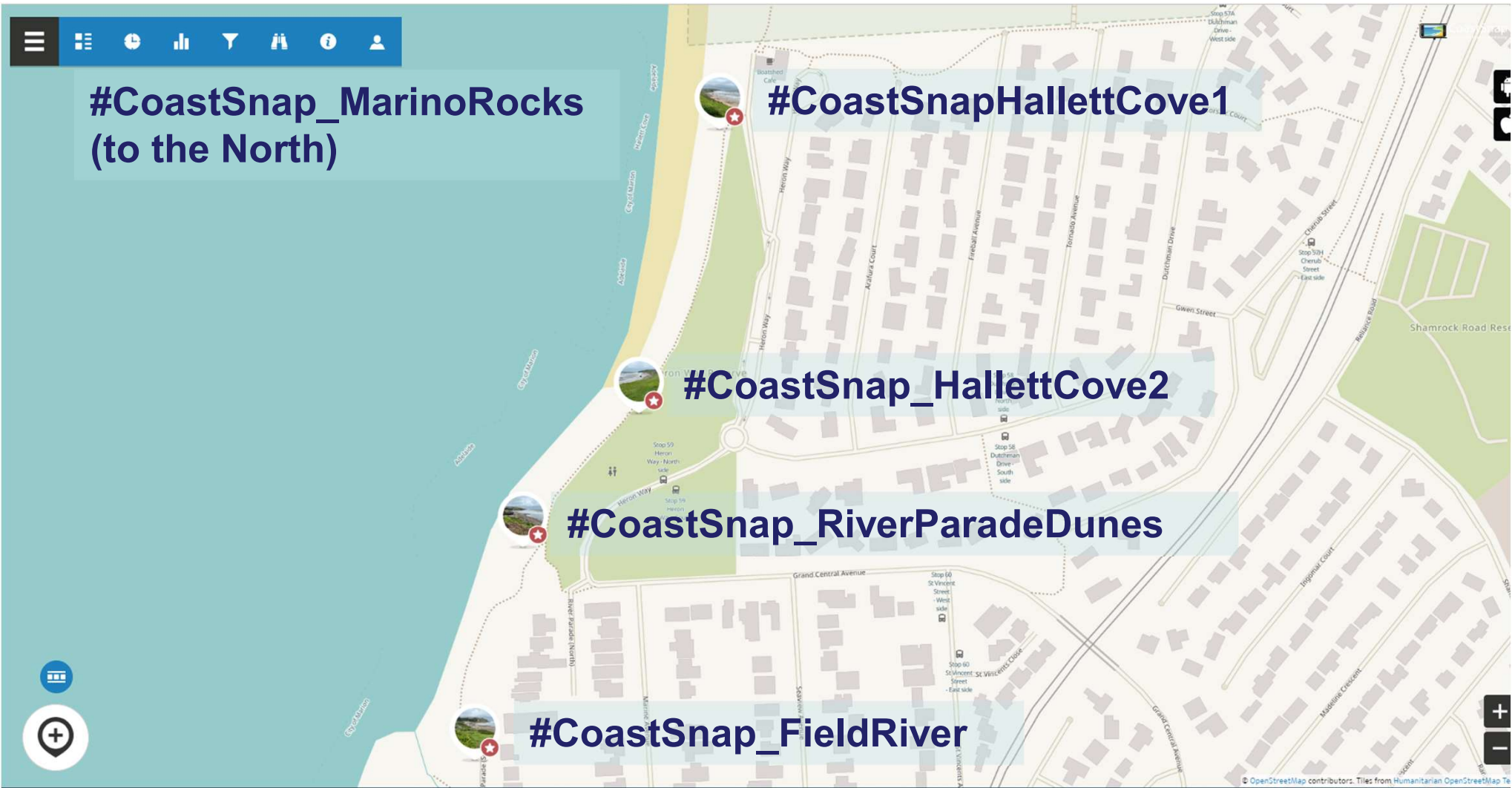
#CoastSnap\_MarinoRocks  
(to the North)

#CoastSnapHallettCove1

#CoastSnap\_HallettCove2

#CoastSnap\_RiverParadeDunes

#CoastSnap\_FieldRiver



# CoastSnap App



16/09/2022  
COASTSNAP FIELD RIVER (OFFICIAL)

15/05/2022  
★ Top Spot  
Method: Coastsnap Station  
● Changes since last update: No Obvious Change

Dallas Parker

” Cloudy windy rainy very high tide lots of big waves the birds that usually sit down on the rocks with the car water all back ride along The edge

Spot ID: 618633

16/09/2022  
COASTSNAP FIELD RIVER (OFFICIAL)

12/05/2022  
★ Top Spot  
Method: Coastsnap Station  
● Changes since last update: No Obvious Change

Dallas Parker

” Had to wait for this guy to move!

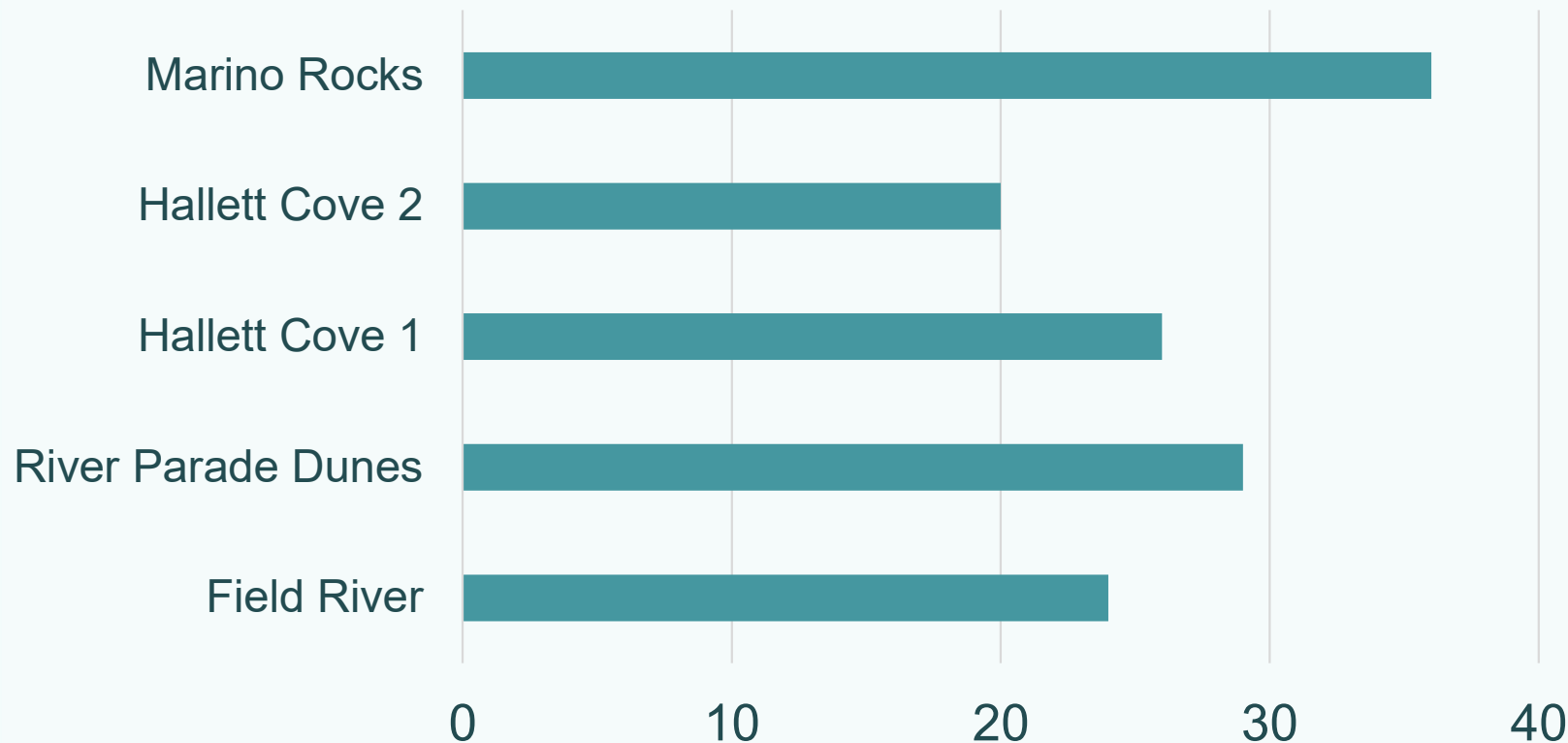
Spot ID: 617140

# Exporting data



- 135 observations sine November 2021.
- Approx 50 different observers.

## CoastSnap Observations Sept 2022





# Shoreline tracking



# Lessons Learnt

- Do your own graphic design for signs.
- Posts need a large concrete plinth
- Wood looks nice – recycled plastic option soon.
- Data cleaning.
- Stations >500m apart.
- Support from UNSW – WRL is great.
- Advice from local coastal specialist.



Evaluation report coming soon  
(happy to share)

# More CoastSnap in SA!



Let's talk about a coordinated expansion of CoastSnap in South Australia.

## Websites

[www.marion.sa.gov.au/services-we-offer/environment/coastsnap](http://www.marion.sa.gov.au/services-we-offer/environment/coastsnap)

[www.coastsnap.com](http://www.coastsnap.com)

## References

- [Harley, M.D. and Kinsela, M. \(2022\) CoastSnap: A global citizen science program to monitor changing coastlines, Continental Shelf Research, 245, 104795, https://doi.org/10.1016/j.csr.2022.104796](https://doi.org/10.1016/j.csr.2022.104796)
- [Harley, M.D., Kinsela, M., Sánchez-García, E. and Vos, K. \(2019\) Shoreline change mapping using crowd-sourced smartphone images, Coastal Engineering, 150, 175-189, https://doi:10.1016/j.coastaleng.2019.04.003](https://doi:10.1016/j.coastaleng.2019.04.003)

UNSW Sydney: [coastsnap@unsw.edu.au](mailto:coastsnap@unsw.edu.au)

# Thank you!

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# Adaptation Options



## Hallett Cove Seaside Pool

*The Hallett Cove Seaside Pool seeks to provide protection from coastal erosion whilst improving coastal access and amenity.*

- 2019 Hallett Cove Ocean Pool Feasibility Study, Coast Protection Grant (\$25k:\$25k).
- 2021, Hallett Cove Seaside Pool Concept Plan and Consultation Program, Coast Protection Grant (\$35k:\$35k).

