



**NOTICE OF EXTRAORDINARY GENERAL MEETING,
VOTING OUTSIDE OF MEETING
OF THE PRIMARY THOROUGHFARE BODY CORPORATE**

Type of Meeting **Voting Outside Committee Meeting**
Date and Time of meeting **Friday 26th April 2024 4:05PM**

You are advised that a Meeting of the Sanctuary Cove Primary Thoroughfare Body Corporate is Voting Outside Committee Meeting, and votes must be returned by Friday 26th April 2024 4:00pm

This notice is forwarded to all committee members.

Note: Only EGM committee members are required to vote.

The following agenda sets out the substance of the motions to be considered at the meeting.

Sanctuary Cove Body Corporate Services Pty Ltd,
for and on behalf of the Secretary.

Motions

1. Approval for the commissioning of SANDMAP to complete scope of further works associating with mapping the profile and depths of the catchment lakes located within Sanctuary Cove.

Reply To PO Box 15, SANCTUARY COVE QLD, 4212

VOTING PAPER
Committee Meeting for PTBC EGM

Location of meeting: Voting Outside Committee Meeting
Date and time of meeting: Friday 26th April 2024 4:05PM

Instructions

If you want to vote using this voting paper, then mark either YES, NO or ABSTAIN (eg. by a circle) printed opposite each motion you wish to vote on. You may on as few or as many motions as you wish. It is not necessary to vote on all motions.

After signing the completed voting paper, forward it promptly to the Secretary at the address shown at the end of the agenda.

MOTION

1	Approval for the commissioning of SANDMAP to complete scope of further works associating with mapping the profile and depths of the catchment lakes located within Sanctuary Cove.	ORDINARY RESOLUTION
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Proposed by: PTBC Secretary

THAT the PTBC EGM approves the commissioning of SANDMAP, to complete the scope of work of the lake system and water management system within the Sanctuary Cove Golf Course at a cost of \$41,000 (ex gst).

The scope of work will include:

- mobilisation, EMP, JSEA and WMS Preparation
- Probing 10-20m nominal grid for 24 catchment lakes
- Reporting and drafting outcomes

Two quotes were sourced:

SANDMAP - \$41,000 (ex gst)
Marine & Earth Sciences - \$46,725 (ex gst)

Yes	
No	
Abstain	

Name of voter: _____

Signature of voter: _____ Date: _____

The PTBC commissioned ENGENY to provide a report and assessment of the existing conditions of the lake system and water management system.

The results of this survey will assist with the understanding of whether the amount of recycled water that is currently being supplied to the catchment lakes can be reduced to avoid the erosion of the lake edges and increase stormwater retention.

Scope and Purpose

- Background Data Review:
 - Review all data available to understand the existing water management practices and any issues associated with the day-to-day operations of the Golf Course.
- Site inspection:
 - Inspection/identification of silt traps and identify any defects and conditions of current assets.
 - Visual surface inspection of stormwater drainage system to identify defects, ponding or blocking.
 - Identification of opportunities for water quality improvements.
 - Inspection to identify areas of erosion of the lake batters and potential sources of sediment.
 - Visual inspection to estimate depth of lake systems based on current conditions.
 - Identify areas that may need planted buffers or ground stabilization.
- The total cost for this project was approved by the PTBC at \$42,970 (ex gst).

Further Approval for Funding requested by the PTBC.

- The above data review and investigation, failed to locate the original design and as built profiles of the man-made catchment lakes.
- It is impossible to accurately assess the above issue visually.

Therefore, to complete this vital survey and profiling exercise, and provide accurate data and information moving forward, the PTBC has sourced two quotes from companies for the following scope of works.

- Mobilisation, EMP, JSEA and WMS Preparation
- Probing 10-20m nominal grid for 24 catchment lakes
- Reporting and drafting outcomes.

The two quotes;

SANDMAP - \$41,000 (ex gst)

Marine & Earth Sciences- \$46,725 (ex gst)

It is recommended that the PTBC approve the commissioning of SANDMAP for \$41,000 to complete the above scope of works.

Budget PTBC – Reports.

From: [Rod Tansley](#)
To: [Carson Ly](#)
Cc: [Brendon Bolt](#); [Sean Mccagh](#); [Ted Anderberg](#)
Subject: RE: Sanctuary Cove Golf and Country Club - Lake Survey - Sediment Depths
Date: Tuesday, 26 March 2024 1:13:18 AM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)
[Sanctuary Cove Golf Course Lakes Sub Bottom Profiling Proposal - SandMap.pdf](#)

Hi Carson,

I apologise for the delay in getting this proposal to you, I've been in South Australia on the Murray on a project for the last week and got a bit caught up.

I have attached a proposal for you to consider. We have tried to reduce our costs as much as possible but there are external costs with sub bottom profiling that we can't control and the number of lakes to move between contributes considerably to the cost.

As I mentioned in the proposal, we are fairly booked up until May at this stage but some projects are weather dependent so there may be opportunity to schedule something in earlier once you decide to go ahead.

Let me know if you have any queries. As a brief summary, this survey would provide you with a gridded surface of the hard clay base of the lakes that can be used in conjunction with the single beam bathymetry data you have for volume calculation of the sediment.

Regards,

Rod Tansley

Technical Director

M +61 417 333 497

E Rod.Tansley@sandmap.com.au

W www.sandmap.com.au



From: Carson Ly <Carson.Ly@engeny.com.au>
Sent: Friday, March 15, 2024 8:41 AM
To: Rod Tansley <rod.tansley@sandmap.com.au>
Cc: Brendon Bolt <Brendon.Bolt@engeny.com.au>
Subject: Sanctuary Cove Golf and Country Club - Lake Survey - Sediment Depths

Hi Rod,

As discussed, are you able to give me a fee to undertake sub-bottom profiling of the waterbodies at Sanctuary Cove Golf and Country club? The intention of the survey is to identify the sediment depths of each waterbody.

There are 24 waterbodies throughout the course which totals approx. 26ha. I have individually measured each waterbody (see table below).

Within your fee can you also provide a timeframe for when these works can be undertaken?

Please note that bathymetric survey for the existing base (top of sediment) which can be provided for your comparison. However, I do not believe Lake 25 has had survey to the top of the sediment so please allow for this in cost estimate.

Lake id (internal)	Area (sq.m)	Golf Course
1	2881.61	Pines
2	14825.32	Pines
3	11127.94	Pines

4	18429.53	Pines
5	17734.85	Pines
6	12747.17	Pines
7	25677.6	Pines
8	16129.72	Pines
9	25209.97	Pines
10	1537.84	Pines
11	3727.04	Pines
12	2729.22	Pines
13	4648.02	Palms
14	3950.85	Palms
15	3347.97	Palms
16	31212.32	Palms
17	20140.03	Palms
18	730.02	Palms
19	2720.86	Palms
20	7186.72	Palms
21	3807.44	Palms
22	945.43	Palms
23	5142.71	Palms
24	22927.14	Palms
25	5761.47	Palms
Total	259517.32	

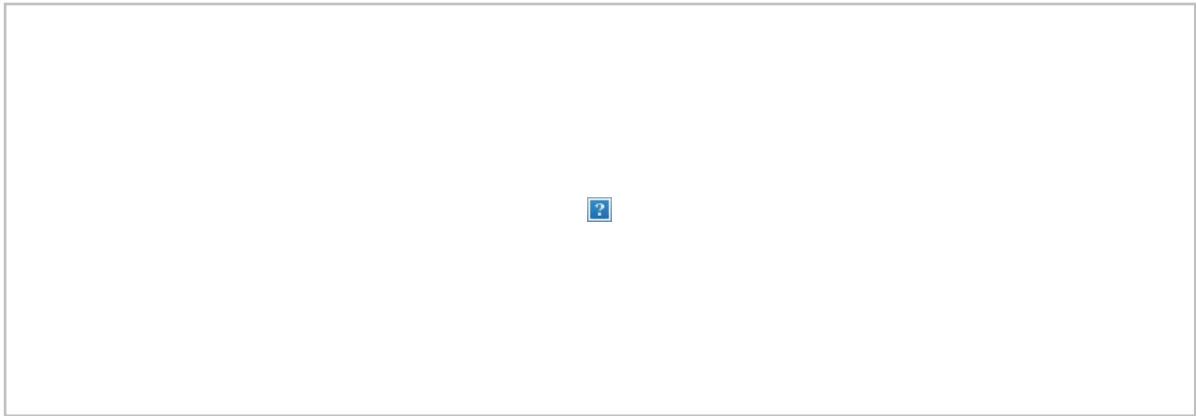


Figure 1 - Pines Golf Course

From: [David King](#)
To: [Carson Ly](#)
Cc: [Brendon Bolt](#)
Subject: RE: Sub-bottom profiling Survey - Sanctuary Cove Golf Course
Date: Friday, 19 April 2024 7:53:01 AM
Attachments: [image007.png](#)
[image008.png](#)
[image009.png](#)
[image010.png](#)
[image011.png](#)
[image012.png](#)
[image013.png](#)
[image001.png](#)
[image002.jpg](#)
[image005.png](#)
[image006.png](#)

Hi Carson

I wouldn't recommend sub-bottom profiling.

Looks too shallow to work effectively and extensive weed cover which suggest there will be gas charged sediments in the dams which effectively attenuates the seismic signal.

The best option would be to probe to firm base to measure thickness of recent materials and generate contour plans of this surface and then use the bathymetry data surface to calculate recent sediment volumes for each lake.

Costs to do this from a shallow draft vessel and on a nominal 10-20m grid would be in the order of

Item	Cost Estimate
Mobilisation, EMP, JSEA and WMS Preparation	\$ 2,375.00
Probing 10-20m nominal grid 24 Lakes	\$ 43,600.00
Reporting and Drafting	\$ 750.00
Total excl. GST	\$ 46,725.00

If you need any further information please let me know.

Regards

Dave

David King
Principal Geophysicist

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land +61 7 3899 1156
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web www.marineandearth.com



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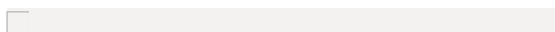
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Thank you.

From: Carson Ly <Carson.Ly@engeny.com.au>
Sent: Thursday, April 18, 2024 10:57 AM
To: David King <david.k@marineandearth.com>
Cc: Brendon Bolt <Brendon.Bolt@engeny.com.au>
Subject: RE: Sub-bottom profiling Survey - Sanctuary Cove Golf Course

Hi David,

Thanks for getting back to me.

See link below for the bathy survey.



Kind regards,



Carson Ly
Senior Engineer
0411 536 761

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From: David King <david.k@marineandearth.com>
Sent: Thursday, April 18, 2024 10:45 AM
To: Carson Ly <Carson.Ly@engeny.com.au>
Cc: Brendon Bolt <Brendon.Bolt@engeny.com.au>
Subject: RE: Sub-bottom profiling Survey - Sanctuary Cove Golf Course

Hi Carson
I will get this sorted today for you.

One thing which would help is the bathymetry data for each pond just to assess navigation. Can you provide this please.
Regards
Dave

From: Carson Ly <Carson.Ly@engeny.com.au>
Sent: Wednesday, April 17, 2024 10:46 PM
To: David King <david.k@marineandearth.com>
Cc: Brendon Bolt <Brendon.Bolt@engeny.com.au>
Subject: RE: Sub-bottom profiling Survey - Sanctuary Cove Golf Course

Hi David,

Just following up on this one? When can I expect a quote?

Kind regards



Carson Ly
Senior Engineer
0411 536 761

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From: Carson Ly
Sent: Thursday, April 11, 2024 2:38 PM
To: david.k@marineandearth.com
Cc: Brendon Bolt <Brendon.Bolt@engeny.com.au>
Subject: Sub-bottom profiling Survey - Sanctuary Cove Golf Course [Filed 11 Apr 2024 14:37]

Hi David,

As discussed, are you able to give me a fee to undertake sub-bottom profiling of the waterbodies at Sanctuary Cove Golf and Country club? The intention of the survey is to identify the sediment depths of each waterbody.

There are 24 waterbodies throughout the course which totals approx. 26ha. I have individually measured each waterbody (see table below).

Within your fee can you also provide a timeframe for when these works can be undertaken?

Please note that bathymetric survey for the existing base (top of sediment) has already been undertaken which can be provided for your comparison. However, I do not believe Lake 25 has had survey to the top of the sediment so please

allow for this in cost estimate.

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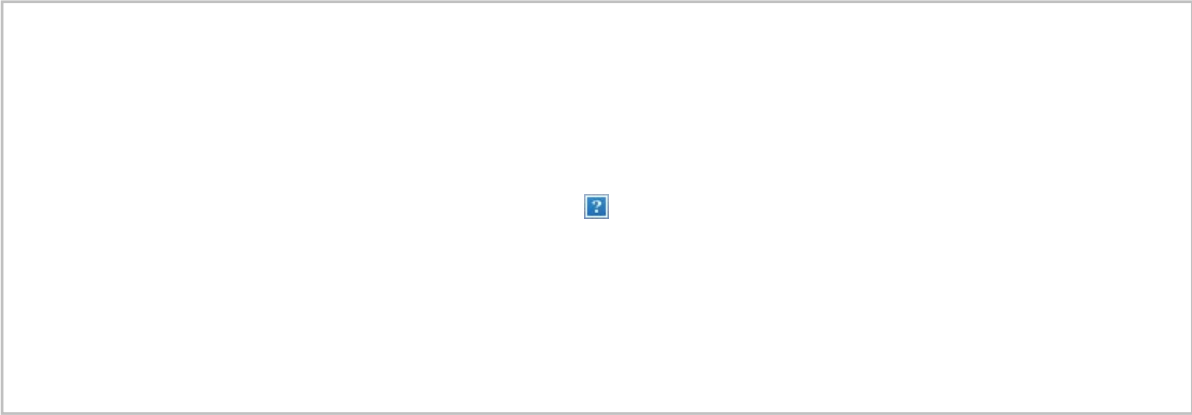


Figure 1 - Pines Golf Course



Project proposal

Hydrographic Surveying Services for Sanctuary Cove Golf Course Lakes – Sub Bottom Profiling

Document number: GC20240318

Version date: 18/03/2024

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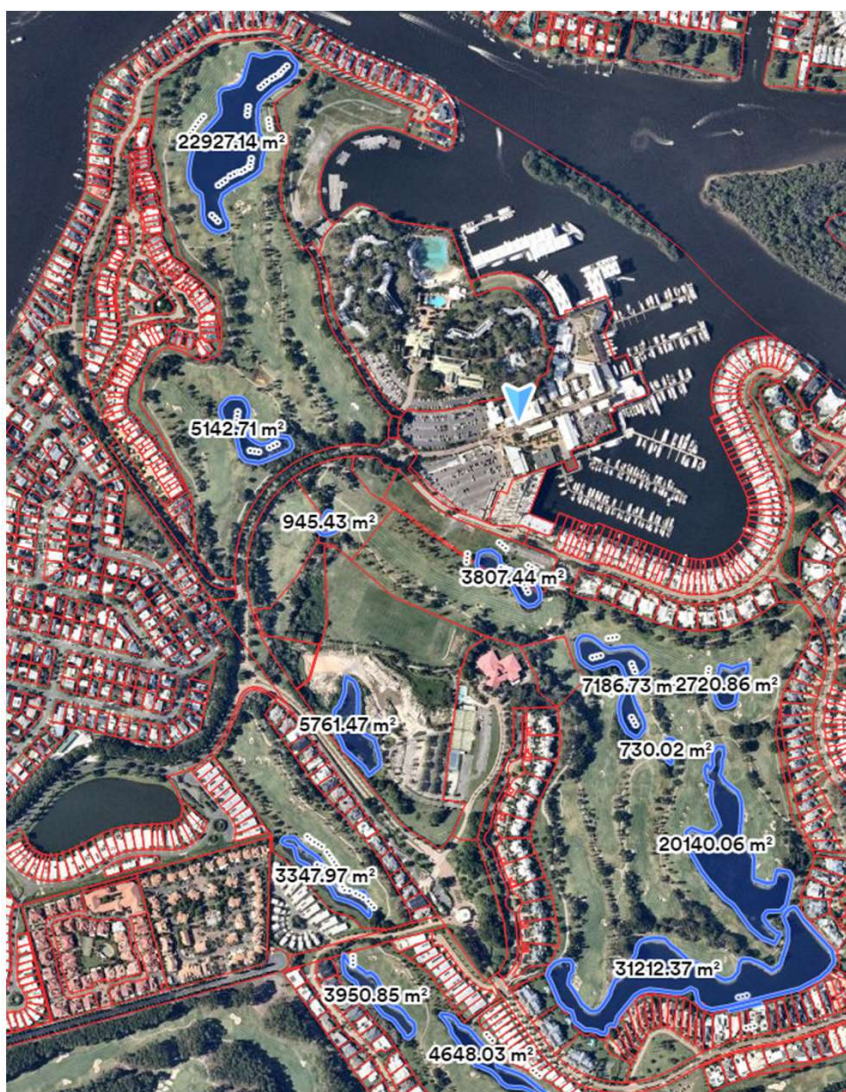
1 Preamble

Thank you for the opportunity to provide a fee proposal for the sub bottom profiling survey of Sanctuary Cove Golf Course Lakes. There are 25 lakes in total comprising an area of 259,317m² and are distributed across the golf course as shown in Figure 1 below.

We understand that a single beam hydrographic survey has already been conducted of 24 of the golf course lakes by others and the delivered data will provide bathymetry for the top of sediment. At this stage it is unclear as to the resolution of the data or the line spacing used during the acquisition phase. The 25th golf course lake will require bathymetric survey as well as sub bottom profiling.

Sanctuary Cove has a requirement to determine the volume of silt and sediment above the clay base of the golf course lakes and as such requires a sub bottom profile survey to capture the original hard clay base of each lake.

This proposal details our relevant experience, equipment, and methodology to carry out this work. SandMap would carry out all the physical sub bottom profiling data acquisition work in the field with our senior geophysicist sub-contractor, Dr Douglas Bergersen, conducting the analysis and creating the clay base surface. SandMap has worked with the geophysicist on several projects and provided very successful solutions in each case.



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Figure 1 – Partial project area



Figure 2 – Partial project area

2 Equipment

We have developed a suite of technologies that, in combination, make our equipment the most specialised available for the purpose of mapping stream and waterbody bottom profile, quickly and efficiently, in shallow water, and even the near-shore surf zone. We can cost effectively map almost anywhere, and our systems are able to collect at swath widths of up to 12 x depth in many cases.

We offer interferometric, conventional multibeam and hybrid sonar equipment to suit any task in shallow waters, or offshore. Equipment utilised on projects to date include:

- Bathyswath 2
- Norbit i77h Winghead
- Ping DSP 3DSS iDX450 Pro
- Edgetech 6205s2
- Innomar Smart Sub Bottom Profiler

Our inertial navigation system with integrated GPS and dual antennae are designed to accurately determine our position and adjust for swell conditions that prevent survey using traditional methods.

Additionally, SandMap owns and maintains various ancillary equipment including RTK GNSS and other support equipment. Having developed excellent local connections with suppliers in Australia, any other equipment required for specific tasks are easily sourced locally.

For this project however we propose to utilise an Innomar Smart sub bottom profiling unit. We have used the Innomar sub bottom profilers with success on other projects including a recent large project on Clarrie Hall Dam in northern NSW where the sediment depth was required to be determined over a 7km x 0.5km waterbody. The final result of this survey was a gridded surface at a high resolution of the original dam base that was used to calculate sediment volumes when compared against bathymetry from the top layer.

The Innomar equipment uses both low and high frequency, with the low frequency used for sediment penetration. Figure 3 below gives an indication of the data collected and when analysed by an experienced geophysicist, provides a clear understanding of the lake base that Sanctuary Cove requires.

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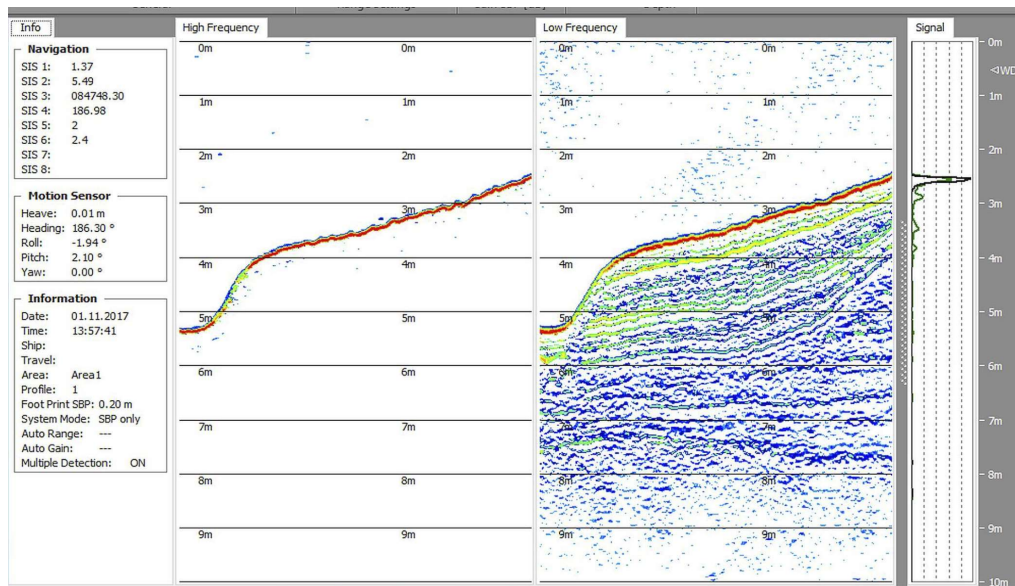


Figure 3 – Innomar Smart data acquisition

3 Vessels

SandMap’s vessels include:

- modified Seadoo GTX jetski designed to launch and retrieve quickly and easily, survey in places where other vessels can’t, and operate comfortably in testing sea conditions
- customised Stabicraft 5m survey vessel with state of the art sonar mounting system
- customised Quintrex 3.85m v-nosed punt set up for full time survey work and portable enough to manually handle around obstacles and launch in difficult locations
- 3m aluminium punt set up for survey work in inaccessible areas that can be carried in by hand to location and operate in shallow water down to 1m depth.



Figure 4 – SandMap’s vessels

4 Methodology

As bathymetry of the top sediment layer has already been completed, our survey would include the use of the Innomar sub bottom profiling attached to our specialised 3m punt and manned by two crew, surveyor and the vessel coxswain. This vessel can be manually launched into the water without a boat ramp and can operate in water to approximately 0.8m deep.

The survey crew would run survey lines over every lake, shifting the vessel from one to the other manually. The stored raw data would be supplied to our geophysicist for processing and analysis. This would result in a brief report and a digital dataset of the lake base that can be used as a base surface for volumetric calculations in conjunction with the bathymetry supplied by others.

The lake that also requires bathymetric survey to the top of sediment will be completed through the use of the higher frequency in the sub bottom profiler so as to avoid extra cost of mobilising further equipment. This will essentially be the same data as the single beam data acquired for the other 24 lakes.

Data acquisition will achieve horizontal and vertical uncertainty requirements through the use of SmartNet Australia base stations. An iMAX solution will be used to provide short baseline lengths, and base stations located at Arundel, Nerang, and Pimpama will provide the information required for accurate interpolation. AUSGeoid2020 will be utilised to reduce data to AHD heights from ellipsoid heights.

Checks to local survey control would be undertaken using pole mounted RTK GNSS equipment.

All survey work will be supervised by either our AHSCP certified Level 1 surveyor, Ted Anderberg, or our AHSCP certified Level 2 qualified surveyor, Rod Tansley. Data analysis will be carried out by our experienced senior geophysicist, Dr Douglas Bergersen.

Operators of SandMap vessels hold AMSA Coxswain Grade 1 Near Coastal marine qualifications as a minimum and our vessels are commercial vessels registered with AMSA.

5 Compliance and WHS

- Our vessels are commercially registered with AMSA and comply with all AMSA regulations. Safety Management Systems (SMS) are fully documented and implemented for each vessel and master/crew all have AMSA qualifications as appropriate for the task, including Coxswain Grade 1 Near Coastal as a minimum for all masters.
- All coxswains are first aid qualified. They have current competency in 'HLATAID011 Provide First Aid'.
- All vessels carry Scale G Marine First Aid kits.
- All vessels carry EPIRB.

6 Resource capability

Our operational team includes hydrographic survey personnel with many years of experience.

Ted Anderberg

All of our surveys to class are closely supervised by our Survey Manager and Level 1 Certified Hydrographic Surveyor, Ted Anderberg. Ted is accredited through the Australian Hydrographic Surveyors Certification Panel (AHSCP) of the Geospatial Council of Australia and, along with a

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Bachelor of Surveying degree, has over 30 years, experience in the hydrographic surveying industry. Ted has worked in both government and the private sector, completing projects all around Australia. He initially worked with MSQ on various exploration, charting and dredge support surveys along the Queensland coast and joined SandMap on projects over 3 years ago before recently becoming a part owner. He also holds an unrestricted AMSA Coxswain Grade 1 NC qualification.

Rod Tansley

Our Technical Director and hydrographic surveyor, Rod Tansley, has over 25 years experience in survey and GIS, and 5 years’ experience as a hydrographic surveyor. He is a certified AHSCP Level 2 Hydrographic Surveyor. He also holds an unrestricted AMSA Coxswain Grade 1 NC qualification and has 40 years, experience on the water, including service with the RAN. Having been born and raised in the Cook Islands, Rod has a lot of experience with coral reef lagoons.

Gene Rippin

Gene holds a Bachelor of Marine Science degree and holds an unrestricted AMSA Coxswain Grade 1 NC qualification. He is quickly establishing himself as an asset to any hydrographic survey data acquisition activity. We anticipate Gene will complete an IHO recognised S-5 Category B Hydrographic Surveying Program in the near future.

Luiz Schmidt

Luiz is an Oceanography graduate with hydrographic survey experience and a great addition to our team. He has wide ranging experience from hydrographic survey and GIS through to numerical modelling and python script development.

Sean McCagh

Our Commercial Director, Sean McCagh, has several years’ experience with infrastructure operational management, and has highly developed project management and client liaison skills. As a mechanical engineer, Sean has worked with various levels of government on large projects, and has developed a strong skill set with hydrographic survey projects at all levels.

We have further hydrographic survey and AMSA Coxswain qualified resources with extensive marine experience to draw upon to increase our capacity as needed. Being a small business, we often work with other local companies and are able to assist each other with short term resources as required.

7 Project experience

Client	Project	Nature of services provided
Tweed Shire Council	Clarrie Hall Dam Bathymetry and Sib Bottom Profiling	Complete bathymetric multibeam survey with full coverage of the entire dam as well as complete sub bottom profiling of the entire dam to determine sediment depth throughout. Project completed by Ted Anderberg, Rod Tansley, Gene Rippin, Luiz Schmidt, and Dr Douglas Bergersen.

Client	Project	Nature of services provided
NSW Environment Protection Authority	Submerged Debris Hydrographic Survey Program	Identification of potentially hazardous submerged debris through hydrographic survey in priority areas of flood-impacted rivers to reduce risks to river users and the environment to inform a clean-up program. Included almost 300km of river surveys in the northern part of NSW. Project conducted using Norbit Winghead i77h multibeam system on 5m Stabicraft customised vessel over a 7 month period. Included large navigational multibeam survey to IHO Exclusive Order of the Tweed River for NSW Maritime. Ted Anderberg, Rod Tansley and Gene Rippin completed this project in the field.
Hinchinbrook Shire Council <i>(completed as sub-contractor to Water Technology Pty Ltd)</i>	Dungeness All Tide Access Hydrographic Survey	Large area of hydrographic survey of 50km of the Hinchinbrook Channel in North Queensland between Cardwell and Lucinda to Maritime Services Queensland Class D. Consisted of areas of full coverage and other areas of multibeam transect lines. Much of the area consisted of drying sand and mud banks with survey possible only in very shallow water at high tide. Included many very small and shallow creeks and rivers in remote areas with limited access and large numbers of crocodiles. Side scan data was required for seabed classification. Survey plans and report were also delivered. EdgeTech 6205s2 multibeam unit utilised. Ted Anderberg and Rod Tansley completed this project in the field, data processed by Gene Rippin and Luiz Schmidt.
NSW Maritime	Swansea and Airforce Channel Hydrographic Survey	Pre-dredge survey of the Swansea and Air Force Channel leading into Lake Macquarie in Swansea, NSW. Part of survey area closed to boating traffic due to the extreme shallow nature of the channel. Survey conducted at high tide using SandMap's 5m survey vessel and EdgeTech 6205s2 hybrid multibeam system, operating in 0.5m of water at times. Ted Anderberg, Rod Tansley and Luiz Schmidt completed this project in the field, data processed by Gene Rippin and Luiz Schmidt.
QLD Dept of Environment and Science	Moreton Bay Multibeam and Interferometric Hydrographic Survey Research Project	Research project overseen by MSQ Survey Manager involving the hydrographic survey of an area in southern Moreton Bay using different technologies. SandMap supplied one area with standard multibeam and another area with interferometric multibeam. In addition, multibeam backscatter and interferometric side scan data were processed and delivered, along with plans and survey reports. Ted Anderberg, Rod Tansley and Gene Rippin completed this project in the field, data processed by Gene Rippin and Luiz Schmidt.
Moreton Bay Regional Council	Redcliffe Peninsula Hydrographic Surveys	Hydrographic multibeam surveys of 3 large sites off Redcliffe to support coastal management modelling. This included the survey of reef areas and coverage as far up the beach at high tide as possible. This was completed using SandMap's customised PWC swath sonar system. Ted Anderberg supervised and Rod Tansley completed this project in the field.
Gold Coast Waterways Authority	Various projects	Hydrographic multibeam surveys of a number of areas within the Broadwater on the Gold Coast to support infrastructure upgrades. Most recent survey completed September 2023 and involved Class A navigation survey of very shallow harbour area, undertaken with 5m survey vessel and EdgeTech 6205s2 hybrid multibeam system. Other surveys undertaken to MSQ Class C standards with survey plans and reports provided. PWC interferometric swath system also utilised. Ted Anderberg, Rod Tansley, Gene Rippin, and Luiz Schmidt completed these projects.
Maritime Services Queensland (MSQ)	Molongle Creek Hydrographic Survey	Post-dredge Class C survey of Molongle Creek, located in a remote area of Central Queensland. Shallow channel with drying banks required to be surveyed at high tide in shallow water. Survey conducted using SandMap's 5m survey vessel and EdgeTech 6205s2 hybrid multibeam system, operating in 0.5m of water at times. Ted Anderberg and Rod Tansley completed this project in the field.

Client	Project	Nature of services provided
Gold Coast City Council	Palm Beach Artificial Reef Monitoring Surveys	Class A hydrographic surveys every 6 months to monitor the settlement or shifting of a recently constructed artificial reef structure offshore. Involved the use of our PWC customised swath sonar system. Ted Anderberg supervised and Rod Tansley completed this project in the field.
North Coast Surveys	Thomson River Hydrographic Survey (Pride of the Murray)	Hydrographic investigation survey of the Thomson River near Longreach, Queensland as part of efforts to raise the paddle steamer Pride of the Murray, sunk during a recent flood event. Work involved surveying the sunken vessel to a level of detail allowing for damage assessment as well as surveying the river to assess potential sites for bank access for re-floatation purposes. Vessel was raised last month as a result of the survey. Survey completed using 5m survey vessel and a Norbit i80s Winghead multibeam system. Ted Anderberg and Rod Tansley completed this project.

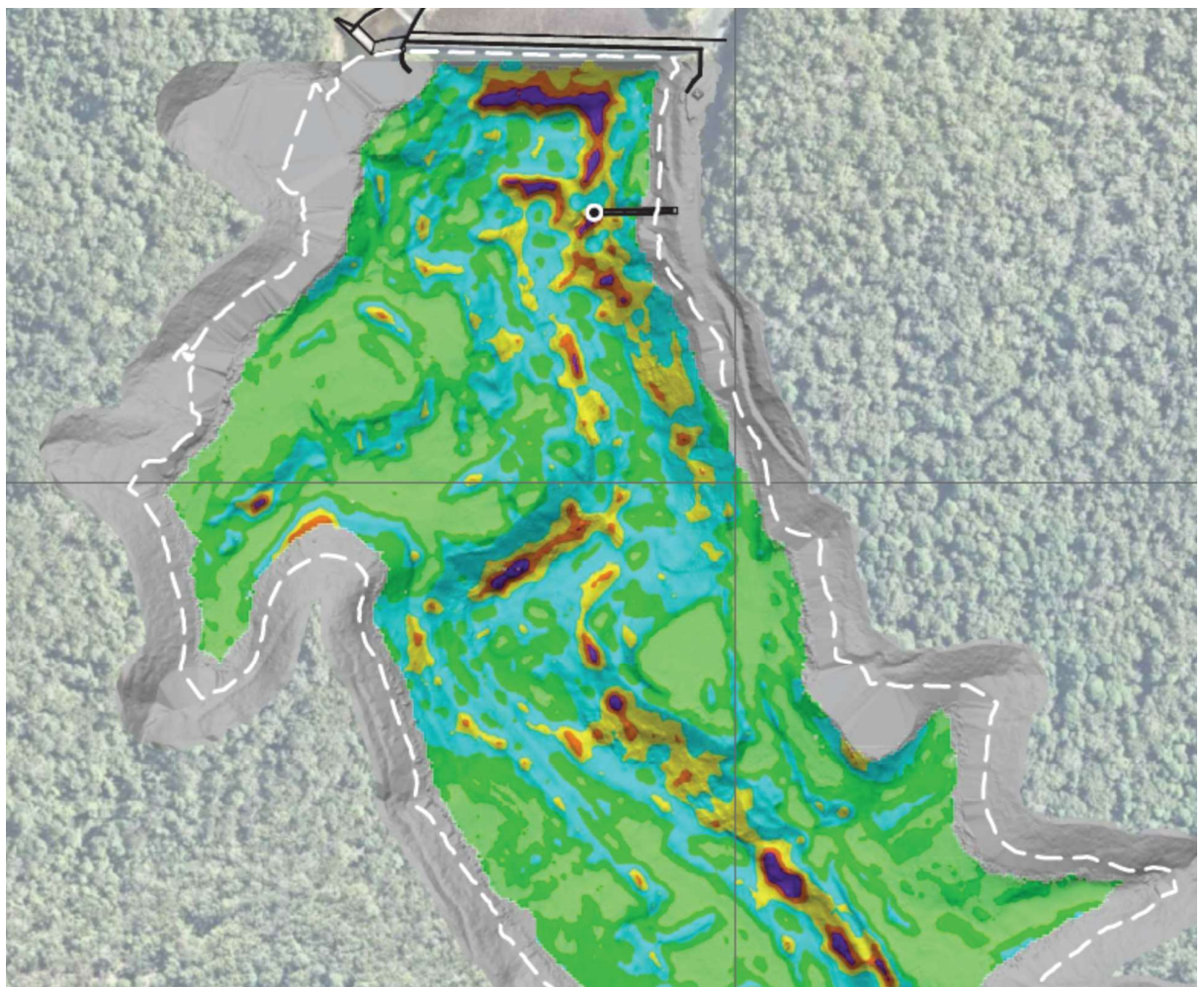


Figure 5 – Sample of Clarie Hall Dam sediment depth plan based on bathymetry and sub bottom profile data acquisition. Digital data also supplied for volume calculations.

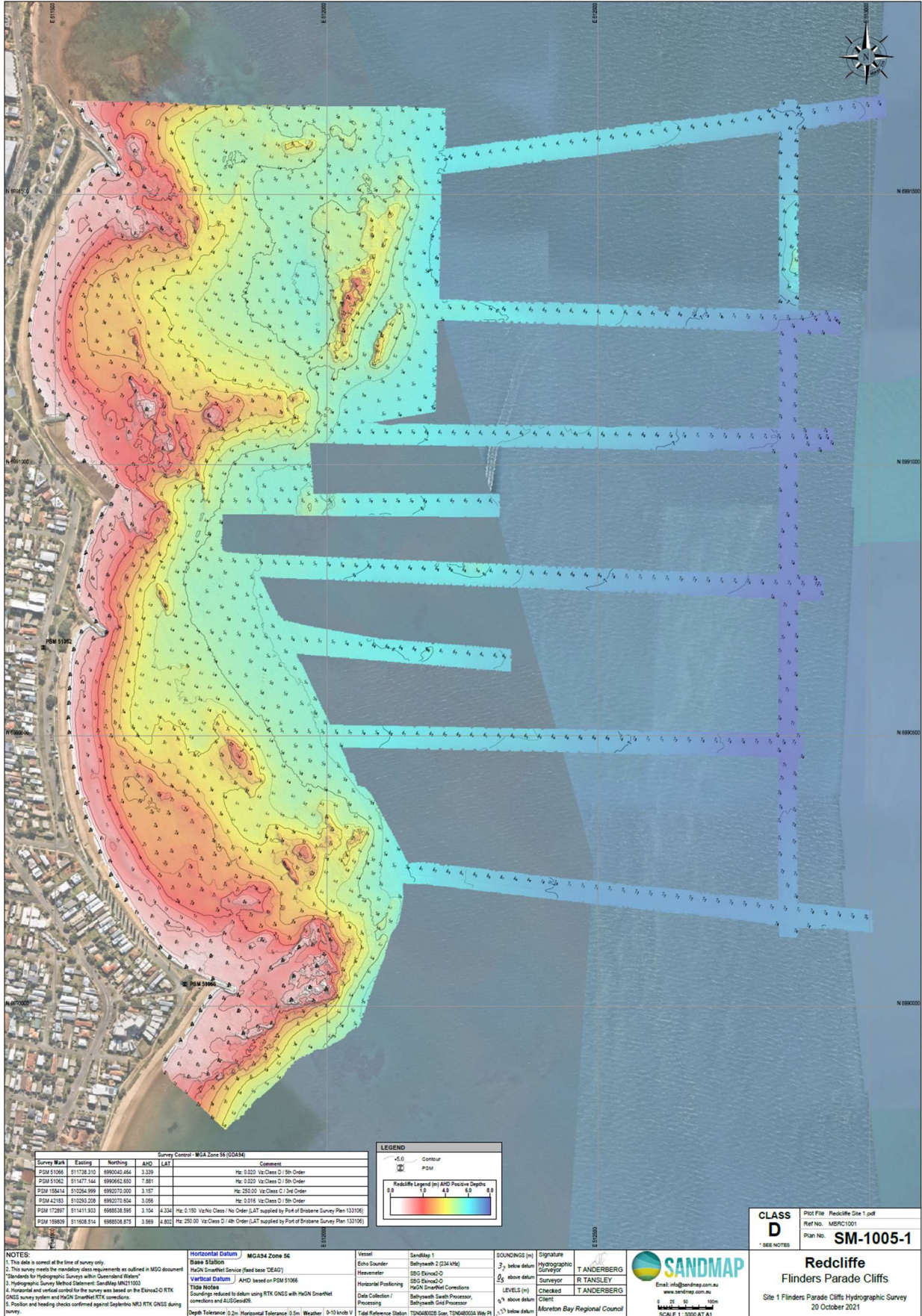


Figure 6. Redcliffe Site 1 Survey Plan. Project included transects to sea at client specifications.

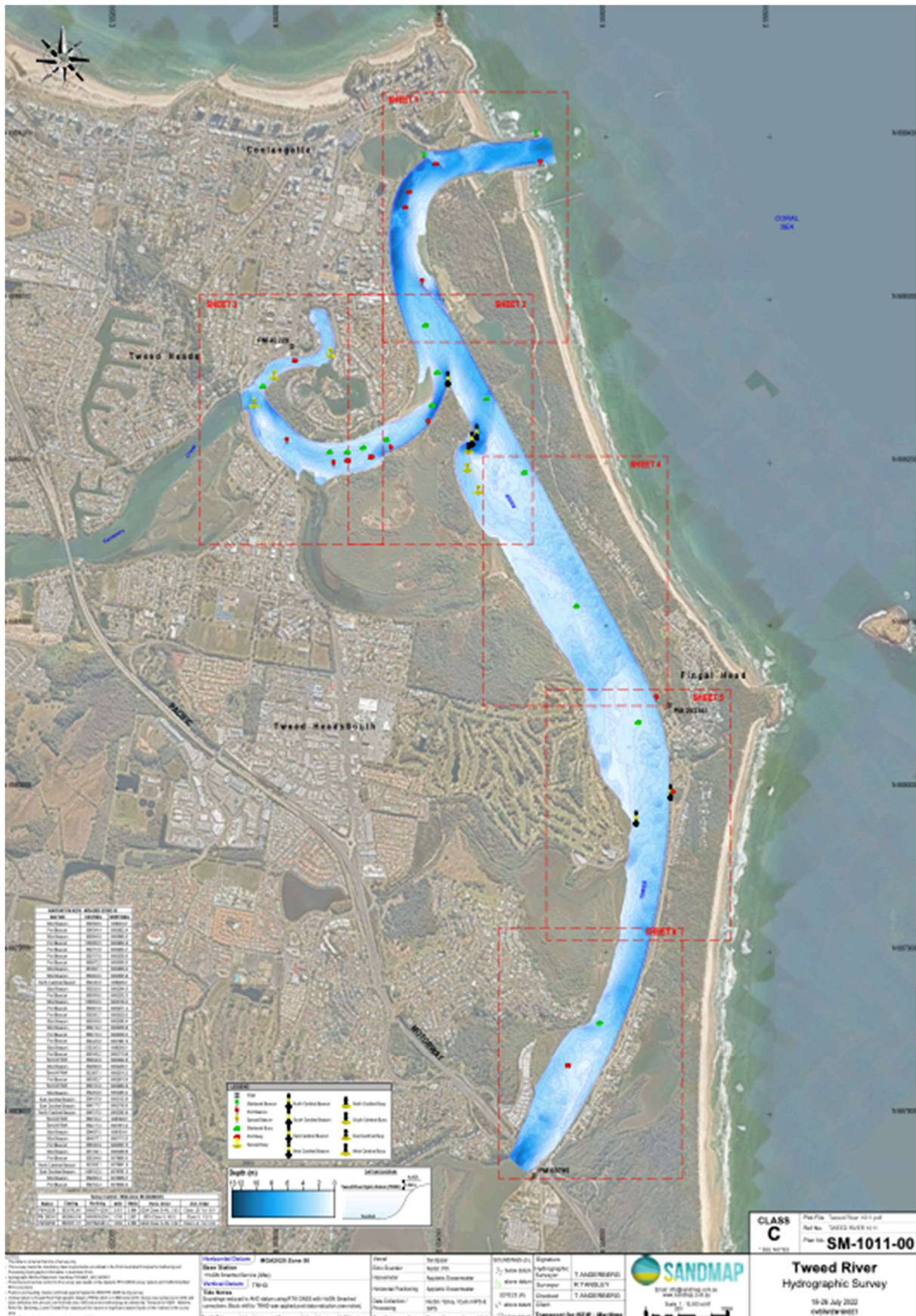


Figure 7. Tweed River Navigational Survey Plan Example (overview provided)

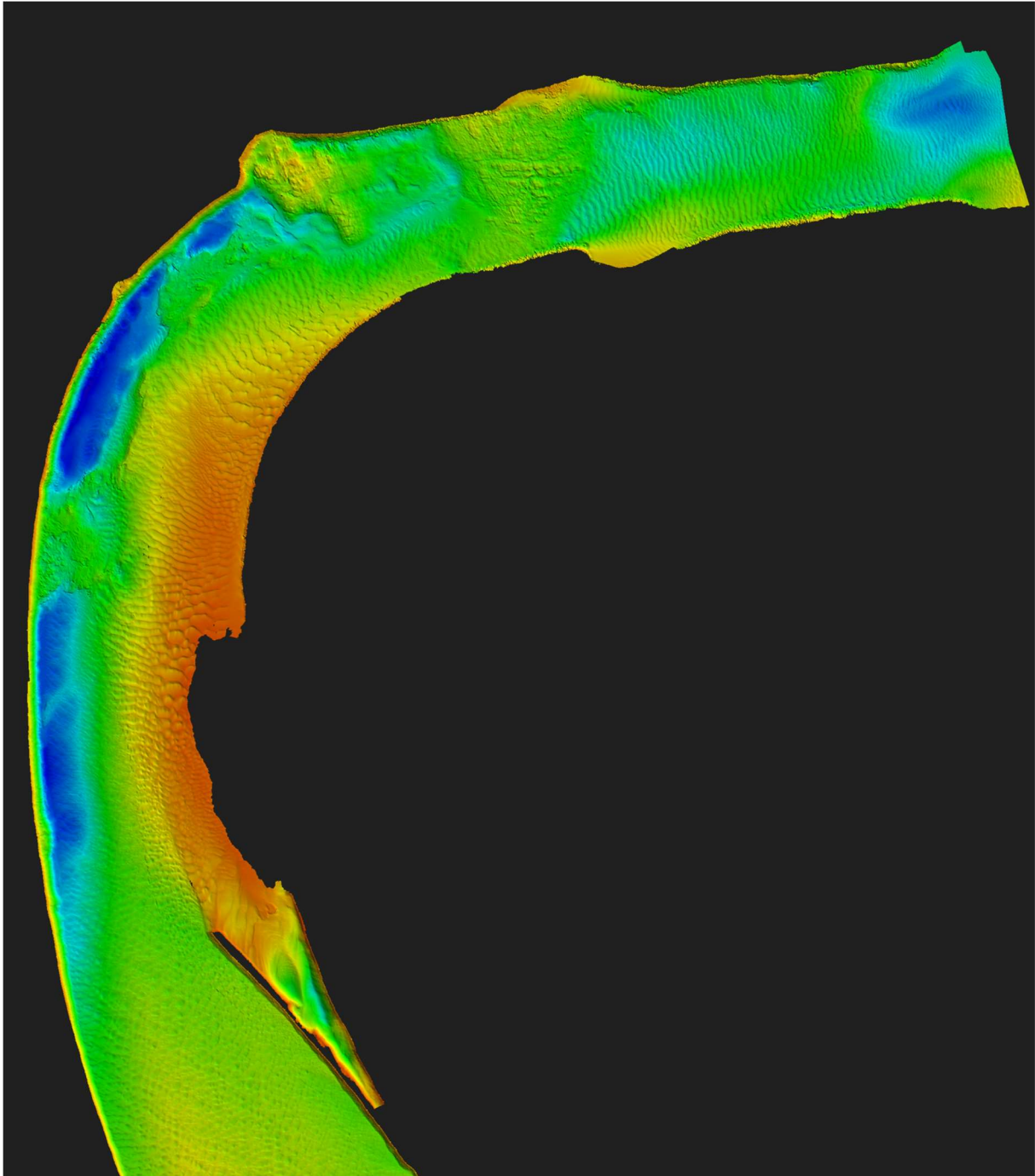


Figure 8. Full coverage data achieved by Norbit multibeam, showing detail in the Tweed River.

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8 Fee proposal

The fee proposal includes SandMap’s professional fees to complete the required hydrographic survey of the 25 lakes involved. We envisage the project to take 6 to 7 days in the field, due to having to relocate between each lake each time. We are currently heavily committed up until May however some projects rely on weather and other factors and there may be opportunity to schedule earlier should we have early advice to go ahead. Our fees include:

- mobilisation
- sub bottom profiler and all ancillary equipment
- survey data acquisition
- calibration and other checks
- geophysicist interpretation of data and report
- office processing and data preparation.

SandMap offers to perform the required hydrographic survey services for a total price of \$41,000 excluding GST.

Item	Price (Ex GST)
Hydrographic survey professional fees	\$41,000
Total Cost	\$41,000

SandMap looks forward to working with you.



Rod Tansley
Director



Sean McCagh
Director

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Appendix A – Innomar Smart Specifications



Innomar "smart" Sub-Bottom Profiler



Innomar "smart" SBP

The Innomar "smart" model is the smallest member of the Innomar sub-bottom profiler family. It has been designed for in-shore surveys in shallow waters down to 100 metres water depth using small boats, but can also be used in coastal areas.

Because of its small size and weight this system is convenient even on the smallest boat and on uncrewed remotely or autonomously operated vehicles (USV/ASV).

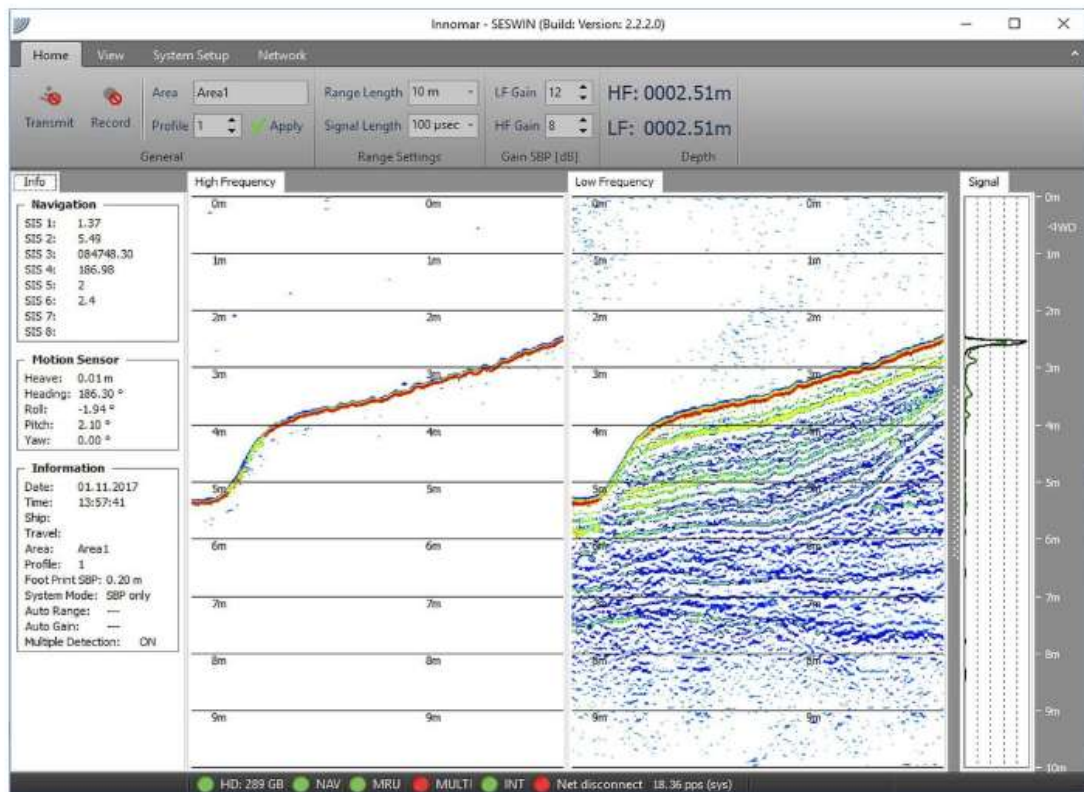
The topside unit is controlled via Ethernet (LAN / WiFi) using any Windows based PC or tablet.

The Innomar "smart" model acquires full-waveform data that can be processed with any seismic software (SEG-Y format). Innomar also provides the ISE post-processing software specialized on the Innomar SBP data.

This model has been first launched as "SES-2000 smart" in 2017,

the latest generation has been introduced in 2022.

The Innomar "smart" model is utilized on the Innomar "autonomous" uncrewed surface vehicle (USV) for remote-controlled and autonomous surveys in sensible environments.



Innomar "smart" SBP online data example (screenshot SESWIN data acquisition software)

Technical Specification

Water Depth Range	0.5 – 100 m below transducer
Sediment Penetration	up to 20 m (depending on sediment type and noise)
Sample / Range Resolution	c. 1 cm / up to 8 cm (depending on pulse settings)
Transmit Beam Width (-3dB)	c. $\pm 2.5^\circ$ for all frequencies / footprint c. 9% of water depth
Ping Rate	up to 40 Hz (pings/s)
Heave / Roll / Pitch Compensation	heave (depending on external sensor data)
Primary Frequencies (PHF)	c. 100 kHz (frequency band 90 – 110 kHz)
PHF Source Level / Acoustic Power	>235 dB/ μ Pa re 1m / c. 2 kW
Secondary Low Frequency (SLF)	centre frequency 10 kHz
SLF Total Frequency Band	5 – 15 kHz
SLF Pulse Type	Ricker, CW
Pulse Width	user selectable 0.1 – 0.5 ms (CW)
Data Acquisition and Recording	digital 16 bit / c. 70 kHz (SLF full waveform, PHF envelope)
Data File Format	Innomar "RAW" (16 bit), "SEGY" (via SESconvert)
External Sensor Interfaces	HRP (motion, RS232), GNSS position, depth (both RS232 / UDP), trigger (BNC)
Bottom Detection	internal (PHF and SLF data) or external depth
Depth Accuracy	(2.5 cm @ 100 kHz / 5 cm @ 10 kHz) + 0.1% of water depth
Remote Control / Survey Integration	basic functions via COM or Ethernet (UDP), NMEA
Topside Unit (Transceiver)	W 47 cm \times D 36 cm \times H 17 cm (IP65) / weight c. 9 kg
Transducer	W 27 cm \times D 21 cm \times H 6 cm / weight c. 10 kg (incl. 15 m cable)
Transducer Depth Rating	Surface
Power Supply	10–30 V DC; optional external AC power supply (100–240 V AC)
Power Consumption	<100 W
Control / Data Storage PC	external PC/Laptop/Tablet (MS Windows 10/11 OS), not included
First / Latest Product Generation	2017 / 2022

Included Features

- 16-bit SLF full waveform data acquisition (sub-bottom data) / Innomar "RAW" data format
- SESWIN basic remote-control via COM / UDP (e.g. line start/stop, line name)

Optional Features

- SESWIN extended remote-control via Ethernet (all survey settings)
- external AC power adapter (100–240 V AC)
- Pre-configured laptop PC (control unit)
- Transducer bracket for over-side-mounting

Software

- **SESWIN** data acquisition software
- **SES Convert** data converter software (RAW to SEG-Y, XTF, ASCII)
- **SES NetView** for online data and system information display on remote computers
- **ISE** post-processing software (optional)

Technical specifications are subject of change without notice.

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