

## RV Investigator Voyage Plan

<b>Voyage #:</b>	IN2017_E03		
<b>Voyage title:</b>	Brisbane Port Period Sea Trials		
<b>Mobilisation:</b>	Brisbane, 19 August 2017		
<b>Depart:</b>	Brisbane, 17:00, Sunday 20 August 2017		
<b>Return:</b>	Brisbane, 18:30, Wednesday 23 August 2017		
<b>Demobilisation:</b>	Brisbane, Thursday 24 August 2017		
<b>Voyage Manager:</b>	Stephen McCullum	<b>Contact details:</b>	Stephen.mccullum@csiro.au
<b>Chief Scientist:</b>	N/A		
<b>Affiliation:</b>	N/A	<b>Contact details:</b>	N/A
<b>Principal Investigators:</b>	N/A		
<b>Project name:</b>	Equipment Commissioning Trials		
<b>Affiliation:</b>	N/A	<b>Contact details:</b>	N/A

## Scientific objectives

There is no planned science activities for this voyage.

## Voyage objectives

The sea trials voyage will depart from and return to Brisbane. The primary objective of IN2017\_E03 is to complete the sea trial regime as per the table below:

ID	Trial	Requirement	Owner	Trial Location
1.	Fire Dampers	Prove newly installed fire dampers are integrated into Konsberg system and functional (x2 dampers)	Chief Engineer	Alongside
2.	HVAC system	Trial required after recent upgrades to HVAC system. (H&H commissioning checklist)	Chief Engineer	Alongside
3.	Winch inhibitor system trials	System proving of new winch inhibitor switches	Chief Engineer	Alongside
4.	Drop keel locking pins adjustments	Confirm positions and set points	Chief Engineer	Alongside
5.	Drop keel locking pins adjustments	Validate operation at sea	Chief Engineer	Sea Trial
6.	Trawl winch sea trials	Trial required after software upgrades to trawl winch control system	Chief Engineer	Sea Trial
7.	Food Macerator Trials	Sea trial of newly installed food macerator – continuous running through duration of sea trials & confirm functioning with no blockages	Chief Engineer	Sea Trial
8.	Vibration Monitoring system	Sea trial of newly installed vibration monitoring system in Bow Thruster & sign off of FAT	Chief Engineer	Sea Trial
9.	Vibration Monitoring system	Sea trial of newly installed vibration monitoring system – main engines	Chief Engineer	Sea Trial
10.	GP Winch Trials	Prove spooling of GP winch after software modifications	Chief Engineer	Sea Trial
11.	K chief trials	K chief trials after upgrades	Chief Engineer / Konsberg	Sea Trial
12.	DP system testing	Trial required after removal annual calibration and re installation of MRU Standard DP box in trial Compare MRU#5 & MRU#2 outputs	Chief Mate	Sea Trial
13.	CTD Launch and recovery system	Trial required after modification to launch and recovery tracks. Launch to 1000m with 36 bottle rosette	CSIRO SIT Brett Muir	Alongside & at sea
14.	Thermosalinograph (TSG) trials	Confirm functioning in new location	CSIRO SIT Brett Muir	Meanwhile sea trial activity
15.	Weather radar Trials	Complete FAT testing of the weather Radar	CSIRO SIT Wil Ponsonby	Meanwhile sea trial activity
16.	Meteorological sensor trials	Trial required after removal annual calibration and re installation of various instruments	CSIRO SIT Brett Muir	Meanwhile sea trial activity

ID	Trial	Requirement	Owner	Trial Location
17.	Drop keel camera function test		CSIRO SIT Brett Muir	Meanwhile sea trial activity
18.	EK60 noise trials	Trials required to confirm outcome of noise mitigation works	CSIRO SIT Brett Muir	Meanwhile sea trial activity
19.	Opportunistic equipment trials during transits	Triaxus tow, time permitting	CSIRO SIT Brett Muir	Meanwhile sea trial activity
20.	Virtual Server Upgrade	Trial of newly installed virtual server	CSIRO - DAP Ian Hawkes	Meanwhile sea trial activity

## Operational Risk Management

The key challenge around completion of the sea trials program will be managing safe operations in testing new / modified equipment for the first time. A number of high risk activities have been identified and will be mitigated as follows:

- Maintaining exclusion zone around wires under tension during load / function testing;
- Restricting trawling trials to daylight activities only, noting the limited experience of the ship's crew with trawling operations.

ASP Standard Operating Procedures, JSA's and toolbox meetings will be followed throughout the voyage to reduce risk to operations.

## Overall activity plan including details for first 24 hours of voyage

The following list details the key activities planned for IN2017\_E03:

- Transit to trial location
- Complete DP trials
- Test modified CTD Launch & recovery system (launch to 1000m)
- Complete trawling trials #1 (Prove system in fisheries mode and science mode)\*;
- Complete GP winch trial #1
- Complete GP winch trial #2
- Complete trawling trial #2
- Allowance to complete a third GP winch or trawling trial
- Complete remaining equipment function tests concurrently with trawling testing and transits.

**Note:** Trawling will be completed with the cod end open. No recovery of specimens to the vessel is planned, they are purely a function test of the winch control system post software upgrades.

## Voyage track example

The example voyage track below will be adjusted as required by the Master / crew taking into consideration weather, other vessels and the other operational considerations as required.

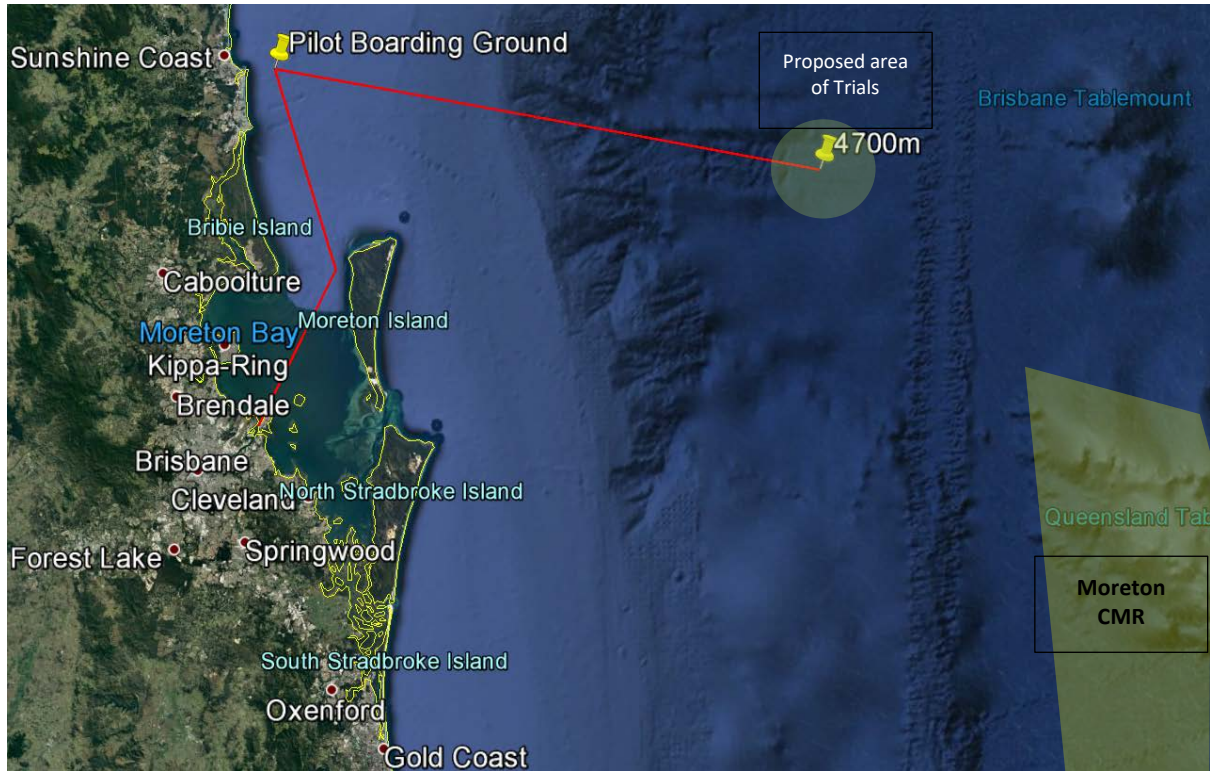


Figure 2: Proposed Voyage Track

## Waypoints and stations

The following sites have been identified as the locations for performing sea trials, as it provides suitable depth for the trawling assembly to be deployed to a target depth of 4000m whilst remaining clear of the seafloor.

Site	Latitude	Longitude	Distance (nm)	Total Distance (nm)	Steaming Time (hours)	Total Steaming time (hrs)
Brisbane	-27.35	153.15				
Brisbane PBG	-26.75	153.2	45	45	4.5	4.5
Moreton (4700m)	-26.9	154.4	65	110	6.5	11
Brisbane PBG	-26.75	153.2	65	175	6.5	17.5
Brisbane	-27.35	153.15	45	220	4.5	22

## Time estimates

The following time estimates are based on a steaming speed of 10 knots, noting a large portion of the transit will be within Moreton Bay where speed will be limited.

Site	Target depth	Lat	Long	Operation	Duration (hours)	Start date	End date
						and time	and time
Brisbane - Fisherman Wharf		-27.4	153.17	Mobilisation	10	20/08/2017 7:00	20/08/2017 17:00
Brisbane - PBG		-26.7	153.2	Transit to PBG (45Nm @ 10 knots)	4.5	20/08/2017 17:00	20/08/2017 21:30
Moreton	4700	-26.9	154.4	Transit to test site (65nM @ 10knots) <b>Meanwhile:</b> Vibration Monitor Base line measurements - Main Engine	6.5	20/08/2017 21:30	21/08/2017 4:00
Moreton	4700	-26.9	154.4	DP Trials	1.5	21/08/2017 4:00	21/08/2017 5:30
Moreton	4700	-26.9	154.4	CTD Launch (to 1000m) & recovery trial <b>Meanwhile:</b> EK60 noise mitigation testing	3	21/08/2017 5:30	21/08/2017 8:30
Moreton	4700	-26.9	154.4	Demersal trawl Trial #1 (RAPP)	10	21/08/2017 8:30	21/08/2017 18:30
Moreton	4700	-26.9	154.4	GP winch spooling test #1 (RAPP)	8	21/08/2017 18:30	22/08/2017 2:30
Moreton	4700	-26.9	154.4	GP winch spooling test #2 (RAPP)	8	22/08/2017 2:30	22/08/2017 10:30
Moreton	4700	-26.9	154.4	Demersal trawl Trial #2 (RAPP)	10	22/08/2017 10:30	22/08/2017 20:30
Moreton	4700	-26.9	154.4	Vibration Monitor Base line measurements - Bow Thruster (SKF)	2	22/08/2017 20:30	22/08/2017 22:30
Moreton	4700	-26.9	154.4	Allowance for demersal trawl Trial #3 or GP winch spooling test #3 - As required (RAPP)	8	22/08/2017 22:30	23/08/2017 6:30
Moreton	4700	-26.9	154.4	Drop Keel lowering & locking at sea trial	1	23/08/2017 6:30	23/08/2017 7:30
				Transit to PBG (65nM @ 10knots) <b>Meanwhile:</b> Triaxus tow trial	6.5	23/08/2017 7:30	23/08/2017 14:00
Brisbane - PBG		-26.7	153.2	Transit to Fisherman Island (45Nm @ 10 knots)	4.5	23/08/2017 14:00	23/08/2017 18:30
Brisbane - Fisherman Wharf		-27.4	153.17	Arrival Bris (1000 16/6/17))	1	23/08/2017 18:30	23/08/2017 19:30

**Note:** Other trials not allocated time in the table above will be performed meanwhile to the primary trials listed above - i.e. they do not require dedicated vessel time to be performed.

## Piggy-back projects (if applicable)

Not Applicable

## Investigator equipment (MNF)

1. CTD system;
2. Winches and sensors for demersal trawl ;
3. Rapp scientific winch suite;
4. Large (AAD supplied) Trawl doors;
5. Demersal trawl net, bridles and associated rigging;
6. Large diameter block mounted on stern A-frame;
7. USBL system for trawl door (net monitoring);
8. Multibeam sonar, ADCP, Sub-bottom Profiler;
9. Simrad EK60 Echo-sounder, run using IMOS protocols;
10. Rear deck facilities;
11. Communication/control systems (e.g. Operations Room, Bridge, rear deck);

## User Equipment

N/A.

## Special Requests

None.

## Permits

Several agencies were approached for approval / permits to complete trawling trails with the cod end open. The table below summarizes the permit requirements for the voyage. Permits are attached in Appendix B.

ID	Permit Title	Agency	Status
1	CSIRO Animal Ethics Committee	CSIRO Animal Research Ethics	CSIRO AEC permit not required as confirmed via email from Sharyn Zrna 13/7/17
2	General Fisheries Permit	Queensland Fisheries	Permit No 193141 approved for use between 15-31 August
3	General Fisheries Permit	AFMA	Permit No 1003467 approved for use between 15-29 August
4	Biological Resources in a Commonwealth Area Part 8A:	Department of Environment	No Part 8A application is required for accessing biological resources in commonwealth waters as confirmed via email Matt Kimber 14/07/17

## Personnel List

ID	Name	Position	Organisation
1.	Stephen McCullum	Voyage Manager	CSIRO MNF
2.	Mark Scanlon	Deputy Voyage Manager	CSIRO MNF
3.	Wil Ponsonby	SIT Support	CSIRO MNF
4.	Brett Muir	SIT Support	CSIRO MNF
5.	Amy Nau	GSM Support	CSIRO MNF
6.	Karl Malakoff	DAP Support	CSIRO MNF
7.	Dean Pigden	Observer	CSIRO
8.	Lisa Burns	Observer	CSIRO
9.	Jim Youngblood	Weather Radar Technician	EEC

## Signature

<b>Your name</b>	Stephen McCullum
<b>Title</b>	Voyage Manager
<b>Signature</b>	Stephen McCullum
<b>Date:</b>	11 August 2017

## List of additional figures and documents

Refer to Appendix A and B overleaf

## Appendix A – Test Procedures

ID	Trial	Governing Test Document	Owner
1.	Trawl winch sea trials	TBC	Chief Engineer
2.	HVAC system	TBC	Chief Engineer
3.	Winch inhibitor system trials	TBC	Chief Engineer
4.	Food Macerator Trials	TBC	Chief Engineer
5.	Vibration Monitoring system	TBC	Chief Engineer
6.	Fire Dampers	TBC	Chief Mate
7.	DP system testing	TBC	Chief Mate
8.	K chief trials	TBC	Chief Mate
9.	CTD Launch and recovery system	TBC	Chief Mate
10.	Thermosalinograph trials	TBC	CSIRO - Seagoing Instrumentation Team
11.	Weather radar Trials	EEC SAT test document	CSIRO - Seagoing Instrumentation Team
12.	Meteorological sensor trials	TBC	CSIRO - Seagoing Instrumentation Team
13.	Drop keel camera function test	TBC	CSIRO - Seagoing Instrumentation Team
14.	EK60 noise trials	TBC	CSIRO - Seagoing Instrumentation Team
15.	Virtual Server Upgrade	TBC	CSIRO - DAP Team



## Appendix B - Permits

ID	Agency	Permit Number	Permit Title	Start Date	End Date
1.	AFMA	1003467	Scientific Permit	15 Aug 17	29 Aug 17
2.	QLD Fisheries	193141	General Fisheries Permit	15 Aug 17	31 Aug 17