Higher Degree Research
Graduate School
Supervisor Manual

Version 4. October 2024

Version control protocol:

Before making any changes to this manual, please save a new version of this document with a new version number and date before proceeding.

Please note: this is to be done prior to making any changes to this manual.

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SUPERVISOR DEFINITIONS

ROLE	Entered in HDR IRMA record as	Definition
Principal supervisor	Internal	Nominated Principal supervisor
Co-supervisor	Internal	Nominated Co-Supervisor
Adjunct co-supervisor	Internal	SCU current adjunct with load and no Industry
Associate supervisor	External	SCU member or external member with NO LOAD
Industry supervisor	External	Pure Industry - Must NOT be an SCU adjunct or affiliated with another Uni.
Industry co-supervisor	External/Internal	Industry supervisor who is also an SCU adjunct with or without load which is industry employed.
Previous supervisor	Internal	A supervisor who ended supervising before student candidacy ended
Lapsed student supervisor	Internal / External	Supervisor whose Candidate has lapsed

FILLABLE FORMS

The Graduate School currently uses Adobe fillable forms to capture all our student data. To ensure that we capture everything in our fillable forms, you must use Adobe DC Reader (free download) or Adobe Pro (at a cost) to complete our forms. In order to sign, please create a digital signature using the appropriate Adobe prompts that appear when you click into the relevant signature panel. Please find a link here for instructions on how to sign.

If you use a Mac computer, the form will automatically open in the Mac default program *Preview* unless you select Adobe as your default for .pdfs. We ask that you download the free Adobe Reader (as a minimum) for Mac's and ensure you choose that as your default for opening any Graduate School .pdfs.

If you are using a PC, you need to ensure your default app for opening .pdfs is Adobe. On a PC the forms can, by default, open in a web browser (it can happen with the latest PCs).

On a PC to double check that you are using Adobe you can check your default app by searching for default apps on your task bar and then select 

(it will take a little time to load) then scroll down to .pdf on the left-hand menu and make sure on the right-hand side it has Adobe Acrobat selected. If not please ensure you change it to Adobe Acrobat. You may also need to change the following defaults .pdx and .p7m.

***Please note if a form is opened in an alternate browser or program, even once, it becomes corrupted. Simply closing it and opening it in Adobe again will not fix the form. A new form will need to be downloaded from the forms and documents section on the Graduate School website here.**

SUPERVISOR RESPONSIBILITIES

Overview
Supervisors have key responsibilities with regard to the mentoring of their Higher Degree by Research (HDR) candidates, including the design, conduct and reporting of the work in a manner that adheres to the principles of the responsible conduct of research. The HDR supervisory team is responsible to support, mentor and guide HDR candidates throughout their entire HDR journey

The *National Code for Responsible Conduct of Research (2018)* (the Code) articulates the broad principles and responsibilities that underpin the responsible conduct of Australian research.

Supervisors, when considering a new HDR candidate, must follow the following basic principles;

- **Choose candidates carefully:** Select candidates whose research aligns with your expertise and aim for high-quality applicants.
- **Supervisory load**: Supervisors (both Principal and Co-supervisors) can supervise no more than 10 students at any one time, regardless of full-time or part-time enrolment. If a supervisor wishes to supervise in excess of 10 students, as part of the new HDR application form, or a change of current supervisory team (CCE form), a supervisor will need to write a brief justification as to how they propose to provide adequate supervision to both new and existing students.
- **Establish clear expectations:** Ensure students understand that they are responsible for their Thesis, while the supervisor's role is to facilitate, advise, critique, and mentor.
- **Agreeing to supervise a student is a contract**: Agreeing to supervise a student is indeed a significant commitment and can be seen as a contract between the supervisor and the student. This relationship is built on mutual trust, respect, and a shared goal of advancing the student's research and academic development.
- **Regular formal meetings are essential:** Hold formal meetings at least every two weeks. Discuss goals, timelines, and mutual expectations.
- **Detail expectations:** Students must be encouraged to submit written work early in their candidature. Discuss expectations for feedback, and provide detailed written feedback, highlighting strengths and offering advice for improvement.
- **Supervisors:** need to ensure HDR candidates they supervisors will generate research outputs and that these outputs will involve the supervisors.
- **Mentoring:** Cultivating a research culture, providing guidance on grant applications, and protecting the intellectual property rights of both research candidates and supervisors.

The Higher Degree Research Candidate and Supervisor Policy states;

Supervisors

(14) Supervisors of Candidates will:

a. *as their, main role, provide academic support throughout the candidature, in accordance with the Higher Degree Research Candidature and Supervision Procedures, to enable the Candidate to achieve a high standard of research activity and output within an appropriate timeframe.*
b. *maintain a respectful and positive working relationship with the Candidate.*

c. *have a thorough understanding of the University's Rules, Policies, Procedures and Guidelines so that accurate advice and appropriate support is given to the Candidate. Notably this Policy and the following:*

i. *Higher Degree Research Candidature and Supervision Procedures*
ii. *Research Quality, Standards and Integrity Policy*
iii. *Research Integrity Procedures (Staff)*
iv. *Research Integrity Procedures – Higher Degree Researchers (Students)*
v. *Academic Integrity Guidelines*
vi. *Work Health Safety Policy*
vii. *Harassment, Bullying and Discrimination Prevention Policy*
viii. *Sexual Misconduct (Prevention and Response) Policy*
ix.

d. *support candidates to develop the Graduate Attributes as appropriate to research degrees.*

e. *strongly encourage, where appropriate, the publication of the results of the Candidate's research*

f. *attend mandatory Supervisor training at least every three years.*

g. *participate in additional supervision workshops and training opportunities relevant to research supervision.*

h. *strongly encourage the Candidate to engage with training opportunities provided by the University relevant to their skill requirements.*

i. *through education and support, minimise the likelihood of any breaches of Academic Integrity, including the inappropriate use of Generative AI, and*

j. *take all reasonable steps to maintain an effective working relationship with the Candidate.*

(15) The Principal Supervisor has the main supervisory responsibility for the Candidate, and is responsible for directing the work of the Candidate and for ensuring that the Candidate meets all administrative and academic requirements. The Principal Supervisor located in the Faculty or College in which the Candidate is enrolled must:

a. *mananage the supervisory team to ensure a productive and respectful relationship maximising the probability of a successful candidature.*

b. *ensure that the program of research is managed according to the Research Candidate and Supervision Procedures.*

c. *be a mentor for any Co-Supervisors, where appropriate.*

d. *support Supervisors and Candidates in taking advantage of all appropriate training opportunities.*

e. *develop any cotutelle agreements in consultation with the Director, Higher Degree Research.*

f. *intervene if the progress of the candidature is becoming a concern and discuss progress and support required with the Candidate concerned.*

g. *report unsatisfactory progress of the candidature to the Graduate School so that appropriate monitoring and support measures can be put in place.*

Part B - Responsibility of the Candidate

(16) Candidates have primary responsibility for the undertaking, active pursuit, and completion of the research.

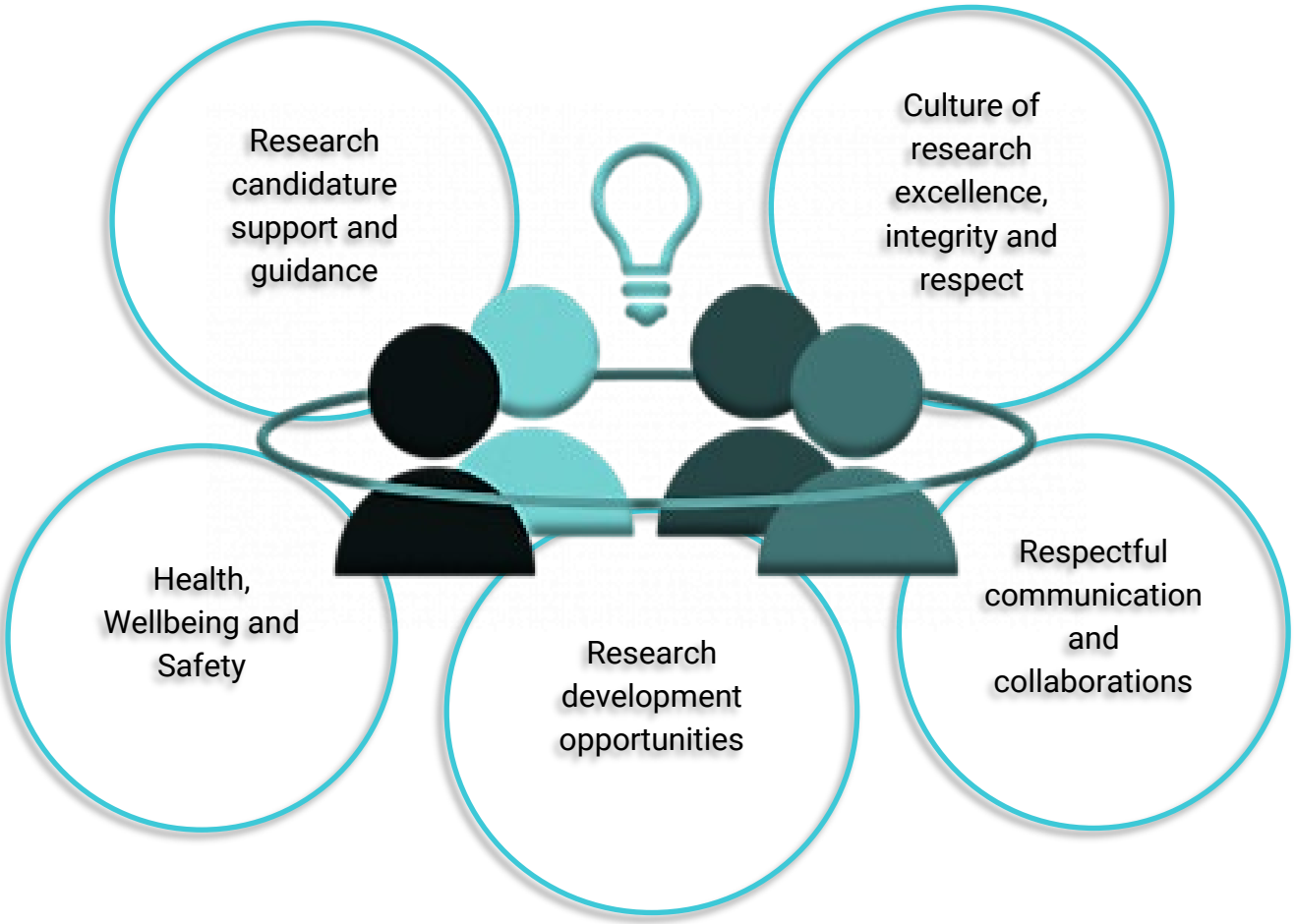
(17) Candidates will:

a. *undertake Orientation and online induction with the Graduate School as soon as possible after commencing candidature.*

b. *familiarise themselves with the Higher Degree Research Candidature and Supervision Procedures in particular, and Southern Cross University's Rules, Policies and Procedures more broadly.*

c. *adhere to research practices as set out in the Australian Code for the Responsible Conduct of Research.*
d. *adopt safe working practices relevant to the field of research and adhere to the University's Work Health and Safety Policy.*
e. *comply with University policies on research integrity, academic integrity and academic misconduct, authorship and with the Research Integrity Procedures - Higher Degree Researchers (Students).*
f. *follow appropriate ethical practices appropriate to the relevant discipline, and seek further clarification where required.*
g. *understand and avoid breaching principles of academic integrity as detailed in the Academic Integrity Guidelines. This includes the appropriate and inappropriate use of Generative AI.*
h. *maintain continuous enrolment, or seek approval for leave of absence or interruptions when necessary.*
i. *use the resources and facilities available in a timely and responsible manner to facilitate progress on the research project.*
j. *advise their Supervisors of any significant factors which may affect their progress and, in consultation with Supervisors, initiate any variations to candidature as required.*
k. *document the progress of the work and present written or other material for comment, feedback, and discussion in a timely manner to allow for continuity of the research program.*
l. *actively participate in the University HDR Candidate training program.*
m. *participate in other activities that will enable the acquisition or improvement of the skills and knowledge required for completion of the research project.*
n. *accept responsibility for the preparation of the final copies of the thesis, and to submit a thesis which meets the University's requirements on presentation and content.*
o. *advise the Graduate School of, or apply for in the prescribed manner, any changes to conditions of enrolment.*
p. *maintain satisfactory academic progress of candidature.*
q. *complete mandatory candidature milestones at the appropriate times.*

HDR CANDIDATE-SUPERVISOR RESPONSIBILITY GUIDE



Our values

We strive for excellence

We apply the highest standards.
We're always seeking to be at our best.

We are bold

We're ambitious.
We're dynamic.
We make bold decisions.

We care

We care for our people.
We champion our communities.
We respect our planet.

We own it

When we commit, we keep our word.
When we fail, we learn.

We build trust through action

We tell the truth.
We do what's right.

Southern Cross University

HDR CANDIDATE-SUPERVISOR RESPONSIBILITY GUIDE

About this guide

Southern Cross University promotes respectful and productive relationships between candidates and supervisors throughout the research journey. The University acknowledges that the needs of candidates and supervisors may change overtime. This means that respectful communication is important and understanding of both parties is required at all times.

This guide is designed to support HDR candidates and supervisors in completing their Supervisor Candidate Agreement. It acts as a tool to assist candidates and supervisors to develop respectful, open and honest communications, create dialogue around common arrangements, and agreement on approaches to progressing research from the beginning of candidature.

This guide encourages candidates and supervisors to consider various elements of their supervisory arrangement prior to finalising their Supervisor Candidate Agreement. Whilst supervisory relationships differ, they share similarities that require mutual understanding. This includes but is not limited to:

- Abiding by the University Code of Conduct, Higher Degree Research Candidate and Supervisor Policy, Higher Degree Research Candidature and Supervision - Procedures, Research Quality, Standards and Integrity Policy, Research Publications, Dissemination and Authorship Procedures, and the Research Data Management Policy.
- Utilising SCU email accounts for all communications, including regular communications between supervisors and candidates (in addition to phone and online meetings)
- Meeting regularly as agreed, either in-person or online (with exceptions of student and supervisor leave, and depending on availability)
- Supervisors expecting candidates to submit written material with adequate time prior to meeting, where the material will be discussed. Submission dates to have mutual agreement
- Candidates expecting supervisor's review and feedback on written material within a timely and mutually agreed timeframe
- Candidates are expected to complete tasks as required by the supervisor based on discussions.

This guide is suitable for supervisors and candidates to use as a reference point for discussion when completing the Supervisor Candidate Agreement. It will be provided to supervisors and candidates along with the Supervisor Candidate Agreement. Supervisors and candidates can refer to the discussion topics and questions below to develop a mutual understanding of expectations for candidature supervisory arrangements.

HDR Supervision arrangements for discussion

A. Communications	
Daily greeting	• Expectations of standards in communication (respectful and courteous), and preferred mode of address for both supervisor and student, e.g. by first name, Ms/Mr. Surname, Dr Surname, Prof Surname, etc.?
Contact protocol	• What modes and times of communication are expected besides supervisor meetings (e.g. Zoom, mobile or landline phone, SMS, email – during business hours or weekends)? • What is the expected timeframe for supervisors to reply to emails or phone calls? • If challenges are faced, is communication to a third neutral party by the supervisor or student required? • How should co-supervisors engage in communication?
Meetings	• How often should meetings be held (e.g. Regular, whenever suits, flexibility) and who will organise the meetings (e.g. including if meetings are missed)? • Will candidates draft agendas and minute meetings, determine how they should be structured, what level of detail should they contain (e.g. Action items/discussion and decision points/task lists from meetings), and how will these be distributed (i.e. paper based or electronically)?
B. Research Progression	
Nature and timing of review and feedback	• In what timeframe do candidates expect feedback (a general timeframe or specific dates can be agreed with each submission of work)? • What kind of feedback is most useful for candidates (types of feedback include comments substantive argument, form, argument structure, grammar, copy-editing including typos)? • Should feedback be driven by supervisors or only upon request from the Candidate?
Progress Reviews	• Will you review your progress on a quarterly basis other than the formal six-monthly Review of Progress as agreed in your SCA?
C. Intellectual Property, Authorship and Publication	
Intellectual Property	• Will the Candidate, supervisors or the University retain all ownership over IP, or is there a specific IP agreement in place? Are there any other IP arrangements between the Candidate and others? • Are there any intended IP arrangements between the candidates and other parties involved or with proposed involvement in the research project? (e.g. IP for Indigenous Research projects, with collaborators etc)
Authorship and Publication	• Will the Candidate be the first author on all publications resulting from the studies undertaken during candidature? • What other authorship arrangements do the Candidate and supervisors agree to in consideration of the SCU Responsible Research Conduct Policy (e.g. will contribution to the research and order of authors be agreed to in the SCA, and confirmed prior to all

	publications being drafted?) What role will each supervisor play in contribution to the research outputs? • Will the candidates and supervisors ensure that all research outputs from the candidature are managed with integrity and ethically, recognising all contributors appropriately? • Are candidates aware of their responsibilities if they are first authors, to all publications produced through candidature? Are all supervisor authors aware of their responsibilities to the publications and in supporting the Candidate as first author? • If disputes with authorship arise, who can assist candidates and supervisors objectively in resolving such disputes? (E.g. Research Integrity Advisors)
D. Research End-User Engagement	
Research Internships	• If a Research Internship has not already been undertaken, identify industry partners or bodies which candidates could potentially engage for internship opportunities, complementary to the research project within the first 18 months of candidature.
Industry engagement	• If there are no Industry Supervisors currently participating in the Candidate's supervision, identify suitable industry supervisors to engage to provide relevant expertise or contribute to mutually agreed project aims and outcomes. • Is there any industry relevant funding that candidates could consider applying for (if not already receiving an industry funded scholarship or stipend)? • Identify any training already undertaken by the Candidate, or future training opportunities in research industry engagement, commercialisation, entrepreneurship and innovation, and community and consumer engagement.
E. Candidature planning and support	

Research planning	• Discuss the following to include in your Research Study Plan:
	  ○ A realistic research project plan (including research question, literature review, design, methodology, etc.) and timeline for at least the first 6 months?
	  ○ Your research skills development?
	  ○ Any essential trainings or licenses you require before you begin research?
	  ○ A data management plan?
	  ○ How do you intend to manage, store and retain research data?
	• Have any funder or ethical requirements been considered in formulating the data management plan? How will this be documented and confirmed prior to applications for ethics approval being submitted?
	• Do you require an ethics approval to do your research and how often might you need to do field trips?
	• What is the long-term plan and expectation for publications of research (journal article, book chapter, monograph)?

Planning and timing of drafts	• What is the expected time-line for submission of draft chapters? This discussion should become more specific with each year. • If there are delays in submitting drafts or receiving feedback, how should this be dealt with (email notifying delay, follow up emails where deadlines are not met)?

F. Skills development	
Researcher development planning	• What are some areas of research knowledge and skill gaps (e.g. discipline knowledge, research methodology, literature review, academic writing, software, English proficiency, post-PhD mentoring)? • Which courses or workshops are appropriate to address these researcher development needs (mandatory/optional) and to be included in the Candidate's Research Study Plan? • Are candidates aware of the existing support mechanisms provided through the University and library? (e.g. software, e-research, online data management plans) • Are there any specific knowledge dissemination activities considered for inclusion the Research Study Plan? (e.g. presentations at relevant conferences and forums, relevant industry body engagements)
G. Health and Wellbeing	
Health and wellbeing support	• What access requirements may be necessary during the degree? • How should these be accommodated in the Research Study Plan? (E.g. maintaining physical and mental health and wellbeing, managing family and work responsibilities). • Are there any foreseeable challenges (e.g. health and wellbeing, caring duties etc.) that may impact progress, and how should these be addressed?

Conflicts and conflict resolution	• How should conflict resolution be undertaken when there are conflicts between:
	  ○ Supervisors and student?
	  ○ Student and other students?
	• How should issues around conflict be raised?
	• Is there a third neutral party to consult when conflict arises?

Reading guide

- SCU Code of Conduct
- Higher Degree Research Candidate and Supervisor Policy
- Higher Degree Research Candidature and Supervision Procedures
- Research Quality, Standards and Integrity Policy
- Higher Degree Research Register of Supervisors Policy
- Research Integrity Training (on Blackboard) *(Log in to Blackboard to access),* including the Research Integrity Training Guidelines, and Research Integrity Guidelines for HDR Candidates and Supervisors
- Current students' site
- Text matching software policy
- Text matching software procedures
- Research Publications, Dissemination and Authorship Procedures
- Rules relating to Awards - Rule 7 - Masters by Thesis
- Rules relating to Awards - Rule 8 - Professional Doctorate Awards
- Rules relating to Awards - Rule 9 - Doctor of Philosophy (PhD) award
- SCU Health and Wellbeing support and self-help services

SUPERVISOR REGISTER

All Higher Degree Research (HDR) Supervisors must apply for registration on the HDR register of supervisors. To do this, you need to complete an application for Inclusion on the HDR Register of Supervisors form and have this approved by the Director of Higher Degree Research and the Associate Dean of Research in your Faculty. (If you are new to SCU, you will also need to attach your academic CV for the Dean Graduate School to consider your request). Once this has been signed, it is sent to the Graduate School for collation, and the Graduate School will then forward your request to the Dean Graduate School for consideration.

If your application is approved, you will receive an email approval back from the Graduate School. Your supervisor information will then be loaded to the Graduate School website Find a Supervisor Register.

Fast Tracking

HDR Supervisors that do not meet the eligibility criteria for Principal supervisor status can elect to undertake the fast-tracking process provided the applicant can satisfy the following requirements:

a. **Participate in three confirmation of candidatures:** as non-voting participants, being involved in the whole process, accessing all documentation, and be part of the feedback and discussions panels as an observer.
b. **Participate in two In-candidature reviews:** as non-voting participants, being involved in the whole process, accessing all documentation, and be part of the feedback and discussions panels as an observer. Important that prospective supervisors understand the importance of this review.
c. **Examination processes**: it is expected that prospective principal supervisors will, through the Director HDR, be familiar with the HDR examination process. Newly appointed principal supervisors must agree to be mentored by an experienced co-supervisor or the Director HDR when assisting their first HDR Candidate with responses to examiner comments.
d. **Director HDR endorses the application**: for an application for a new Principal Supervisor to be considered for fast-track approval by the Dean, Graduate School, the application must be endorsed by the Director, HDR.
e. **Director, HDR must agree to formally induct** any applicant that is approved as a new principal supervisor: this will involve ensuring that new Principal Supervisors are familiar with their responsibilities, relevant policies, processes and expectations in relation to HDR candidature.
f. **Regularly publishing research papers in scholarly journals:** If you are applying to be a principal supervisor for a PhD candidate under the fast track guidelines, it would be expected that you regularly publish research papers in scholarly journals.

POLICIES

The following policy details the eligibility criteria for HDR supervision:

- Higher Degree Research Register of Supervisors Policy

As an HDR supervisor, you also need to be aware of the following policies:

- Higher Degree Research Candidate and Supervisor Policy
- Higher Degree Research Candidature and Supervision - Procedures
- Higher Degree Research Register of Supervisors Policy
- Rules Relating to Awards - Rule 7 - Masters by Thesis Awards
- Rules Relating to Awards - Rule 8 - Professional Doctorate Awards
- Rules Relating to Awards - Rule 9 - Doctor of Philosophy (PhD) award
- Higher Degree Research Scholarships Policy
- Higher Degree Research Candidate Transfer Policy
- Higher Degree Research Fitness to Study Policy
- Research Publications, Dissemination and Authorship Procedures
- Research Data Management Policy
- Research Integrity Training Guidelines
- Research Integrity Training Guidelines for HDR Candidates and Supervisors
- Research Productive - Definition
- Research Quality, Standards and Integrity Policy

SCHOLARSHIPS

Southern Cross University Postgraduate Research scholarships that are administered by the Graduate School include the following:

- **RTP Scholarships:** RTP scholarships are allocated according to several important criteria:
    - to applicants who have a demonstrated strong academic track record.
    - The relevance of the proposed research topic with the University's strategic research priorities. More recently, the alignment with the research clusters.
    - The strength and expertise of the proposed supervisory team.
    - The grade/assessment of honours/masters or previous research components when considering an applicant's academic qualifications.

It should be noted that the final decision around the allocation of scholarships rests with the Senior Deputy Vice-Chancellor of Research and Dean of Graduate School.

- **Top-up scholarships:** Top-up scholarships will only be approved where the funds are specifically provided for this purpose from an external organisation and are not from university-administered funds.

- **Co-funded scholarships**: Those that are co-funded from external/industry funds at 50% and 50% from Graduate School or DVCR funds. Approved by the Dean, Graduate School.

- **Tuition-fee Offset scholarships:** Domestic candidates are not required to pay fees for the duration of their candidature. This fee-offset scholarship is supported by the Australian Government Research Training Program and means that the tuition fees that would otherwise have been required to be paid have been offset.

- **International Tuition Fee Waiver:** A request for a tuition fee offset can only be approved by the Dean of the Graduate School with support from the Principal Supervisor, DHDRT, and Associate Dean (Research). For consideration, the following criteria must be met: the student must demonstrate high academic quality and possess appropriate English proficiency, evidenced by an IELTS Academic score of at least 7.0 in Writing and no other band less than 6.5. The research project's expected outcomes, quality, and alignment with the Supervisory team's research areas must be clearly defined. Additionally, the Faculty and Supervisory team must have adequate resources and facilities to support the project. If the HDR applicant is not on a scholarship, they must provide evidence of their ability to support themselves during their candidature.

- **Scholarships in support of large grants – Office of the Deputy Vice-Chancellor (Research):** The following support for industry schemes/main funding sources from which our industry partners can leverage, the DVCR have made available the following Industry Schemes.

    - **New Project Scholarship (1):** This is for successful projects where the external funding amount to Southern Cross University (net) is a minimum of $150K total within three years.
    - **New Project Scholarship (2):** This scholarship applies where an external funding body on a Category 2 or Category 3 project co-funds 50 per cent of the total scholarship stipend.
    - **Linkage Scholarship:** This is for a successful contracted ARC Linkage project (LP19) round project in which Southern Cross University is the lead.

- **Bridging Scholarships:** HDR candidates who have successfully submitted their thesis can apply for a three-month additional bridging stipend in order to write up manuscripts, apply for fellowships and/or undertake further research. The stipend conditions will be the same as an RTP stipend, i.e. full-time commitment with the possibility of 1 day a week of paid employment. Applicants must meet specific selection criteria, such as timely completion, must have senior authored publication in a Q1 or Q2 journal during candidature etc.

Scholarship duration:

The maximum duration of any scholarship is three (3) years and three (3) months for a PhD and two years for a Masters by Thesis. No further extension will be considered. Scholarships are paid fortnightly and are tax-free.

Amount:

The rate of stipend scholarships is normally at the Australian Government Research Training Program base rate and is indexed annually.

These scholarships are governed by either Higher Degree Research Scholarships Policy or Australian Government Research Training Program Scholarships Policy.

Through the Office of the Deputy Vice Chancellor (Research) and administered by the Graduate School, Southern Cross University oversees a number of other postgraduate scholarship options. All Scholarships applications need to be assessed and approved by the Deputy Vice Chancellor (Research) and the Dean, Graduate School.

All available scholarships are found on the Graduate School Scholarship website.

Please email hdrscholarships@scu.edu.au for all scholarship enquiries.

HOW TO APPLY (Students)

Applications for admission to a Higher Degree by Research at Southern Cross University can be made at any time.

Student must follow the following steps to begin an application for admission.

1. **Ensure they meet degree entry requirements**
   Each research program will specify its admission criteria and English language requirements on the relevant course page. Prospective Students will need to visit our policy pages for the specific award rules.

2. **Prepare a research proposal**
   A research proposal will assist prospective students with their application and help them find appropriate supervisors

3. **Find a supervisor**
   Prospective students will need to approach and confirm a principal supervisor and a co-supervisor from SCU for their intended candidature before starting an application.

4. **Apply online**
   Once all of the above has been confirmed.

5. Once all this above has been completed the Graduate School will collate all the information and send an email to the prospective supervisors and DHDRT. The Graduate School will require confirmation from all prospective supervisors that they agree to supervise the student in question.

6. Once confirmed, the Graduate School will send a pre-approval email to the DHDRT and the ADR to confirm that the applicant's research proposal aligns with the strategic research priorities and to confirm the strength of the proposal and the team proposed.

7. Once all the above has been confirmed then the Graduate School will send a zip file with all documents to the proposed supervisors and the DHDRT. This will include a zip file containing:

   - Appendix A* Research Proposal;
   - Appendix B^ Citizenship Documents;
   - Appendix C* Transcripts/Testamurs/Certificates;
   - Appendix D* Career Summary;
   - Appendix E Publications/Research Experience;
   - Appendix J Tuition fee waiver statement (if applicable).

   ** These appendices are mandatory.*
   ^ Appendix B is mandatory only for International Students.

There will also be an HDR Application Supervisor Form attached that needs to be completed by all supervisors. The DHDRT and the ADR.

The Graduate School will send the student an acknowledgement of the documents and then wait for the form to come back completed.

The Graduate School will then collate all the completed documentation and send to the Dean Graduate School (Dean) for consideration.

Once the Graduate School has approval from the Dean, then the Graduate School will send an offer of admission to the prospective student.

Noting: all of this takes time, so any prospective student you liaise with will need to be made aware that the HDR application process can take time to process.

Once the prospective student sends back the signed letter of offer they can be enrolled. They do have an option to nominate a start date (if not onshore, for instance, and awaiting their visa approval, etc.), or they can choose to be enrolled straight away. HDR students do not self-enrol as they are time-based students the Graduate School must do this on their behalf.

CONFIRMATION OF CANDIDATURE

PhD candidates are expected to complete their Confirmation of Candidature (CoC) milestone within 6 months (full-time equivalent) from the commencement of their enrolment.

Masters by Thesis candidates are expected to complete this milestone within 6 months (full-time equivalent) from the commencement of their enrolment.

Professional Doctorate candidates are expected to complete this milestone within 6 months (full-time equivalent) from the commencement of their enrolment into the thesis unit.

Extensions will not be granted unless there are exceptional circumstances.

CoC Requirements:

- Prior to completing the Confirmation of Candidature (CoC) presentation, candidates MUST complete the online Research Integrity Training module and view the RiskWare training video via the *Research @ Southern Cross University* and *Higher Degree by Research (Graduate School)* Information sites respectively in the students *MYSCU*. To find out more about the requirements of the training, please refer to the Research Integrity Training Guidelines. The Candidate needs to have successfully completed the Research Integrity training module prior to CoC and include their certificate with their CoC documents. It is expected that all supervisors will also have completed the Research Integrity training module. Failure to comply with either of the above requirements will mean the cancellation of the Confirmation of Candidature presentation. This will mean the presentation has to be rescheduled, and, in some instances, this may lead to the termination of candidature.

- The interim Supervisor Candidate Agreement needs to be reviewed at the Confirmation of Candidature by all parties. If there are any changes to be made, then a new Supervisor Candidate Agreement must be submitted to the Graduate School along with the other CoC documentation for assessment.

- The Candidate is expected to provide all of the CoC documents to the panel at least 2 weeks in advance. It is expected that the Candidate will be receiving regular feedback from the supervisors while preparing the documentation.

- The Confirmation of Candidature proposal must be submitted through the University's text-matching software Turnitin via the Graduate School Blackboard site prior to being sent to the Confirmation panel.

- The Turnitin report must be sent to the Confirmation panel members together with the research proposal.

The Confirmation of Candidature process requires the Candidate to fulfil the following elements to a requisite standard.

1) **Confirmation of Candidature requires a written research proposal (at least 7,000 words but no more than 10,000 words), a seminar presentation and, as applicable, the fulfilment of any special conditions required by the Dean, Graduate School.**

   I. The written research proposal must contain the following:
   - Cover page;
   - Table of contents;
   - A 200 word abstract of the proposed project;
   - A critical literature review identifying gaps in the knowledge and areas for further study;
   - A brief philosophical and/or theoretical framework;
   - Hypotheses and/or study aims and objectives, proposed methodology;
   - Detailed research plan with a timeline;
   - If ethics approvals and other research permits are required (including any specialised WH&S requirements), then an indication of the proposed process and timelines for securing these will need to be provided;
   - Any special conditions required by the Dean, Graduate School to ensure the Candidate attains the requisite HDR standard must also be satisfied.

   II. The seminar presentation must:
   - Be 20-30 minutes in duration;
   - Allow a further 20-30 minutes for questions;
   - Be open to other members of staff and other HDR Candidates;
   - Where applicable, contain arrangements to enable online candidates who cannot attend on-campus to present online through the relevant University online forum.

During question time, the Candidate must address all questions made by the panel independently. Following question time, the open component of the CoC is closed, and the Confirmation panel meets privately to discuss the written and oral research proposal. The Chair of the COC panel and external panel member then formulate their recommendation on the outcome of the CoC and complete the Report for consideration by the Dean, Graduate School. The Chair of the panel is responsible for oversight of the completion of the Report and submission to the Graduate School.

Following the conclusion of the oral presentation of the CoC, the Director Higher Degree Research Training (HDRT), will ensure that all documents are completed, prepared and submitted to the Graduate School for consideration. This will include:

- Confirmation of Candidature document – i.e. the written research proposal submitted to the panel; and
- Abstract; and
- Copy of presentation slides; and

- Confirmation of Candidature report; and
- The confidential Report; and
- The revised SCA or confirmation that the original SCA still applies.

The Candidate will not be informed of the outcome of the Confirmation of Candidature until such time as the Dean, Graduate School has reviewed and considered the Confirmation of Candidature documentation and the panel's recommendation. This will be no more than two weeks after the presentation.

Once the Dean of the Graduate School considers the documentation, the Graduate School will advise the Chair of the panel (Director, HDRT) and supervisors of the outcome. It is the responsibility of the supervisors to then advise the Candidate of the outcome of their Confirmation of Candidature.

The Confirmation panel will consist of:

- Director Higher Degree Research Training (as Chair) - noting only the Chair and external panel member can vote on the Confirmation of Candidature outcome and the ADR if they are on the panel;
- External panel member[1], [2]
- Principal Supervisor;
- Co-supervisor(s);
- As applicable, any other person recommended by the Dean, Graduate School.

Note: if the DHDRT is a supervisor, the Deputy DHDRT / Associate Dean (Research) or Delegate must act as the Chair of the Confirmation panel.

[1] *An independent panel member can be someone who is (obviously) independent of the Candidate and supervisors and can add value to the CoC presentation. This person can be from Academia (from SCU or another University). If from SCU, they must be a current academic or Adjunct. They can also be from industry. If from industry, they must be well placed in that industry to be able to provide the critical feedback required to assist the Candidate in progressing with their candidature. They must also hold an equivalent or higher qualification than the Candidate is undertaking the presentation for. The independent panel member, must review the submitted work prior to the presentation and contribute feedback and input to the assessment of the Candidate's work. They have the same voting and input rights as the Director/Chair of the panel.*

[2] *Please refer to the Conflict of Interest Guidelines for Confirmation of Candidature panel Members.*

For noting:

- The supervisors will attend the Confirmation of Candidature to provide additional context and information to the Chair and external panel member/s in order to reach a recommendation. The supervisors do not have a vote on the outcome of the CoC;
- In order to address perceived imbalances of power when the supervisor of a candidate is an Executive Dean, the Associate Dean Research (ADR) also sits on the Confirmation panel. If the ADR is also one of the supervisors, then the Dean, Graduate School will sit on the panel as a non-voting observer;
- The Chair of the panel is the Director HDRT or delegate. They are responsible for preparing the Report and circulating to the panel for sign off;

- The external panel member provides an objective and critical overview of the Candidate and project. They preferably ought to be research active and drawn from outside of the University, with no close links to the Candidate, project or supervisors;
- The choice of external panel member needs to be endorsed by the Faculty HDRT Director and approved by the Dean, Graduate School;
- Only the Chair and external panel member can vote on the Confirmation of Candidature outcome and the ADR if they are on the panel.
- The Chair and external panel member will also have a private discussion with the Candidate to assess if the supervisors are both suitable and engaged. This assessment will be documented in a separate confidential report submitted to the Graduate from the Chair of the panel and will not be shared with the supervisors. This should be made clear to the Candidate.

The seminar presentation provides additional context for answering the above questions and is not assessed in its own right.

Candidates will be made aware of these questions in their orientation booklet. They will be expected to prepare the CoC documentation and presentation with these in mind.

The responsibility and role of the Principal Supervisor in the CoC process:

The Principal Supervisor is the academic and administrative leader in the supervisory team. It is very important that the Principal Supervisor along with all co-supervisors are involved in determining (with the Candidate), whether or not the Candidate is ready for Confirmation. When a candidate is ready for CoC, the Principal Supervisor should advise the Director Higher Degree Research Training accordingly.

The Principal Supervisor's responsibilities are then:

1. To identify a potential **external expert to sit on the Confirmation panel,** and obtain agreement from this person to participate in the Confirmation of Candidature;

2. To advise the Director HDRT of the identity of the proposed external member and co-supervisors for the Candidate;

3. To provide the Director with the CV of the nominated external member, and a statement that there is no conflict of interest (please refer to conflict of interest guidelines). The Principal Supervisor will also be required to provide a brief outline of the expertise/experience of the external panel member. The DHDRT will assess the suitability of the proposed external panel member and advise the Principal Supervisor of any concerns with the suitability of the proposed panel member;

4. To inform the Director HDRT of possible dates for Confirmation (wherein the Candidate, the supervisory team and the external member are available) and confirm the mode that the external Examiner will be attending (e.g. in person, by Skype/zoom or video conference, etc).

The responsibilities and role of the Director HDRT in the Confirmation of Candidature process:

The Director of Higher Degree Research Training is responsible for providing the following advice and documentation to the Graduate School so they can book and advertise the Confirmation:

- The identity of the Candidate undertaking the Confirmation.
- The date and time they would like the Confirmation to be held.
- The panel members for the Confirmation so the Graduate School can copy the panel members into the confirmation invitation.
- Provide the 200-word abstract of the research proposal so that the Graduate School can advertise the Confirmation to all HDR supervisors and HDR Candidates.
- When booking a Confirmation of Candidature presentation, the DHDRT will supply a zoom code and password for the presentation to the Graduate School. This needs to be either added to the COC request form or an email invitation sent to hdrexamination@scu.edu.au (please do not send to hdrsupport).
- The Director HDRT will collate and distribute the paperwork to the Confirmation panel ahead of the scheduled date.
- The Director must review the submitted work prior to the presentation and contribute feedback and input to the assessment of the Candidate's work. They have the same voting and input rights as the supervisors and the external panel member on the panel.
- The Director HDRT is the Chair and also provides an independent assessment. The Chair has the casting vote on any issues.
- The Director HDRT is responsible for the oversight of the completion of the confirmation report/form and notifying the Graduate School of the outcome.
- Where applicable, contain arrangements to enable online candidates who cannot attend on-campus to present online through the relevant University online

The Confirmation of Candidature Presentation and Process:

- The Candidate will present their 20 - 30-minute oral presentation to the panel;
- The panel will then ask the Candidate questions on the presentation (allow 20-30 minutes);
- Once the questions are concluded, staff and students attending the CoC will be asked to leave;
- The Candidate will be asked to leave;
- The Chair of the panel will have a discussion with the external panel member and the supervisors regarding the CoC;
- Following the panel discussion, the supervisors of the Candidate may or may not be asked to leave for the final discussion regarding the CoC outcome. This will be at the discretion of the Chair of the panel;
- The Chair of panel and the external panel member will then ask the supervisors to leave and invite the Candidate in for a private discussion on supervision;
- Following the private discussion on supervision, the Chair of the panel will provide the Candidate with feedback on their presentation and inform them of the next steps ie. The Report will be

prepared, the external panel member and Chair will sign it and then the is sent to the Dean, Graduate School for consideration along with the other supporting documentation;

- Following the Dean's consideration of the confirmation of candidature documentation, the supervisors and Director HDR are informed of the outcome of the Confirmation of Candidature by the Graduate School;
- The supervisors and Director, HDR then have the responsibility of informing the Candidate of the outcome.

The Confirmation of Candidature Report:

As a guide, it is suggested the Report includes whether or not the Candidate has demonstrated a capacity to fulfil the following requirements:

- Did the Candidate articulate a clear and explicit research question (s) and is it the panel's assessment that the research question is appropriate?
- Did the Candidate demonstrate appropriate knowledge of their proposed research area?
- Was the literature review comprehensive and appropriate for the topic being pursued?
- Did the Candidate clearly articulate the gaps in the knowledge that their research will address and the significance of investigating the gaps?
- Did the Candidate demonstrate appropriate knowledge of the methodology to be used and were the methods and research design clear and appropriate for the topic being pursued?
- Where an Ethics application will be required, are there any potential ethics issues and is the Candidate aware of them?
- In answering the panel questions, did the Candidate demonstrate clear logical and independent thinking?
- Was the action plan and timeline feasible and consistent with a timely completion?

The Confirmation Report must be submitted to the Dean, Graduate School with a recommendation that candidature is:

- Confirmed, with no further work required; or
- Confirmed, with changes recommended by the committee to the satisfaction of the Principal Supervisor; or
- Conditionally confirmed after major revisions to the literature review and research plan as recommended by the panel and made within 3 months to the satisfaction of the Confirmation panel (resubmission and final sign-off to be coordinated by the Chair of the Confirmation panel); or
- Not confirmed, but the Candidate is required to revise and resubmit their paper and make another presentation within 6 months for Doctor of Philosophy Candidates, and within 4 months for Masters by Thesis and Professional Doctoral candidates; or
- Remedial Action: Remedial action or recommended transfer to Masters by Research (if Confirmation is for PhD); or
- Not Confirmed, and candidature is terminated.

Queries in relation to the confirmation of candidature process should be directed to the Director Higher Degree Research Training, the Principal Supervisor or the Graduate School.

CONFLICT OF INTEREST GUIDELINES FOR CONFIRMATION OF CANDIDATURE PANEL MEMBERS

The independence of a confirmation panel member can be ensured by the use of these guidelines.

There are a range of circumstances that can lead to a conflict of interest. The guidelines below list examples of different types of conflict of interest that may arise between the independent confirmation panel member and various parties, including the Candidate, the supervisor/advisor, the University, the subject matter itself and other members of the panel. The list is indicative and is not to be considered exhaustive.

In managing conflicts of interest, it is useful to:

- Distinguish major (potential) conflicts of interest that would normally result in the non-appointment of the independent panel member from minor (potential) conflicts that should be declared and explained but which should not normally, independently of other considerations, inhibit the appointment of the independent panel member.

Conflicts of Interest

Listed below are examples of different types of conflict of interest that may arise between the independent panel member and various parties including the Candidate, the supervisor/advisor, the University, the subject matter itself and other panel members.

This list is indicative and is not to be considered exhaustive.

A. Conflict with the Candidate		
Working Relationship		
A1.	Independent panel member has co-authored a paper with the Candidate within the last five years	MAJOR
A2.	Independent panel member has worked with the Candidate on matters regarding the Thesis Eg. Previous member of the advisory team.	MAJOR
A3.	Independent panel member has employed the Candidate or been employed by the Candidate within the last five years.	MAJOR
A4.	Independent panel member is in negotiation to directly employ or be employed by the Candidate	MAJOR
A5.	Independent panel member has acted as a referee for the Candidate for employment	MAJOR
Personal Relationship		

A6.	Independent panel member is a known relative of the Candidate	MAJOR
A7.	Independent panel member is a friend, associate or mentor of the Candidate	MAJOR
A8.	Independent panel member and the Candidate have an existing or a previous emotional relationship of de facto, are co-residents or are members of a common household	MAJOR
Legal Relationship		
A9.	Independent panel member is or was married to the Candidate	MAJOR
A10.	Independent panel member is legally family to the Candidate (for example, step-father, sister-in-law)	MAJOR
A11.	Independent panel member is either a legal guardian or dependent of the Candidate or has power of attorney for the Candidate	MAJOR
Business, Professional and/or Social Relationships		
A12.	Independent panel member is currently in or has had a business relationship with the Candidate in the last five years (for example, partner in a small business)	MAJOR
A13.	Independent panel member is in a social relationship with the Candidate, such as co-Trustees of a Will or god-parent	MAJOR
A14.	Independent panel member has a current professional relationship, such as shared membership of a Board or Committee (including editorial and grant decision boards), with the Candidate	MINOR
A15.	Independent panel member has had personal contact with the Candidate that may give rise to the perception that the Examiner may be dealing with the Candidate in a less than objective manner	MINOR

B. Conflict with the Supervisor/Advisor		
Working Relationship		
B1.	Independent panel member was a candidate of the supervisor within the past five years	MAJOR
B2.	Independent panel member has co-supervised with the supervisor in the past five years	MAJOR
B3.	Independent panel member holds a patent with the supervisor granted no more than eight years ago and which is still in force	MAJOR
B4.	Independent panel member had directly employed or was employed by the supervisor in the past five years	MAJOR

B5.	Independent panel member holds a current grant with the supervisor	MAJOR[1]
B6.	Independent panel member has co-authored a publication with the supervisor in the past five years	MAJOR[2]
Personal Relationship		
B7.	Independent panel member is in negotiation to directly employ or be employed by the supervisor	MAJOR
B8.	Independent panel member is a known relative of the supervisor	MAJOR
B9.	Independent panel member and the supervisor have an existing or a previous emotional relationship of de facto, are co-residents or are members of a common household	MAJOR
Legal Relationship		
B10.	Independent panel member is or was married to the supervisor	MAJOR
B11.	Independent panel member is legally family to the supervisor (for example, step-father, sister-in-law)	MAJOR
B12.	Independent panel member is either a legal guardian or dependent of the supervisor or has power of attorney for the supervisor	MAJOR
Business, Professional and/or Social Relationships		
B13.	Independent panel member is currently in or has had a business relationship with the supervisor in the last five years (for example, partner in a small business)	MAJOR
B14.	Independent panel member is in a social relationship with the supervisor, such as co-Trustees of a Will or god-parent	MAJOR
B15.	Independent panel member has a current professional relationship, such as shared membership of a Board or Committee (including editorial and grant decision boards), with the supervisor	MINOR
B16.	Independent panel member has had personal contact with the supervisor that may give rise to the perception that the Examiner may be dealing with the Candidate in a less than objective manner	MINOR

[1] Mitigating circumstance may exist, for example where the grant in question is held by a large consortium of relatively independent researchers.

[2] Mitigating circumstance may exist, for example where the paper in question has a large author list and where the Independent panel member and supervisor have not collaborated directly.

C. Conflict with the subject	
Research	
C1. Independent panel member has a direct commercial interest in the outcomes of the research	MAJOR
D. Conflict with other Panel Members	
Personal Relationship	
D1. Independent panel member is married to, closely related to or has a close personal relationship with another panel member	MAJOR
Professional Relationships	
D2. Independent panel member has a professional relationship with another panel member	MINOR

Additional notes on the management of the guidelines

In managing the Conflict of Interest guidelines, it is useful to remind those who are nominating independent panel members/experts that the purpose of the guidelines is to ensure the independence of the panel member in both fact and perception. The guidelines are designed to protect the Candidate, independent panel member and the University against potential negative perceptions during and beyond the confirmation of candidature process. There is no presumption that any individual will behave inappropriately.

It would be unreasonable to expect potential independent experts/panel members to make decisions about their suitability to participate in a confirmation (with reference to these or other guidelines), though it is reasonable to expect them to declare conflicts of interest and to make provision for through the appropriate channels. The nomination of the independent panel member is best made by the principal supervisor and/or co-supervisors in consultation with the Director Higher Degree Research Training.

The most frequent concerns raised by Directors of HDRT relate to conflicts of interest between an independent panel member and a supervisor with respect to co-authorship (B6). There is occasionally a tension between the need to find an independent panel member/expert and the need to find an independent panel member with expertise in the field of the Thesis, especially where the field is considered to be particularly narrow. It may be useful here to keep in mind that specific expertise in the narrow field of the Thesis is not the only (nor necessarily the primary) consideration in selecting a potential independent expert. An independent panel member/expert's broad knowledge of the particular field of research, experience as a supervisor of HDR candidates and Examiner of HDR theses, plus their broad familiarity with the expectations of Australian HDR courses are all considerations in the selection of appropriate **independent panel members.**

As a general rule of thumb, a conflict of interest exists where a potential independent panel member has worked with the Candidate or supervisor on matters of synthesis or analysis or has maintained a correspondence or other contact over an extended period in which the research has been discussed.

Changes to conditions of candidature

During the period of a student's candidature, there are likely to arise in situations where the conditions of their candidature set down at the time of their enrolment need to change. The following types of changes all require they will need to complete a Change to Conditions of Enrolment form, available from the Changes to Conditions of Enrolment section under Forms and Downloads on the Graduate School website and require the approval of the supervisor, DHDRT and the Graduate School:

Change to Thesis Topic

If they need to change their topic, they will need to check whether it entails a change to their Supervisors or the Faculty in which they are enrolled. This can have funding implications, so it is important to be clear on the form whether these changes follow from their decision to change their topic.

Change to Supervision Arrangements

If they need to change one (or more) of your supervisors, both the new supervisor and the supervisor who is being replaced will need to sign off. They also may wish to change who is your principal supervisor and who is your co-supervisor or associate supervisor. Any change of supervisor will require a new Supervisor Candidate Agreement.

Change to Attendance Type

If they want to change their enrolment from internal to external (or vice versa) or from full to part-time (or vice versa), they can apply to do so by filling out this form.

Interruption to Candidature

Interruptions to candidature will not be considered for candidates prior to confirmation of candidature. If extenuating circumstances exist, a case can be made to the Dean, Graduate School for special consideration. It should be noted, that if an interruption to candidature is approved by the Dean, Graduate School due to extenuating circumstances, the period of interruption cannot exceed 3 months.

Interruptions to candidature subsequent to the successful completion of confirmation of candidature need to be submitted to the Graduate School for consideration. Candidates need to provide a valid reason in order for a request to interruption to candidature to be considered. It is not possible to apply for an interruption to your candidature retrospectively. Interruptions of 12 months or longer will require approval from the Dean, Graduate School. If they are on a scholarship they will need to notify the Graduate School and dorfinance@scu.edu.au so that the scholarship can be suspended.

Candidate's approved an interruption to their candidature should be advised that all ethics approvals, or any other relevant approvals in relation to their candidature are suspended for the period that they are on interruption, noting that whilst they are on interruption, they are no longer considered to be an enrolled student for the duration of the interruption.

Sick leave and Recreation leave

All students are required to notify the Graduate School of any leave from their School. Students wishing to take sick leave or Recreation leave during their candidature will need to complete an application for Sick leave or Recreation leave form which must be submitted to the Graduate School. For Scholarship recipients please refer to the Higher Degree Research Scholarships Policy Section 4. This form is located on the Graduate School website.

Leaving Australia Travel form – International students.

There is a form that is required to be completed by International HDR Candidates who plan to travel away from the University/Campus for more than 72 hours (3 days), and who are not on a Stipend Scholarship.

The purpose of this form is to inform the Graduate School of their travel plans especially if they are intending on travelling back to your home country for a short period of time.

They will remain enrolled into their course of study and must maintain satisfactory progress whilst away from the University. Please note that this application, if approved does not extend the period of their candidature.

They must strictly abide by the approved start and end dates of their intended absence from the University or Campus. Noting that International HDR candidates are expected to complete their course of study without any interruptions or Leave of Absence, unless there are compassionate or compelling circumstances, of which a Change to Conditions of enrolment form would need to be completed and approved by the Dean, Graduate School.

Extensions to Candidature

If they wish to apply for an extension to their candidature beyond the due date for completion, they will need to complete an Application for Extension to Candidature form and forward it to the Graduate School two months *before* the normal term of their candidature expires. This form can be found on the Forms and Documents section of the Graduate School website. While they may choose to seek the comments of their principal supervisor before submitting their application, it remains their responsibility to ensure the application reaches the Graduate School 2 months before their candidature end date.

All extensions to candidature require the approval of the Dean Graduate School. Please be aware that extensions are only provided in exceptional circumstances beyond their control. If their candidature is taking longer than they expected and does not involve exceptional circumstances, consider taking an interruption before their candidature expires.

Please note that they must have their progress reports up to date before an application for extension will be considered.

Withdrawal from Candidature

If they wish to withdraw their candidature for any reason, there is no need to fill out a form. Just email the hdrsupport@scu.edu.au advising they wish to withdraw.

Termination of Candidature

Be assured we make every effort to ensure that any problems are dealt with before taking the step of terminating candidature, provided they keep us and their supervisors informed of their progress. However, it is important for they to know that candidature can be terminated under certain circumstances which include:

- failure to have their candidature confirmed at the required time.
- if, in the opinion of the supervisors, the DHDRT, and the Associate Dean (Research), they have not made satisfactory progress.
- if they have failed to submit progress reports or have made no contact with their supervisors or the Graduate School for a period of 12 months or more, despite repeated attempts to contact they.
- inability to proceed with candidature as evidenced by multiple interruptions.
- if they make repeated applications for interruption without any indication that their candidature is likely to be completed within a reasonable time frame.
- if their candidature has expired without any contact from they.

Transferring their candidature

Doctoral candidates may transfer at any time into a Master by Thesis degree if the project is suitable and the request is supported by the principal supervisor and Associate Dean (Research) (refer Part A - for specific conditions).

Masters by Thesis candidates who meet the relevant admission criteria to undertake a doctoral degree under the Rule 8 (Professional Doctorate) or Rule 9 (PhD) may transfer at any time into a doctoral degree if the project is suitable and the request is supported by the principal supervisor, Director, Higher Degree Research, and Associate Dean (Research) (refer Part B - for specific conditions).

Impact on Research Training Program Scholarships

If a domestic student (Australian or New Zealand citizen, or Australian permanent resident) has exhausted their Research Training Program Fee Offset Scheme entitlement but remains enrolled, the Commonwealth government will no longer fund the candidature, and the cost of maintaining the candidature will need to be borne by the academic unit supporting the transfer.

Transfer into a Masters by Thesis Degree from Doctoral Degree

Application for transfer from a Doctoral degree to a Masters by Thesis degree should be made to the Dean, Graduate School through the principal supervisor, Director, Higher Degree Research and Associate Dean (Research) using the appropriate form.

An application to change from Doctoral candidature to Masters by Thesis candidature must:

a. describe the circumstances leading to the request;

b. describe the work completed and remaining to be done;

c. define a timetable for completion of the work and the Masters by Thesis degree; and

d. confirm that the proposed Masters by Thesis degree is in an equivalent field of research to that conducted for the Doctoral program.

Approval will not be granted unless the supervisors, Director, Higher Degree Research and Associate Dean (Research) have certified that continuing supervision and research support arrangements are satisfactory, or have advised of new arrangements as appropriate.

The period of candidature already completed at Doctoral level will be deemed completed against the Masters by Thesis. A student who, in order to complete the new program, will exceed the maximum period of candidature applicable to that program, must apply for an extension to candidature. Normally, the new completion date will be extended by no more than twelve months (full time equivalent) from the date of effect of the change.

Transfer into Doctoral Degree from Masters by Thesis Degree

Application for transfer from a Masters by Thesis degree to a Doctoral degree will be made to the Graduate School through the principal supervisor, Director, Higher Degree Research and Associate Dean (Research) using the appropriate form.

For candidates seeking transfer into a Doctoral award on the basis of non-formal or informal learning (where permitted by Rules Relating to Awards Rule 8 or 9), the candidate must have demonstrated the ability to undertake research at doctoral level as follows:

a. a substantial written report will be required (noting this could be provided through the normal doctoral confirmation process);

b. the Associate Dean (Research) must be able to certify that the candidate has achieved the required academic standard for admission under the relevant Rules;

c. the supervisors must be able to demonstrate that they are eligible to supervise at the PhD level;

d. the project must be suitable for a doctoral program, and the transfer must be supported by the principal supervisor, Director, Higher Degree Research and the Associate Dean (Research); and

e. the applicant must demonstrate that they now meet the admission criteria for entry into Doctoral candidature.

Transfer will normally only be permitted after the first full year of candidature in the Masters by Thesis degree (or part - time equivalent).

Where possible, the transfer process will align with the confirmation of candidature process so that the candidate does not need to complete confirmation for both a Masters by Thesis and a doctorate. All doctoral candidates must have completed confirmation at that level.

In the case of a Masters by Thesis candidate who wishes to combine the transfer and confirmation processes:

a. supervisors, supported by their Director, Higher Degree Research and Associate Dean (Research) may nominate Masters by Thesis candidates as having demonstrated the potential to be transferred to doctoral enrolment. A formal recommendation with supporting documentation must be recorded with the Graduate School;

b. candidates so nominated can have their Masters by Thesis confirmation process deferred by the Faculty/College. They will be required to go through a doctoral confirmation period of at least 6 and no longer than 10 months full-time equivalent or 12 to 20 months if enrolled part-time;

c. if the confirmation committee judges that the quality of the candidate's confirmation document, presentation and response to questions from the committee indicates that the candidate is capable of completing a doctoral degree, then the panel can recommend to the Dean, Graduate School that the candidate be transferred to doctoral enrolment;

d. if the confirmation performance is judged to indicate capacity to complete a Masters by Thesis but not a doctoral degree, then the panel may recommended that the candidate's enrolment in the Masters by Thesis be confirmed in accordance with Rules Relating to Awards Rule 7.

e. if the confirmation performance is below both Doctoral and Masters by Thesis standard, the candidate may be offered an opportunity to try again after three months.

In the case of (e, above) following the second attempt the confirmation committee will make one of the following recommendations to the Dean, Graduate School:

a. if the confirmation committee judges that the quality of the candidate's confirmation document, presentation and response to questions from the committee indicates that the candidate is capable of completing a doctoral degree, then the committee can recommend to the Dean, Graduate School that the candidate be transferred to doctoral enrolment;

b. if the confirmation performance is judged to indicate capacity to complete a Masters by Thesis but not a doctoral degree, then the committee may recommend that the candidate's enrolment in the Masters by Thesis will be confirmed in accordance with Rules Relating to Awards Rule 7.

c. if the confirmation performance is below both Doctoral and Masters by Thesis standard the committee can recommend the following outcomes in accordance with Rules Relating to Awards Rule 7 Part G with respect to Masters by Thesis candidature:

i. remedial action in accordance with Rules Relating to Awards Rule 7 Part G; or

ii. recommendation to terminate candidature in accordance with Rules Relating to Awards Rule 7 Part G.

IN-CANDIDATURE REVIEW REPORTS

A formal In-candidature review for all HDR students post confirmation is now a requirement for all HDR candidates.

For all current candidates, the HDRC agreed that those candidates that have not completed their Confirmation of Candidature (CoC) will be required to undertake an In-Candidature Review. Students already enrolled and who have passed their CoC will also be required to undertake an In-Candidature Review, unless they can make a case to the Dean, Graduate Studies to have this requirement waived. The case will need to be supported by the Principal Supervisor and the Director of Higher Degree Research.

For PhD candidates, an In-candidature review would be 12 months post Confirmation of Candidature (full time equivalent).

For Masters by Thesis candidates and Professional Doctorate Candidates, an In-candidature review would be 9 months post Confirmation of Candidature (full time equivalent).

All candidates **MUST** complete the online Research Integrity Training module prior to completing their in-candidature review. To find out more about the requirements of the training, please refer to the Research Integrity Training Guidelines.

Panel:

The In-Candidature Review Panel will include:

- The principal supervisor
- The co supervisors
- The Director HDRT
- An external panel member[1] (*it is recommended that where possible the same external panel member for the Confirmation of Candidature will be the external panel member for the In-Candidature Review).

[1]*An independent panel member can be someone who is (obviously) independent[2] of the student and supervisors and can add value to the ICR presentation. This person can be from Academia (from SCU or another University). If from SCU, they must be a current academic or Adjunct. They can also be from industry. If from industry, they must be well placed in that industry to be able to provide the critical feedback required to assist the Candidate in progressing with their candidature. They must also hold an equivalent or higher qualification than the Candidate is undertaking the presentation for. The independent panel member, must review the submitted work prior to the presentation and contribute feedback and input to the assessment of the student's work. They have the same voting and input rights as the supervisors and the Director/Chair of the panel.*

The format for the In-Candidature Review will be:

a) A written document containing draft chapters of Thesis.
b) An oral presentation of a minimum of 15 minutes (required length to be determined by the panel) which addresses:

- What was approved at the Confirmation of Candidature- (research aims, methodology, design, and timeline);
- The Progress achieved to date, against the timeline provided at Confirmation of Candidature;
- Discussion of any barriers/ issues or changes to the research project;
- A detailed timeline for completion and submission of the Thesis with clear and measurable milestones;

c) Any other written material as requested by the panel.

Outcome:

The outcome of the In-Candidature review will include:

- A brief report highlighting any issues identified, which will be signed by the In-Candidature review committee members and submitted to the Graduate School for recording against the student's record.

Where further support, training or intervention is required, a detailed plan and timeline (to due date of submission) will be written and submitted together with the above-mentioned.

PROGRESS REPORTS

HDR candidates are required to submit Progress reports every 6 months from the date of enrolment in their chosen HDR degree until they submit their Thesis for Examination regardless of what other milestones may be due at the time as progress reports serve a very different reporting purpose.

Progress reports are a way for all parties (Candidate, Supervisors DHDRT and the Graduate School) to monitor a candidate's Progress.

While most times it will be just a matter of the Graduate School acknowledging the progress report, there may be times we (the Graduate School) refer the progress report to the Dean Graduate School or back to the supervisors and DHDRT. Progress Reports will only be accepted by the Graduate School when all required signatures are obtained.

There is also an option for either party to submit a confidential progress report that goes to the Manager of the Graduate School.

It is the Candidate's responsibility to ensure their milestones are submitted in a timely manner. The Graduate School does send reminders, but this is just a courtesy function that is undertaken to assist our HDR candidates.

INTERNSHIPS/RESEARCH END USER

Eligible Industry internships are:

- At least 3 months long;
- Consist of 60 full time equivalent days of engagement;
- Are agreed in written form with a research end user within 18 months of the HDR course commencement (full time equivalent).

Research end-user is defined as an individual, community or organisation external to academia that will directly use or directly benefit from the output, outcome or results of research. Examples of end users includes businesses, governments, non-governmental organisations, communities and community organisations. Specific exclusions are:

- Other higher education provides;
- Organisations that are affiliates, controlled entitles or subsidiaries of a higher education provider;
- Equivalent (international or domestic) of the above exclusions.

1. Candidates who undertake an industry internship, provided there is a written agreement within the first 18 months of their candidature, will have their candidature extended by the equivalent period of the internship.
2. Candidates who are in receipt of a scholarship stipend and their internship is unpaid – will receive an extension to their scholarship for the equivalent period of the internship (maximum three months).
3. Interruptions to candidature are not required as any internship will form part of the candidature.
4. Importantly, there is no impact for the Candidate in terms of timely completions.

There are four key components that SCU needs to consider in terms of Higher Degrees Research Training to remain competitive and secure the same or greater proportion of RTP funding:

1. **Higher Degree Research (HDR) completions** (timely completions and quality candidates).
2. **Industry internships/placements** must be formally agreed to within the first 18 months of candidature for PhD candidates – can be paid or unpaid.
3. **Securing engagement income** for HDR candidates in collaboration with Industry.
4. **Securing Industry supervisors for PhD** candidates jointly supervised by at least one supervisor from industry (or research end user). The supervision arrangements must be endorsed by the University and the research end user supervisor must be actively engaged in the candidates HDR.

TIMELY COMPLETIONS

The standard period of candidature for a PhD candidate is three years, 6 months full-time, or seven years part-time. The maximum period of candidature for a PhD candidate is four years full-time or eight years part-time. This does not include approved extensions or periods of approved leave of absence/interruption.

1. **The ideal PhD milestone candidature timeline** (full-time equivalent) would mean that recommendation of award of degree is attained within the 4-year period:

    - PhD enrolment.
    - 6 months confirmation of candidature.
    - 12 months after confirmation of candidature an in-candidature review.
    - **3 years and 6 months thesis submitted for Examination.**
    - 4 years completion – submission of thesis deposit and verification form to the Graduate School following recommendation of award of degree.

2. **The ideal Master by Research candidature** (full time equivalent) milestones and timelines:

    - Masters enrolment.
    - 6 months confirmation of candidature.
    - 12 months after confirmation of candidature in candidature review.
    - **2 years thesis submitted for Examination.**
    - 2 years 6 months completion - submission of thesis deposit and verification form to the Graduate School following recommendation of award of degree.

3. **The ideal Professional Doctoral Candidature** milestones and timelines:

    - 1-year course work enrolment.
    - Thesis component enrolment.
    - At 1 year and 6 months confirmation of candidature.
    - 12 months after confirmation in candidature review.
    - **3 years thesis submitted for Examination.**
    - 3 years and 6 months completion - submission of thesis deposit and verification form to the Graduate School following recommendation of award of degree.

SUBMISSION OF EXAMINERS

Criteria for the selection of examiners:

1. Two primary examiners and one reserve examiner are required to be nominated for all PhD, Professional Doctorate and Masters by Thesis candidates.

2. The following general principles will apply in the selection of examiners:
   - Examiners must be independent and free from real or perceived bias, either for or against the Candidate, the supervisor or the University, in accordance with the Australian Council of Graduate Research (ACGR) Conflict of Interest Guidelines (available on the Graduate School website). Any potential or perceived conflicts must be declared by the Principal Supervisor on the Submission of Recommended Examiners form.

   - Examiners must hold a qualification equivalent to, or higher than the degree for which the Thesis is being examined, or possess equivalent professional experience, and are expected to apply accepted contemporary international standards in their assessment of the research.

3. Examiners must be experts of international standing in the discipline and will be research active (as demonstrated by recent peer-reviewed publications or equivalent discipline relevant outputs), thus ensuring that their knowledge of the field or area of professional practice is current.

4. Examiners and the reserve examiner must all be independent from each other and not from the same institution.

5. Examiners must have empathy with the theoretical framework used by the Candidate.

Procedures for the appointment of examiners

1. The recommendation of Examiners is confidential and must not be communicated to the Candidate at any time.

2. In order to avoid delays in the examination process, at least two to three months before the submission of the Thesis, the Principal Supervisor will:

   a. consult with the Candidate on any objections the Candidate may have to potential examiners. Any such objections will be taken into account in the process of selection of examiners;
   b. consult with the co-supervisors and Director of Higher Degree Research and Training (DHDRT) regarding potentially suitable examiners and any possible conflicts of interest. MAJOR conflicts of interest would normally preclude the involvement of the proposed Examiner. In the case of MINOR conflicts of interest, it is up to the Principal Supervisor to make a case as to why the proposed Examiner is still appropriate – this information will be passed by the DHDRT to the Dean, Graduate School for a decision;
   c. provide a list of suggested examiners via email to the DHDRT with associated URL's/CV/publications, along with the thesis title and summary.

3. The DHDRT will then:
    a. Independently check for potential conflicts of interest (e.g. current and previous institutional affiliations, co-authored papers etc);
    b. scrutinise the suitability of the proposed examiners based on qualifications, expertise and relevance to the project;
    c. if necessary, raise any concerns with the supervisor and discuss potential alternatives.

4. Once there is an in-principle agreement about the suitability of examiners between the supervisors and DHDRT, the Principal Supervisor can approach the potential examiners to establish their willingness and availability to examine the Thesis. When contacting the potential examiners, Principal Supervisors should preferably use the template letter provided by the Graduate School. The following information must be provided:
    a. the name of the Candidate and an indication of the predicted date of thesis submission;
    b. the thesis title and summary/abstract;
    c. an indication of the expected timeframe for Examination (6-8 weeks);
    d. reference to the conflict of interest guidelines;
    e. if applicable, an indication of whether they are being recommended as a reserve examiner and the importance of this role.

5. The Principal Supervisor also should obtain the following information from potential examiners for administrative purposes:
    a. the best email address to contact them on for the examination process;
    b. telephone contact number;
    c. the number of Higher Degree Research students at a Masters, PhD, and Professional Doctorate levels which they have supervised;
    d. the number of Higher Degree Research theses at a Masters, PhD, and Professional Doctorate levels which they have examined;
    e. if relevant the details of any perceived conflict of interest between themselves and the Candidate;
    f. whether they prefer to examine a hard copy or an electronic copy of the Thesis and a physical address for hard copies if relevant (no PO Boxes).

6. Once the required number of examiners have been secured, the Principal Supervisor should fill out the Recommendation of Examiners form.

7. After considering the examiners that have been formally nominated by the Principal Supervisor, the DHDRT will make the recommendation to the Dean, Graduate School. In order to approve the recommended examiners, the Dean must be provided with the Recommendation of Examiners form and supporting information from the Principal Supervisor including:
    a. thesis summary/abstract;
    b. CV or URL link to CV for all the proposed examiners;
    c. Details of at least 3-5 research publications from each Examiner and an explanation of their relevant expertise in relation to the Thesis;
    d. An explanation of any perceived conflicts of interest.

8. After the examiners have been approved by the Dean, Graduate School, their details will be recorded and stored until the Thesis has been submitted and approved for Examination by the supervisory team and DHDRT.

9. Examiners will be made familiar with the requirements of the University, AQF standards for the degree and the essential parts of the Course Rules governing the particular degree.

10. After the Thesis has been submitted, all subsequent liaison with the examiners will be made by the Graduate School. Principal Supervisors are not to contact the examiners under any circumstances and if the examiners contact the supervisors, their enquiries should be immediately referred to the DHDRT and Graduate School.

11. In order to preserve the integrity and independence of the examination process, the identity of examiners will not be revealed to candidates until the examination process has been completed and not then if an examiner has requested to remain anonymous.

EXAMINER CONFLICT'S OF INTEREST

Australian Council of Graduate Research (ACGR)

Conflict of Interest Guidelines

The use of independent thesis examiners is an important defining feature of Australian Higher Degree by Research (HDR) programs. The independence of examiners is one indicator of the quality of the examination process and of the course as a whole.

The process of Examination and classification of theses assumes that examiners undertake the task independently and without bias. Professional and personal relationships between examiners and a candidate and their supervisors/advisors, and relationships between examiners and the University, have the potential to introduce bias and thus compromise the independence of the Examination, in fact or in perception.

The independence of examiners can be ensured by the use of:

- internal guidelines on what might constitute (risk of perception of) conflict of interest,
- a nomination process with a formal review procedure.

There are a range of circumstances that can lead to a conflict of interest. The guidelines below list examples of different types of conflict of interest that may arise between the Examiner and various parties including the Candidate, the supervisor/advisor, the University, the subject matter itself and another examiner. The list is indicative and is not to be considered exhaustive.

In managing conflicts of interest it is useful to:

- Distinguish major (potential) conflicts of interest that would normally result in the non-appointment of the Examiner from minor (potential) conflicts that should be declared and explained but which should not normally, independently of other considerations, inhibit the appointment of the Examiner.
- Recognise that some conflicts of interest arising through collaboration on publications and/or research grants, or membership of an advisory board, may be mitigated by the size of the team and a corresponding relative independence of some members of the team. Indeed in some cases, members of a team may never have met nor corresponded directly.

Listed below are examples of different types of conflict of interest that may arise between the Examiner and various parties including the Candidate, the supervisor/advisor, the University, the subject matter itself and another examiner.

This list is indicative and is not to be considered exhaustive.

A. Conflict with the Candidate	
Working Relationship	
A1. Examiner has co-authored a paper with the Candidate within the last five years	MAJOR
A2. Examiner has worked with the Candidate on matters regarding the Thesis Eg. Previous member of the advisory team.	MAJOR
A3. Examiner has employed the Candidate or been employed by the Candidate within the last five years.	MAJOR
A4. Examiner is in negotiation to directly employ or be employed by the Candidate	MAJOR
A5. Examiner has acted as a referee for the Candidate for employment	MAJOR
Personal Relationship	
A6. Examiner is a known relative of the Candidate	MAJOR
A7. Examiner is a friend, associate or mentor of the Candidate	MAJOR
A8. Examiner and the Candidate have an existing or a previous emotional relationship of de facto, are co-residents or are members of a common household	MAJOR
Legal Relationship	
A9. Examiner is or was married to the Candidate	MAJOR
A10. Examiner is legally family to the Candidate (for example, step-father, sister-in-law)	MAJOR
A11. Examiner is either a legal guardian or dependent of the Candidate or has power of attorney for the Candidate	MAJOR
Business, Professional and/or Social Relationships	
A12. Examiner is currently in or has had a business relationship with the Candidate in the last five years (for example, a partner in a small business)	MAJOR
A13. Examiner is in a social relationship with the Candidate, such as co-Trustees of a Will or god-parent	MAJOR
A14. Examiner has a current professional relationship, such as shared membership of a Board or Committee (including editorial and grant decision boards), with the Candidate	MINOR
A15. Examiner has had personal contact with the Candidate that may give rise to the perception that the Examiner may be dealing with the Candidate in a less than objective manner	MINOR

B. Conflict with the Supervisor/Advisor	
Working Relationship	
B1. Examiner was a candidate of the supervisor within the past five years	MAJOR
B2. Examiner has co-supervised with the supervisor in the past five years	MAJOR
B3. Examiner holds a patent with the supervisor granted no more than eight years ago and which is still in force	MAJOR
B4. Examiner had directly employed or was employed by the supervisor in the past five years	MAJOR
B5. Examiner holds a current grant with the supervisor	MAJOR[1]
B6. Examiner has co-authored a publication with the supervisor in the past five years	MAJOR[2]
Personal Relationship	
B7. Examiner is in negotiation to directly employ or be employed by the supervisor	MAJOR
B8. Examiner is a known relative of the supervisor	MAJOR
B9. Examiner and the supervisor have an existing or a previous emotional relationship of de facto, are co-residents or are members of a common household	MAJOR
Legal Relationship	
B10. Examiner is or was married to the supervisor	MAJOR
B11. Examiner is legally family to the supervisor (for example, step-father, sister-in-law)	MAJOR
B12. Examiner is either a legal guardian or dependent of the supervisor or has power of attorney for the supervisor	MAJOR
Business, Professional and/or Social Relationships	
B13. Examiner is currently in or has had a business relationship with the supervisor in the last five years (for example, a partner in a small business)	MAJOR
B14. Examiner is in a social relationship with the supervisor, such as co-Trustees of a Will or god-parent	MAJOR
B15. Examiner has a current professional relationship, such as shared membership of a Board or Committee (including editorial and grant decision boards), with the supervisor	MINOR
B16. Examiner has had personal contact with the supervisor, that may give rise to the perception that the Examiner may be dealing with the Candidate in a less than objective manner	MINOR

[1] Mitigating circumstances may exist, for example where the grant in question is held by a large consortium of relatively independent researchers.

[2] Mitigating circumstances may exist, for example, where the paper in question has a large author list and where the Examiner and supervisor have not collaborated directly.

C. Conflict with the University	
Working Relationship	
C1. Examiner is currently in negotiation with the University for a work contract (other than examining Thesis)	MAJOR
C2. Examiner is currently working for the University pro bono (for example, on a review)	MINOR
C3. Examiner has examined for the University two or more times in the past 12 months and/or five or more times in the past five years	MINOR[3]
Other Relationship	
C4. Examiner has received an Honorary Doctorate from the University within the past five years	MAJOR
C5. Examiner graduated from the University within the past five years	MAJOR
C6. Examiner has/had a formal grievance with the University	MAJOR
Professional Relationships	
C7. Examiner is a current member of staff or has a current Honorary, Adjunct or Emeritus position with the University or has had such a position during the candidature of the Candidate or in the past five years	MAJOR
C8. Examiner has a current professional relationship with the University (for example, membership of a Board or Committee)	MINOR
C9. Examiner has a current Visiting position with the University or has had such a position during the candidature of the Candidate or in the past five years.	MINOR

[3] Mitigating circumstances may exist, for example, where an examiner has examined candidates across different Faculty of the University.

D. Conflict with the subject	
Research	
D1. Examiner has a direct commercial interest in the outcomes of the research	MAJOR

E. Conflict with other examiners	
Working Relationship	
E1. Examiner works in the same department/faculty as another examiner	MAJOR
Personal Relationship	
E2. Examiner is married to, closely related to or has a close personal relationship with another examiner	MAJOR
Professional Relationships	
E3. Examiner has a professional relationship with another examiner	MINOR

Additional notes on management of the guidelines

In managing the Conflict of Interest guidelines, it is useful to remind those who are nominating examiners that the purpose of the guidelines is to ensure the independence of the Examination in both fact and perception. The guidelines are designed to protect the Candidate, Examiner and the University against potential negative perceptions during and beyond the examination process. There is no presumption that any individual will behave inappropriately.

It would be unreasonable to expect potential examiners to make decisions about their suitability to examine (with reference to these or other guidelines), though it is reasonable to expect them to declare conflicts of interest and to make provision for this in examiners' reporting forms. The nomination of examiners is best made by the supervisory team and/or enrolling faculty and subsequently formally approved by a third party. In many institutions, formal approval will be by delegated authority of the Board of the Graduate Research School or equivalent.

The most frequent concerns raised by supervisors relate to conflicts of interest between an examiner and a supervisor/advisor, especially with respect to co-authorship (B6). There is occasionally a tension between the need to find an independent examiner and the need to find an examiner with expertise in the field of the Thesis, especially where the field is considered to be particularly narrow. It may be useful here to keep in mind that specific expertise in the narrow field of the Thesis is not the only (nor necessarily the primary) consideration in selecting a potential examiner. An examiner's broad knowledge of the particular field of research, experience as a supervisor of HOR candidates and Examiner of HOR theses, plus their broad familiarity with the expectations of Australian HOR courses are all considerations in the selection of appropriate examiners.

The most frequent concern raised by candidates is in relation to formal and informal contact between the Candidate and potential examiners (A2). Candidates often ask if they should avoid attending conferences organised by a potential examiner or at which they may have contact with a potential examiner, avoid presenting papers in a department at which a potential examiner works, or avoid submitting papers to a journal edited by a potential examiner. No conflict of interest exists in these cases and it would defy common sense to consider proscribing such valuable activities. As a general rule of thumb, a conflict of

interest exists where a potential examiner has worked with the Candidate on matters of synthesis or analysis or has maintained a correspondence or other contact over an extended period in which the research has been discussed.

EXAMINATION PROCESS

Appointment of Examiners

At least three months prior to submission, the Principal Supervisor, in consultation with the Director of HDR Training ('DHDRT'), must submit an application for approval of examiners to the Dean, Graduate School. **Two primary examiners and one reserve** examiner are required to be nominated for a PhD, Masters by Thesis.

It is noted that no examiner can be an SCU staff member, an SCU Adjunct or have close ties to the University. All examiners must be external to this University.

Provision of Thesis to Examiners

After the student submits the thesis for examination, and the format of the thesis has been approved by the Principal Supervisor and DHDRT, the Graduate School submits the thesis to the two primary examiners for a PhD and Masters by Thesis.

The examiners are requested to return their examination reports and associated documentation within six to eight weeks of receipt of the thesis.

Standards of Examination

A ***Masters by Thesis*** work must show evidence of competence in research and scholarship including:

(i) reviewing literature in a critical and focused manner;
(ii) deploying analytic, comparative and critically reflective skills as appropriate;
(iii) gathering and analysing material and interpreting results in an informed and competent manner;
(iv) utilising and justifying appropriate methodologies, techniques and processes.

The Thesis must be clearly, accurately and cogently written and suitably documented. The work must demonstrate originality and a thorough understanding of the field of study.

A ***PhD Thesis*** must embody all of the above features of a Masters by Thesis along with the following additional requirements:

(v) make an original and significant contribution to knowledge and understanding in the field;
(vi) demonstrate a high-level capacity for independent research

Examiners' Reports

Each Examiner, must submit an independent report which is made up of the Summary Report form provided to each examiner, as well as an in-depth written report. Comments and suggestions must be detailed enough to enable the Dean, Graduate School to gauge the quality of the thesis.

Comment on the originality and critical insight of the work are particularly appreciated.

Examiners are invited to indicate whether, and to what extent, they wish to remain anonymous with respect to the supervisor and to the candidate. If preservation of anonymity is not clearly requested by the examiner, anonymity will not normally be preserved.

It is requested that the report conclude with a recommendation of one of the following categories: ***(Please note: the A to E designations are categories and are not aligned with the University's grading system)***

A **Award with no/after minor amendments**
The thesis meets the required AQF standards in terms of nature and quality of work, and should be accepted as satisfactory for the award of degree once the minor/typographical errors referenced in my report are revised or defended to the satisfaction of the Dean, Graduate School. These corrections would normally be completed within a period of three months.

B **Award after amendments**

The thesis meets the required AQF standards in terms of nature and quality of work. However, there are passages that need to be revised or defended to the satisfaction of the Dean, Graduate School prior to the thesis being accepted as satisfactory for the award of degree. These amendments would normally be completed within a period of three months.

C **Allow revision and re-examination**

The thesis does not yet meet all required AQF standards for the award of the degree and the candidate should complete a further period of research and/or writing to build upon the current work and submit for re-examination. These corrections will be considered by the Principal/Primary Academic/Coordinating Supervisor and Director of Higher Degrees Research Training prior to submission for re- examination, and would normally be completed within six months for a full-time student or 12 months for a part time student.

D **Allow revision and re-submission as a Masters by Thesis (Note this option is only available for PhD and Professional Doctorate)**

The thesis does not meet the AQF standard for award of Doctor of Philosophy. The candidate should not be awarded the degree of PhD, but should be allowed to revise the thesis and re-submit the thesis for examination as a Masters by Thesis.

E **Do not award**

The thesis does not meet the required AQF standards for the award of the degree, and does not warrant a further period of research and/or writing. The candidate should not be awarded the degree, nor should they be permitted to revise and submit for re-examination.

Outstanding Thesis Award

In addition, the Chancellor of Southern Cross University awards the Chancellor's Medal for an Outstanding PhD Thesis. The medal is given when both examiners highly commend the thesis and agree that the thesis makes an outstanding contribution to the scholarship in its discipline. This opinion would then need to be supported by the Dean, Graduate School.

If you have recommended an "A - Award with no/after minor amendments", could you please provide in your Examiner's Report the following additional information:

- In your opinion does the thesis make an outstanding contribution to scholarship in its discipline (NB: as a guideline the University would estimate that a maximum of 5% of all theses would reach this level of attainment).
- State the reasons for your 'outstanding contribution' assessment in terms of the international significance of the work and its level of excellence. Please ensure that, if you have not included the reasons in your detailed report, you provide them below.
- How many Higher Degree Research theses have you examined to date?
- Are there other indicators of your professional standing relevant to your assessment of the thesis? If so, please identify.

Dealing with Examiners' Reports

First round of examination

Where both examiners agree:

1. If both examiners award either A or B grades, the candidate can proceed with a Table of Changes and Responses documenting the changes that have been implemented and those which will be challenged, including a detailed justification for the latter. In addition, a thesis file with the changes implemented in track-changes mode will be provided. The Table of Changes and Responses will need to be cross-referenced to the Amended Thesis.

   The HDRT Director and Principal Supervisor are responsible for approving the Table of Changes and Responses and updated thesis before they are sent to the Dean Graduate School for approval. Once approved by the Dean, a final version of the thesis is submitted along with a recommendation by the HDRT Director that Academic Board award the degree to the candidate.

2. If both examiners award C grades then the thesis enters the second round of examination. Here the candidate will be permitted to revise the thesis extensively considering the examiners' comments and recommendations. As part of this, the candidate will provide a Table of Changes and Responses indicating what they have addressed and defending any comments they do not agree with.

   The revised thesis will then be sent out to two examiners - these examiners may or may not have been involved in the original examination process. The supervisory team and HDRT Director will nominate two examiners and provide justifications for the choice, if they are different to the original panel, for approval by the Dean. In the case of an original examiner being involved in the second

examination process, a Table of Changes and Responses dealing with their examiner's comments will also be sent out to them.

3. If both examiners award D grades, if the thesis is a PhD thesis, then the candidate will not progress to the second round of examination as a PhD thesis but will be permitted to revise the thesis and re-submit the thesis for examination as a Masters by thesis.

4. If both examiners award E grades, the thesis will be deemed as having failed and will not progress to the second round of examination.

First round of examination where there are conflicting examiner reports.

5. If there are conflicting examiner reports then the thesis is sent out to the reserve/third examiner as part of the first round of examination and the course of action taken will be guided by the majority recommendation as detailed below (i.e. If the reports are conflicting and they are anything other than A or B reports, the third/reserve examiner will be engaged). Examples of conflicting examiner reports in first round of examination that result in the thesis beings sent to the third/reserve examiner are:

(AB)	C
(AB)	D
(AB)	E
C	D
D	E

Dealing with the third examiner report:

When conflicting examiner reports result in the third examiner being brought in as part of the first round of examination, the course of action will be guided by the majority recommendation as detailed below:

6. If the third examiner results in two A or B grades then the process under point 1 is followed.
7. If the third examiner results in two C grades then the process under point 2 is followed.
8. If the third examiner results in two D grades then the process under point 3 is followed.
9. If the third examiner results in two E grades then the process under point 4 is followed.

It should be noted that the third examiner is still part of the first examination round.

If there is conflict between all 3 examiner reports in the first round of examination the following process applies:

If the grades awarded as part of first round of examination are as follows	Course of action to be followed
(AB)/C/D	Re-examination of PhD (follow point 2)
(AB)/C/E	Re-examination of PhD (follow point 2)/Masters re-examination
(AB)/ D/E	Re-examination of PhD as a Masters (follow point 3)/ Masters fail
C/D/E	Re-examination of PhD as a Masters (follow point 3)/ Masters fail

Second Round of Examination:

The revised thesis will then be sent out to two examiners - these examiners may or may not have been involved in the original examination process. The supervisory team and HDRT Director will nominate two examiners and provide justifications for the choice, if they are different to the original panel, for approval by the Dean. In the case of an original examiner being involved in the second examination process, a Table of Changes and Responses dealing with their examiner's comments will also be sent out to them.

If the two re-examiners award either A or B grades, the candidate can proceed with the process outlined under point 1 above.

If the two re-examiners award C, D or E grades, the thesis will be deemed to have not passed the second round of examination. Consequently, in accordance with SCU Rules relating to awards – Rule 7 – Masters by thesis (48), Rules relating to awards – Rule 8 - Professional Doctorate (48) and Rules relating to awards - Rule 9 - Doctor of Philosophy (49), the degree will not be awarded. In the case of PhD and Professional Doctorate, an award of two C's, two E's or a C and E, will provide the option for re-examination as a Master by Thesis.

If the two re-examiners provide conflicting reports of (AB) and C/D/E then the next step is Adjudication. Here an Adjudicator is chosen by the Principal Supervisor and HDRT Director in consultation with the Dean. This Adjudicator would not have been involved in the previous examination process. The revised thesis, and re-examiner's comments and Table of Changes and Responses will be provided to the Adjudicator. The Adjudicator will not be made aware that the thesis has undergone two rounds of examination. If the Adjudicator concludes that that the candidate's responses and revision warrant an A or B grade, the process under point 1 is followed. If the Adjudicator concludes that this has not been achieved, the thesis will be deemed to have not passed the second round of examination. Consequently, in accordance with SCU Rules relating to awards – Rule 7 – Masters by thesis (48), Rules relating to awards – Rule 8 - Professional Doctorate (48) and Rules relating to awards - Rule 9 - Doctor of Philosophy (49), the degree will not be awarded. In the case of PhD and Professional Doctorate, an award of two C's, two D's or a C and D, will provide the option for re-examination as a Master by Thesis.

The Dean, Graduate School is Responsible for: -

i. Approving the candidate Table of Changes and the corrected the Thesis
ii. Providing the Candidate with the opportunity to revise and resubmit the Thesis for a second round of Examination, if required;
iii. Appointing an adjudicator if required;
iv. Recommending to Academic Board the award of the degree;

After a decision on the award of a degree has been made, the Dean, Graduate School will normally communicate to the Candidate, whether successful or unsuccessful.

Candidate may Request Examination

The Dean, Graduate School will consider a request from a candidate that the Thesis be submitted to the examiners, even if this is against the advice of the supervisor.

Notification to Examiners of Outcome

All examiners are notified of the outcome of the examination process once the examination process is completed.

TABLE OF PROPOSED CHANGES/RESPONSES

Once the examiners' reports are returned to the Graduate School by the examiners, and depending on the outcome of those reports (if the reports are either 2 x A's, 1 x A and 1 x B or 2 x B's) or if the reports required the Graduate School to send the Thesis to the third Examiner due to conflicting reports (A & C or B & C), and the third Examiner recommends an A or B, then the Candidate can prepare a table of proposed changes/responses in relation to the Examiner reports. The Candidate will be required to amend, clarify or defend their responses to each and every examiner comment.

The Table of Changes/Responses document should document exactly what it is that will be included or amended in the Thesis in response to each Examiner's comment. Alternately, if the Candidate disagrees with an examiner's comment, they must provide an academic defence which should also be detailed in the Table of Changes/Responses document. It must also be noted that candidates cannot use examiners against each other in their defence of a comment/response.

The Candidate will have three months (FTE) to make the changes and submit the Table of proposed changes/responses along with a thesis with track changes and a revised thesis with track changes accepted to the DHDRT for review prior to coming to the Graduate School. Once the DHDRT is happy with the changes made, then they will send a recommendation to the Graduate School recommending the Table of Changes/responses be accepted and that they recommend to the Dean Graduate School that the Candidate be awarded the degree.

The table of changes should look similar to this example below

Southern Cross University

Graduate School

The supervisory team (Principal supervisor:……. (please insert name/date) ……. and co-supervisors……. (please insert names/dates) declare that we have carefully reviewed the examiners reports, the candidate's Table of Changes and Responses and the final thesis with tracked changes. Examiners comments that are challenged include a detailed justification which has been developed in consultation with the supervisory team. We confirm that appropriate changes have been implemented in the thesis, as identified and cross referenced in the Table of Changes and Responses. Both documents have been proof read and are presented at a standard that satisfies the University's requirements for Higher Degree by Research Theses. The supervisory team recommends that these changes and the final thesis be accepted for award of the degree.

PROPOSED TABLE OF THESIS CHANGES and RESPONSES

Candidate Name: [redacted]

School/Centre: [redacted] **Supervisor/s:** [redacted]

Thesis title: [redacted]

Examiner (if known)	TPN[1]	Comment no. (if applic.)	Comment Detail	Whether Candidate (i) Agrees and will amend ('Agrees'), OR (ii) Disagrees and will defend ('Defend'), OR (iii) Disagrees and will clarify ('Clarify')	Candidate Amendment or Defence

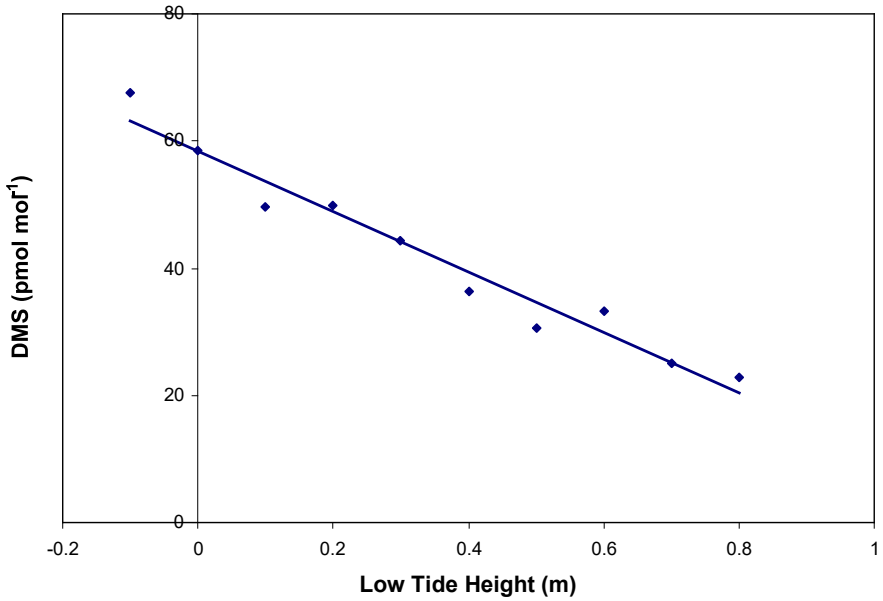
[1] TPN = Thesis Page Number.

Examiner name	30	#2	Request for citation of Twomey 1974 and 1977 for historical completeness	(i)	The following new text has been included in the thesis on P30, L29: "Twomey, 1971, 1974, 1977,….." Additionally, the new references to Twomey 1974 and 1977 have been added to p242 of Literature Cited. These are as follows: Twomey, S. (1974). Pollution and the planetary albedo. *Atmospheric Environment, 8*, 1251-1256. Twomey, S. (1977). The influence of pollution on the shortwave albedo of clouds. *Journal of Atmospheric Sciences, 34*, 1149-1152.
	31 & 33	#3	Spelling mistake: "Ayres" should be "Ayers"	(i)	The noted spelling mistake has been deleted from P31 & 33 due to a request from Examiner 2 to truncate multiple author citations to the first author only.
	33	#4	Notification of an Australian modelling study on DMSmediated feedback on climate	(i)	Thank you for pointing out this paper that I overlooked. A citation to Gabric et al (1998) has been added on P33 and P64. The reference to that paper has now been included on P223 as follows: Gabric, A. J., Whetton, P. H., Boers, R. & Ayers, G. P. (1998). The impact of simulated climate change on the airsea flux of dimethylsulphide in the subantarctic Southern Ocean. *Tellus B: Chemical and Physical Meteorology, 50*(4), 388-399.
	56 etc	#5	Recommendation to include concentration to mixing ratio conversion factor for atmospheric DMS on P7	(i)	The following new text has been included in the thesis on P7: "Surface level atmospheric DMS measurements are reported as mole of substance per unit volume of air (nmol m^{-3}) to allow comparison with historical data. At a temperature of 25°C (298.15 K) and a pressure of 1 atm (101.325 kPa), the conversion factor from 1 nmol m^{-3} to pmol mol^{-1} of DMS is 24.45."

	59	#6	Recommendation to remove cited information that maximum CCN numbers lead to maximum cloud cover over the GBR	(i)	The information that conflicts with established atmospheric boundary layer dynamics has been deleted from P59.

	63	Chapter 2 comment #1	Identification of an imprecise/misleading statement in the abstract for this chapter	(i)	A more accurate and defensible statement along the lines of that suggested has now been included on P63 as follows: "DMS and isoprene are volatile compounds released from coral reefs; they are readily oxidised in the atmosphere by photochemical processes leading to involatile chemical products containing sulfur and/or carbon that participate in new particle formation and growth of CCN. Therefore, these two volatiles merit close attention as likely major precursors of new atmospheric particles over the GBR."
	71	#2	Recommendation to include inlet tube material, dimensions and air residence time for atmospheric DMS sampling	(i)	The suggested information has now been included in Section 2.3.6, P72. The following new/revised text on L319 is as follows: "The primary copper intake tube was 11 m long with an internal diameter of 10 mm, giving it a volume of 864 mL. This intake tube was shared with other equipment, and air was drawn through it at 10 L min^{-1} to satisfy sampling requirements. A Teflon™ tube 1 m long with a 3 mm internal diameter was connected to the primary intake to sample atmospheric DMS. Forty-three grab samples were collected over ten days from 30 May to 9 June 2011. These samples were collected at various intervals throughout each day by drawing the marine air through a 1% sodium ascorbate/glycerol oxidant-scrubbing filter placed in front of a Pyrex tube containing goldcoated glass wool adsorbent (Kittler, et al., 1992). The Pyrex tubes were 300 mm long with a 10 mm internal diameter, and were fitted with stainless steel reducing unions to allow them to be connected to the Teflon™ tube. A low-flow vacuum pump (330 mL min^{-1}) was used to draw air volumes of 60 - 80 L through each tube, measured using the high precision gas meter. The overall residence time of air in the tubing used to sample atmospheric DMS was ~10 s. After exposure, the reducing unions were removed and the ends of each gold-wool tube were sealed with aluminium foil that was secured with Parafilm™. These were stored together with sealed unexposed gold-wool tube blanks for off-site analysis."
	82	#3	Citation of a reference to support the statement for terrestrial isoprene emissions	(i)	The statement that isoprene is mainly derived from terrestrial vegetation required a reference to support it. Thank you for the reference specific to tropical Australia which is now cited in 2.5.3 on P82 and is referenced on P215 of Literature Cited. The reference added to P215, L15 as follows: Ayers, G. P., & Gillett, R. W. (1988). Isoprene emissions from vegetation and hydrocarbon emissions from bushfires in tropical Australia. *Journal of Atmospheric Chemistry*, *7*, 177-190. doi: 10.1007/BF00048045

	102	Chapter 3 comment #1	Consideration of Reduced Major Axis (RMA) regression for calibration plots	(ii)	Thank you for providing information on RMA regression analysis of data. I read the reference provided with interest and will look up Davis (1986) for further information to enable future application. Since Figs 13 and 23 have correlation coefficients very close to 1, applying the RMA method will probably result in insignificant differences to the regression formulae of those plots. For this reason it was decided not to rework the data using the RMA method.
	116	Chapter 4 comment #1	Suggestion to remove speculative sentence about significance of coral reef DMS emissions relative to the oceanic background DMS signal	(i)	It is agreed that the sentence is speculative and is counter-intuitive to the overall concept of the chapter. As suggested the sentence has been deleted from P116.
	115-122	#2	Suggestion to undertake additional data analysis to reinforce the effect of low tide on DMS_a mixing ratios by plotting all data on a single tidal cycle	(i)	This suggestion was undertaken by determining the median values for DMS_a measurements made ~52-60 mins either side of low tide over the entire 2013 dry season dataset. This new data analysis is presented in Appendix 1 as Fig A1-3. I didn't plot a histogram as shown by Paugam (1976) but rather a scatter plot of the medians vs the low tide water height from -0.1 to 0.8 m that is fitted with a linear line of best fit. The reason I decided on this type of plot is due to the variability of the low tide height over the reef which in turn controls the extent and duration of aerial exposure of the coral. The new figure A1-3 shown on P252 with caption is as follows: **Figure A1-3: Median DMS_a mixing ratios plotted against low tide seawater height for the Heron Island dry season dataset, 18 July to 5 August 2013** *This plot shows median DMS_a mixing ratios over the low tide height range that allows the coral reef to be aerially exposed. The median values were derived from DMS_a measurements made ~1 h either side of the low tide for the entire dataset. The low water level controls the extent and duration of coral reef exposure which is shown to have a direct relationship to the DMS_a mixing ratio at Heron Island.*



Additionally as suggested, Bonsang et al., (1976) is now cited in the thesis. That paper is cited in Section 1.5.4 of the Introduction (P57) to acknowledge that initial work reported prior to the publication of Luce et al (1993) at the algal field along the Atlantic coast of Brittany.

The citation to Bonsang et al., (1976) is associated with the following sentence on P57, L14-20:

"These observations of enhanced biogenic emission of DMS associated with low tides are, however, not peculiar to coral reefs. It has been reported that an algal field on the Atlantic coast of Western Brittany (France), when uncovered at low tide, was a notably more active source of DMS_a than when covered at high tide (Luce, et al.,, 1993). The low tide emission of DMS_a at this particular algal field was hypothesised to be the source of enhanced SO_2 and new particles (Aitken nuclei) observed during the daytime at low tide under low wind speeds (Bonsang, et al., 1976)."

Thank you for the Bonsang et al., reference. I didn't receive Paugam (1975).

	183	Chapter 7 comment #1	Repetition of the statement that isoprene and DMS play a role in low-level cloud formation	(i)	It is agreed that this is an overstatement that cannot be substantiated and is a bridge taken too far. The misleading statement has been modified according to the suggested rewording. The following new/revised text on P183-184 is as follows: "Since DMS and isoprene are known to play a role in new particle formation and thus contribute to properties of the marine CCN population, these aerosol precursor compounds could possibly lead to modification of cloud by influencing the CCN that in turn influence cloud microphysical properties (Gantt, et al., 2009; Vallina & Simó, 2007). If sea surface temperature regulation was a consequence of any ensuing changes to cloud properties, this would be consistent with mechanisms hypothesised to operate in the CLAW hypothesis and, as has been argued, potentially over the GBR (Fischer & Jones, 2012; Jones, et al. 2017) and for the coral-dominated WPWP, a region where the greatest biomass of coral reefs occur on Earth (Kleypas, et al., 2008)."
			Citation and reference update		Citations to a new publication (Cropp et al., 2018) have been updated in the text on P59 and P186. The corresponding reference has been updated in the reference listing on P219 of Literature Cited and on P261 of Appendix 3. This reference update is as follows: "Cropp, R., Gabric, A., van Tran, D., Jones, G., Swan, H., & Butler, H. (2018). Coral reef aerosol emissions in response to irradiance stress in the Great Barrier Reef, Australia. *Ambio, First online 3 Feb.* https://doi.org/10.1007/s13280-018-1018-y."
					Thank you for your comments and suggestions, they were much appreciated.

[redacted]	Throughout		Citation formatting throughout the thesis text	(i)	Thompson Reuters EndNote version X3 was used to collate and organise references, which were formatted using APA6 style in the thesis. I prefer APA6 because it is easy to read and restricts multiple authored papers to 6 authors in the references listing. EndNote X3, however, generates citations with up to 6 authors in the document text when the reference is first cited. Endnote also inserted author initials when there were different authors with the same surname to distinguish between them. I removed all author initials and truncated many author strings to 2 or 3 because I felt a few author names helped to identify each reference especially when an author has published more than once in the same year. Seeing that multiple author strings are perceived as a distraction, and to provide consistency, I've gone through the entire thesis and edited multiple authored citations to cite the first author only. Multiple publications in the one year with the same first author et al., are now cited as 'a' or 'b' after the year to identify the reference. When a paper has been written by 2 authors only, both have been cited as A & B (year) in the customary manner.
	Throughout		Definition of CCN particle size	(i)	CCN are derived from many different types of materials, and the ability of these different types of particles to form cloud droplets varies according to their composition, size and hygroscopic properties. Aerosol > ~50nm are capable of acting as CCN, particularly secondary aerosol composed of sulfate that readily absorb water. Many CCN, especially those derived from primary particles with limited hygroscopicity, may be 100-200nm in diameter to effectively act as CCN. Since this thesis is mainly concerned with formation of secondary aerosol derived from DMS oxidation products, these CCN are expected to efficiently act as CCN in the ~50-100nm size range. I've now edited the text in sections 2.2, 3.2, 4.2 and 7.6 to consistently state that CCN of interest here are in the size range > ~50-100 nm.
	Throughout		Clarification of additional caption information and the main text of the thesis	(i)	The template I used to produce the thesis requires that a carriage return is entered after figure and table captions or any additional caption information is carried into the Table of Contents. Where additional information exists after the bolded caption for figures and table headings that information is now *italicized* to more clearly distinguish it from the main body of text.
	Preface		Definition of 'CLAW' at this point in the thesis	(i)	Footnote #1 now provides the definition for this acronym, which is the same as that given in the List of Abbreviations following the Table of Contents. The footnote in the Preface at the bottom of P3 is as follows: [1] Acronym for the Charlson, Lovelock, Andreae and Warren hypothesis published by *Nature* in 1987

	Introduction 29, L7		"…hundreds of millions of tonnes…" This is mixed bag of mass. Maybe okay for a general audience but for scientific writing, but my recommendation is that it is best to stick with exponential notation and fundamental units (grams).	(iii)	This is a general quantitative description of DMS exchanged between the sea and the land which I feel is appropriate in the second sentence of the introduction. A quantitative range for this amount in Tg is given on the following page (30). I've now expressed this range x 10^{12} g (Tg) and deleted the (Mtonne) expression since I agree that the fundamental unit in Tera gram is all that is required to describe this quantitative range. The following new/revised text on P30 L21-22 is as follows: "A recent annual estimate of this sulfur quantity is between 17.6 - 34.4 x 10^{12} g (Tg) (Lana et al., 2011)."
	30, L21		What is remote marine aerosol?	(i)	Remote marine aerosol refers to airborne particulate matter in remote marine regions of the globe. It is a description for marine derived aerosol that is unaffected or minimally influenced by continental and anthropogenic material. Remote marine aerosol is now defined on P30 L22-23 in the text as follows: "DMS is also a significant source of airborne particulate matter in remote marine regions of the globe (remote marine aerosol) which can act as cloud condensation nuclei (CCN) (Fitzgerald, 1991)."
	32, L27		Avoid value judgement (i.e. use of the word "disturbing")	(i)	"disturbing situation" is now replaced by "finding" The revised sentence on P32 is as follows: "This finding suggests an associated decline in euphotic zone DMS; however, this is difficult to assess because chlorophyll pigment concentration (CPC) as a proxy of autotrophic biomass is not necessarily correlated with sea surface DMS concentrations. Most attempts to show a relationship between DMS and CPC have resulted in poor correlations (Liss, et al., 1993)."
	32, L28		Why did you use the term chlorophyll pigment concentration (CPC) rather than just the conventional Chl a or Chl?	(ii)	CPC is used to describe a number of photosynthetic pigments that phytoplankton produce to absorb light. CPC includes Chlorophyll-a; Chlorophyll-b; Xanthophyll; Carotene, with Chlorophyll-a being the main pigment. CPC also indicates that a concentration measurement is referred to.

	41, L22		What do you mean by sedimentation here? DMS does not sediment (though it might mix downward).	(i)	Sedimentation refers to downward movement of DMS(P) within biomass to depths below the euphotic zone. For clarity, the word 'sedimentation' has now been replaced by "sedimenting biomass". The revised sentence on P41 is as follows: "These include: bacterial consumption and transformation; photochemical oxidation; sedimenting biomass; and loss to the atmosphere, where the sea-to-air flux of DMS is just a small bleed from the overall cycle (Liss et al., 1993), Figure 3."
	42, L22		I am not sure it is correct to refer to DMSO as a major source of DMS because the DMSO likely originated from DMS oxidation in the first place. More correctly, DMSO is a reservoir that can recycle DMS after its reduction.	(i)	Agree. The sentence has been changed to "……DMSO reduction is another major reservoir of DMS within the marine environment". The revised sentence on P42 is as follows: "An implicit assumption of many algal studies is that DMSP is the main source of DMS released to the marine environment; however, it is now apparent that DMSO reduction is another major reservoir of DMS within the marine environment."
	42, L24		I am not aware of any studies in the marine water column showing DMSO reduction to DMS being as important as DMSP cleavage to DMS. If you know of such a study, cite it here.	(i)	The sentence in question has been removed from P42.
	43, L9		It is misleading to say "only a limited number of species of algae…" are capable of DMSP biosynthesis. Quite a large number of marine algae produce DMSP. Certainly not all, but a lot.	(i)	"only a limited number of" has been replaced by "many but not all" in the sentence. The revised sentence on P43 is as follows: "It is now known that many but not all species of algae and halophytes are capable of DMSP biosynthesis (Yoch, 2002) and intracellular concentrations of DMSP in different species of phytoplankton that do produce DMSP vary greatly."
	45, L9		Kiene and Bates (1990) is not an appropriate reference for zooplankton grazing effects on DMS release.	(i)	That citation to Kiene and Bates (1990) has been removed from P45.

	46, L14-16		The sentence beginning with "However, equilibrium does not eventuate…" is a bit garbled and not exactly correct. The DMS loss in the atmosphere is not constant – it depends on sunlight so it goes through a diurnal cycle. In fact, the last few sentences in this paragraph could be sharpened up to represent the facts better. The key facts are that DMS is removed rapidly by oxidation in the atmosphere, which results in a low concentration in air, such that the sea surface remains supersaturated. The super saturation results in a net sea-air flux. The concentration gradient, per se, is not relevant; rather, it is the deviation from equilibrium that is relevant. There could be a big concentration gradient (in mol/L) even at equilibrium.	(iii)	Mention of a 'constant loss of DMS' referred to its continual oxidative destruction over time, not the diurnal time scale. Re concentration gradient: A substance will move from an area of high concentration to an area of low concentration until equilibrium is achieved. At equilibrium there is no longer an area of high concentration and low concentration. The concentration gradient between the ocean and the atmosphere is relevant to maintain a state of flux from the ocean (high surface concentration of DMS due to algal source) to the atmosphere (low concentration of DMS due to continual oxidative destruction over time). Surface seawater saturation level is a function of this concentration gradient. Surface seawater saturation is determined from analysis of seawater and air sample concentrations according to the following equation: Saturation(%) = $[C_w/[C_g/K_H]]x100$, where K_H is the Henry's law constant, and C_w and C_g are the concentrations of the substance in seawater and air, respectively. Saturations exceeding 100% are said to be supersaturated and imply a net flux from the ocean to the atmosphere (Sturrock et al., 2003). The section in question has been revised so that it is now written from the perspective of seawater supersaturation of DMS relative to the atmosphere and how this influences the net flux direction. The revised sentences on P46 is are follows: "The saturation level of a volatile constituent in surface seawater is determined from analysis of seawater and air sample concentrations according to the following equation: Saturation (%) = $([C]_w/([C]_g/K_H))x100$, where K_H is the Henry's law constant, a dimensionless inverse partition coefficient representing compound volatility (Warneck & Williams, 2012). Saturations exceeding 100% are said to be supersaturated and imply a net flux of the volatile constituent from the ocean to the atmosphere (Sturrock et al., 2003). DMS oceanic concentrations are approximately 1000 times greater than atmospheric concentrations as a result of continual rapid oxidative destruction of atmospheric DMS over time. The surface ocean, therefore, remains supersaturated relative to the atmosphere. This deviation from equilibrium maintains a net sea-to-air flux of DMS." The new citation to Sturrock et al., (2003) is now included on P240 of Literature Cited. The new reference is as follows: Sturrock, G. A., Parr, C. R., Reeves, C. E., Penkett, S. A., Fraser, P. J., & Tindale, N. W. (2003). Methyl bromide saturations in surface seawater off Cape Grim. In N. W. Tindale, N. Derek & P. J. Frazer (Eds.), *Baseline Atmospheric Program Australia 1999-2000* (pp. 85-86). Melbourne: Commonwealth of Australia.
	48, L15		Change "of" to by	(i)	The typo has been corrected. Thanks for spotting it. The revised sentence on P48 is as follows: "*F* can be over-estimated by up to 5% which may be propagated into global estimates (Johnson, et al., 2011)."

	55, L16		Is the meter squared here surface area of the coral or of the sea surface? It should be specified. And why is there a 3-4 order of magnitude difference in DMS flux values – i.e. 5.3 mmol m^{-2} d^{-1} in the Jones et al 2007 study and 0.5-1.2 µmol m^{-2} d^{-1} in the Kittler et al 1992 study?	(i)	The Kittler et al (1992) citation refers to the gold wool analysis technique not the coral study of Fischer & Jones (2012), which is in question. I've removed the reference to Kittler et al since it has led to confusion. The emission flux of 5.3 mmol m^2 d^{-1} cited from Jones et al (2007) is an extrapolated figure not a direct measurement. The paper states: "Chamber experiments with *Acropora intermedia* designed to specifically test whether corals produce significant amounts of DMSa have shown that this coral produces ~3.4 pM DMSa cm^{-2} h^1. Considering that the average coral colony contains ~100 coral branches with a surface area of ~6500 cm^2, staghorn corals can potentially produce a significant amount of DMSa (~5304 µM m^{-2} day^{-1})." According to the above information the quoted flux figure is based on coral surface area. Given that the quoted flux of 5.3 mmol m^2 d^{-1} is derived from a very approximate extrapolation to a whole coral colony, I have edited the text to now quote the initial flux value ~3.4 pmol cm^{-2} h^{-1}, which is within the flux range of 2.3-4.9 pmol cm^{-2} h^{-1} quoted from Fischer & Jones (2012). In that paper from 2012 it is stated: "Flux measurements were made by analysing the atmospheric or headspace DMS concentration found on the gold tubes resulting from air-sea exchange of dissolved DMS over a 12 h period and expressing this concentration in terms of the coral surface area per day". To address your question, the words "expressed relative to the surface area of the coral" have been added after the cited fluxes in the revised text. Note: DMS released to the chamber headspace is referred to as 'atmospheric DMS' in the cited coral chamber experiments. I have not used that expression in my review of those chamber studies because in my opinion the term 'atmospheric DMS' should be reserved for actual environmental measurements and not be used to refer to DMS released to the headspace of chambers in enclosure studies. The revised sentences on P55 of the thesis are as follows: "Another chamber study using *A. intermedia*, which was designed to measure DMS ventilated to the headspace of the chamber, indicated that this confined staghorn coral could generate an emission flux of ~3.4 pmol cm^{-2} h^{-1} expressed relative to the surface area of the coral (Jones, et al., 2007). A more recently reported chamber study by Fischer and Jones (2012), again using *A. intermedia,* showed that this coral species released significant amounts of DMS into the chamber seawater. The DMS was purged into the headspace of the chamber to simulate air-sea exchange, and it was chemi-adsorbed onto gold-coated glass wool for analysis. The flux of DMS to the chamber headspace from control corals ranged from 2.3-4.9 pmol cm^{-2} h^{-1} expressed relative to the surface area of the coral, which was taken as the potential for this coral species to produce atmospheric DMS."

	Chapter 2 63, L20		Delete the word “indicated”	(i)	“an indicated source” has been changed to “a source” The revised sentence on P63 of the thesis is as follows: “Static headspace GC-MS analysis of coral fragments identified mainly DMS and seven other minor reduced sulfur compounds including dimethyl disulfide, methyl mercaptan, and carbon disulfide, while coral reef seawater was a source of methylene chloride, acetone, and methyl ethyl ketone.”
	63, L27		Change biogenically to biogenic	(i)	“biogenically” has been changed to “biogenic” The revised sentence on P63 of the thesis is as follows: “The major biogenic marine-derived source of natural tropospheric sulfur is dimethylsulfide (DMS) (Andreae & Raemdonck, 1983), although other reduced sulfur compounds including hydrogen sulfide (H_2S), carbonyl sulfide (COS), carbon disulfide (CS_2), methyl mercaptan (CH_3SH) and dimethyl disulfide (DMDS) are also released from the ocean to the atmosphere (Yin, et al., 1990).”
	64, L29		What is the upper boundary for CNN size? Be consistent in how you represent CCN size throughout.	(i)	The CCN size range has been edited to consistently state “>~50 – 100 nm” throughout the thesis. This change has been made to Sections 2.2, 3.2, 4.2 and 7.6.
	66, L29		Was there replication within the treatments? If so, please specify how many. If no replicates, please justify. The distinction between the bubble chamber experiment and the static headspace experiment is not very clear. Is it correct that the static headspace measurements were made on frozen, then thawed samples? Whereas the bubbled samples were live? That is a major distinction that was not mentioned in this paragraph, only later on. It should be described better here.	(iii)	Replication of the chamber study experiments was constrained by the number of internally deactivated stainless-steel air sampling canisters (SilcoCans) available. I could only obtain one pair of SilcoCans at a time, which was why Silcosteel sorbent tubes containing a combination of Tenax TA/Sulficarb were also used to provide additional sampling capacity (as stated in section 2.2.3). SilcoCans were the preferred sampling approach but they are expensive and were in limited supply. The bubble chamber experiments were conducted using healthy live *Acropora* coral branches. The chambers were dynamically sampled, which is basically a ‘purge and trap’ over time approach. Fresh coral fragments were prepared in 5 mL of filtered seawater at Heron Island (section 2.3.2) for static HSGC-MS analysis according to the information given in section 2.3.5. Coral fragments snap frozen at -80°C were thawed in dry nitrogen for static HS-GC-MS analysis. These samples were analysed under an inert dry atmosphere (section 2.3.5). It is now mentioned in section 2.3.1 that both fresh and snap frozen coral fragments were used for static headspace GC-MS analysis to identify VOCs that could potentially be emitted from the coral. The revised sentence on P66 is as follows:

					"Coral branch fragments, both fresh and snap frozen in liquid nitrogen, were additionally analysed using static headspace GC-MS to identify VOCs that could potentially be emitted from the coral."
	66 L24		I had to look up what a secateur was. Maybe it would be good to describe it, at least the first time it is used in each chapter.	(i)	"secateurs" are now described as "secateur cutters" The revised sentence on P66 is as follows: "Colonies of *A. aspera* collected from the Heron Island reef were transferred to a fibreglass outdoor flowthrough seawater holding tank in a mildly shaded location for at least 24 hours prior to removing branches and branch tips with secateur cutters."
	66, L32		A glass fiber filter of 0.7 µm cutoff, will not remove all bacteria so the filtrate will be biologicallyactive with bacteria.	(iii)	The intention was to remove algal cells in the seawater not to produce bacterially sterile seawater, so a 0.7 µm cut-off filter was considered suitable.
	71, L13		Define MES if you haven't already done so (I might have missed it).	(i)	Although MES is defined previously in the thesis, the text has been edited at this location to "methyl ethyl sulfide (MES)" to assist the reader. The revised sentence on P71 is as follows: "Identification standards of ethyl mercaptan, DMS, CS_2, methyl ethyl sulfide (MES) and dimethyl disulfide (DMDS) eluted at 2.93, 3.26, 3.41, 5.72 and 9.24 mins, respectively, using these GC conditions."
	73, L4-10		Again, it is not clear if there was any replication in the treatments. The study is weak if there was no replication (or repeat of the experiment).	(iii)	As previously explained the study was constrained by the availability of SilcoCans. It was an initial investigation to identify the types of VOCs released from coral and to assess their relative abundances. It is appropriate to view Chapter 2 as preliminary work that introduces the rest of the thesis leading to the more detailed studies presented in Chapters 4, 5 & 6.
	73, L8		"Coral deprived of air". Technically there was still air in the chamber, just not bubbled in continuously. Maybe come up with a better description of the treatment.	(i)	The description for *Treatment-3* has been modified to "Coral deprived of air flow and light". I failed to state that the overhead lighting was also discontinued during the 10.75 h period when the air flow was stopped. This omission has been corrected on P69 (L15), P73 (L13) and the caption to Table 1. The revised sentence on P73 is as follows: "Observations of live coral in the bubble chambers for the treatments applied were as follows: *Treatment-1* (coral agitated in seawater), the polyps were retracted, the coral was heavily coated in mucus, and mucus strands or ropes were being released; *Treatment-2* (coral undisturbed), the coral was free of mucus and the

					polyps were extended, as if feeding; *Treatment-3* (coral deprived of air flow and light), the polyps were retracted and a thin coating of mucus was evident on the surface of the coral, mucus ropes were not released."
	Table 1		MR should be more clearly defined as mixing ratio.	(iii)	The caption extension for Table 1 states that "MR is mixing ratio expressed as ppb (nmol mol^{-1})."
	78, L25		It is not clear what "five over recorded nucleation events" means.	(i)	Thank you for identifying this typographical error. The phase has been corrected to say "over five recorded nucleation events". The revised sentence on P78 is as follows: "New 10 nm particles detected on 31 May were found by UFO-TDMA to contain only 11% moderately oxidised organics, which starkly contrasted with the ~50% organic volume fraction in new particles the previous day and over five recorded nucleation events."
	79, L10		Reword slightly: This bubble chamber study…	(i)	Now changed to "This bubble chamber study ….". The revised sentence on P79 is as follows: "This bubble chamber study showed that emission of sulfur VOCs from *A. aspera* was associated with the production of mucus in response to environmental factors such as increased turbulence and decreased dissolved oxygen concentrations."
	79, L13		Here you refer to decreased oxygen concentrations but have no data to show it was low O_2. And later, on L18, you refer to anoxic conditions, yet I didn't see any direct evidence for anoxia.	(iii)	It wasn't possible to measure the DO of the seawater in the chamber without disturbing the headspace volume above the chamber; i.e. I couldn't remove the chamber lid to place a DO probe in the seawater and then replace the lid without invalidating the experiment. In the absence of direct DO measurements, it is reasonable to assume that the DO in the seawater decreased after the air flow was discontinued for a period of 10.75 h to a chamber containing live coral undergoing respiration. DO measurements made by Omori et al., 2015 (GRL) demonstrate that DO decreases as oxygen is removed from seawater. To address your valid comment, that anoxic conditions were not demonstrated, the sentence on P79 L18 has been edited to say: "Consistently, this study suggests that DMS production by *Acropora* coral may be enhanced under decreased dissolved oxygen conditions at low tide."

	80, L22		It is possible that more methylmercaptan (MeSH) will be produced when O_2 is low, but it is also likely that less MeSH will be oxidized when O_2 is low, leading to greater net accumulation. Either, or both could cause more net MeSH accumulation.	(i)	Net accumulation of MeSH is possible due to both increased production and decreased destruction when the seawater dissolved oxygen level is low. As explained, either one or both processes together could lead to net MeSH accumulation. Under the microbial demethylation-demethiolation pathway DMSP could be demethylated in a series of reactions to produce 3-mercaptopropionate (3-MPA) or the intermediate, 3-methiolpropionate (MMPA), which can be demethiolated to yield MeSH and acrylate under low oxygen conditions. The statement made on p80 L22 of the thesis cites this pathway possibly leading to increased MeSH production by coral under low oxygen conditions.
	83, L7		Do you mean oxidative loss of isoprene in the experimental system, or in the analytical trapping system?	(i)	The oxidative loss of isoprene referred to is in the sample from the time of collection to the time when it was analysed. Due to the highly reactive nature of isoprene with a range of oxidants, it is very likely that any detectable isoprene that may have been present in the samples prepared for static headspace analysis was converted to an oxidation product by co-trapped oxidants present in the seawater and/or air space in the sample vial. In comparison, the headspace volume of the chamber that was dynamically sampled into the evacuated SilcoCan was first dried and passed through an oxidant scrubber to isolate the reactive VOCs present in the canister from oxidants, hence providing a more inert storage environment. The text on P83 L4-9 has been edited to say: “Isoprene was not identified from any of the coral fragments prepared for static headspace analysis, presumably due to oxidative loss in the sample vials during storage. Isoprene was only detected from dynamic headspace sampling of bubble chambers, where an oxidant-scrubbing filter was present in the sampling train (Figure 7), hence providing a more inert storage environment.”
	83, L29		Change “may have been” to was. And indicate that this conclusion was based on incubation of seawater only, without coral.	(i)	The sentence on P83 L28-29 has been edited to say: “Isoprene produced by marine biota other than coral was undetectable in the reef seawater when coral was not present.”
	84, Table 3		Why not indicate the unit for residence time in the column title?	(i)	Although the unit for residence time is specified in the caption for Table 3, it is now also included within the Table 3 headings as suggested. The revised Table 3 is as follows: **Table 3: Approximate tropospheric residence times (d) of some VOCs identified in this study.** Sulfur VOCs — Residence time (d) Dimethyl disulfide (DMDS) — 0.01 - 0.1

					Methyl mercaptan: 0.5 Dimethylsulfide (DMS): 1 - 2 Carbon disulfide: 7 Non-Sulfur VOCs: Residence time (d) Isoprene: 0.1 - 0.2 Methyl ethyl ketone (MEK): 13 Acetone: 15 - 66 Methylene chloride (MC): 139 - 150
	85, L22-24		What is the basis of stating that "DMDS and CH_3SH could be relatively important precursors of H_2SO_4 to initiate nucleation of new particles"?	(iii)	This statement on P85 which says "Although DMDS and CH_3SH were only minor in abundance compared to DMS, they may be relatively important precursors of H_2SO_4 to initiate nucleation of new particles." follows the information that "The reaction of OH with DMDS and CH_3SH is significantly faster than its reaction with DMS; the rates being almost two orders and one order of magnitude faster, respectively (Finlayson-Pitts & Pitts Jr, 2000)." This is the basis for the statement in question.
	Figure 10		I think it would be good to represent the OH radical as $OH^{\bullet}$, otherwise it is confusing as just OH (which could mean hydroxide ion)	(ii)	I have followed the convention used by atmospheric chemists to abbreviate the hydroxyl radical as OH in the thesis. This abbreviation is defined in the List of Abbreviations on P27 to refer to the hydroxyl radical and not the hydroxide ion.
	Chapter 3 92, L30		compound with limited solubility is somewhat misleading. As gases go, it is quite soluble, with	(i)	Agree. I state on P46 of the introduction that "DMS is moderately soluble in water and has a saturation solubility of approximately 20 g L^{-1} or 300 mM under standard conditions". The word "limited" has been changed to "moderate" to maintain consistency with the previous statement in the introduction. The revised sentence on P92 has been edited to say: "DMS is a volatile compound with moderate solubility and is supersaturated in seawater relative to the atmosphere."

			concentrations in the water phase ~ 10x that in the gas phase (mol/vol basis).		
	96, L26		Give the precision for the temperature maintenance.	(ii)	At this point in the Chapter (section 3.3.2) the nominal temperature of 34°C is all that is required in the general description of the operating conditions. Later in section 3.3.5.2 (P99) that specifically relates to the uncertainty of the temperature regulation of the permeation tube, the more exact average temperature and standard deviation of 34.18 ± 0.19°C (*n* = 1731) is given.
	96, L31		Unlike a standard flame photometric detector, which has a square response, I thought the PFPD was a linear response detector. But you took the square root of the peak area. Can you explain?	(iii)	The PFPD is an advanced derivative of the conventional FPD; both detectors generate a sulfur dimer (S_2) when an organic sulfur compound is combusted. Therefore, the FPD and the PFPD both generate a quadratic sulfur response which requires the square root of the response to be calculated in order to obtain a linear calibration plot against concentration. Section 3.4.2 of the thesis (P107) provides further information: "The PFPD is a combustion type detector that does not sustain a continuous flame; the pulsed nature of the emitted light allows the S_2 emission signal to be separated in time from background hydrocarbon response. In comparison to a conventional continuous flame photometric detector, the PFPD produces increased signal brightness with significant improvements in sulfur selectivity and sensitivity (Cheskis, et al., 1993)." The Cheskis et al paper by the Israeli inventors of the PFPD provides details about how these improvements are achieved.
	96, L34		Give the value for the DMS/MES response factor.	(ii)	The variables for Equation 4 are introduced in section 3.3.3 (P96-97). Afterwards, the values and measurement uncertainty for each of these variables are given in section 3.3.5 (P98-102). To provide the DMS:MES response factor at this point would pre-empt the information provided in section 3.3.5.7, which provides a value and uncertainty for the DMS:MES response factor, and explains why it was applied in Equation 4. Similarly, to provide values for other variables introduced in section 3.3.3 would pre-empt the information provided in section 3.3.5. The reason a value for the mass fraction of sulfur in MES of 0.42 is given in section 3.3.3 (variable *c* in Equation 4) is because this variable is not dealt with in section 3.3.5 because it contributes negligible uncertainty to the measurement as stated in section 3.3.4 on P97 L25.
	100, L28		What is an electronic 555 timer?	(i)	An electronic 555 timer is an extensively used integrated circuit (IC chip) that has numerous applications in electronic equipment. Given that this information may not be common knowledge to the reader, the sentence has been edited to say: "This load period was controlled by quality electronic integrated circuits (555 timers) in the autosampler that provided precise timing."

	Chapter 4 110, L18		Change observed to obtained.	(i)	"observed" has been deleted and replaced by "obtained". The revised sentence on P110 is as follows: "In most instances, these DMS_a spikes were detected at low tide under low wind speeds, indicating they originated from the lagoonal platform reef surrounding the island, although evidence of longer range transport of DMS_a from a 70 km stretch of coral reefs in the southern GBR was also obtained."
	111, L21		Reword: …; however, AFTER two decades of intensive Earth Systems research, evidence for DMS-dominated control of CCN leading to global climate regulation IS LACKING (Quinn and Bates 2011).	(i)	The sentence has been rearranged as suggested. The revised sentence on P111 is as follows: "Since these high-albedo clouds are capable of altering incident solar radiation, it was hypothesized thirty years ago that biological DMS production and its subsequent air-sea exchange leading to sulfate aerosol and CCN might generate a climate feedback loop (Charlson, et al., 1987); however, after two decades of intensive Earth Systems research, evidence for DMS-dominated control of CCN leading to global climate regulation is lacking (Quinn & Bates, 2011)."
	111, L33		has been understudied WITH RESPECT TO DMS PRODUCTION, COMPARED TO OPEN OCEAN SYSTEMS.	(i)	The sentence has been reworded as suggested. The revised sentence on P111 is as follows: "Considering these dimensions, the GBR is clearly a significant marine ecosystem that has been under-studied with respect to DMS production, compared to open ocean systems."
	112, L6		Reword and clarify "…to environmentally assess that recent chamber observation." Take out "environmentally". Explain what needs to be assessed? The validity? The reproducibility?	(ii)	As is stated, the field campaigns were an *environmental assessment* of what was observed in my previous chamber study. The field campaigns were not intended to *validate* that previous chamber experiment because it may not have properly simulated the environment. The words "environmentally assess" are used to convey this understanding to the sentence in question.
	117, Figure 18		Figure 18, panels (a) and (c) are incomprehensible when looked at in a black and white print out.	(ii)	Each of the four measurements presented in Fig 18 (a) & (c) on P117-118 are integral to understanding the atmospheric DMS response. However, it is difficult to present the quantity of data collected on extended timeline plots. For this reason the measurements are shown in contrasting colours that allow them to be distinguished. It is expected that most readers of the thesis will read it as a PDF, which allows Figs 18 & 21 to be zoomed to 150-200%, which is the intended way for these figures to be viewed. Links to high resolution images of the figures in question can also be obtained from the Biogeosciences journal link where this work has previously been published. Colour contrasting images of these figures can be clearly viewed using 150% or greater resolution in the PDF file available from this link http://www.biogeosciences.net/14/229/2017/

	118, L5		Poor wording "…are indicated to be coral reef-derived emissions". Are LIKELY TO BE coral-reef emissions BASED ON …? The conclusion that the elevated DMS comes from the reef is not definitive, but rather is based on circumstantial evidence.	(i)	The extended caption for Fig 18a on P118 has been edited to say: "*Four distinct spikes (10, 14, 16-17 March) above the background DMS_a signal are likely to be coral reef-derived emissions based on the circumstances surrounding their existence.*"
	123 Figure 21		Figure 21, panels (a) and (b). Again, the figure is incomprehensible when looked at in a black and white print out – the symbols are too small and indistinct.	(ii)	Please refer to response for 117, Fig 18.
	Chapter 5 128, L16		Move the word "seasonally" to after DMSP.	(i)	The sentence has been rearranged as suggested. The revised sentence in the abstract for Chapter 5 on P128 is as follows: "Field application of the indirect HS-GC-MS method in all seasons over a five-year period at Heron Island in the southern Great Barrier Reef indicated that healthy colonies of *A. aspera* ordinarily conserve their branch tip store of DMSP seasonally; however, this store increased to a higher concentration under extended thermal stress conditions driven by a strong *El Niño* Southern Oscillation event."
	129, L3		DMSP is not a mechanism. Replace mechanism with metabolite.	(i)	The sentence has been reworded as suggested. The revision in Chapter 5 on P129 is as follows: "….(3) an overflow metabolite that allows cells to maintain energy balance under sub-optimal conditions (Stefels, 2000); …"
	129, L20		sulfoniUM-compound	(i)	The sentence has been reworded as suggested. The revision in Chapter 5 on P129 is as follows: "The co-production of DMSP by both the symbiont and the host could explain the extremely high concentrations of this sulfonium compound found in some corals (Broadbent & Jones, 2004; Broadbent, et al., 2002)."

	130, L29		Reword : …in SEVERAL SPECIES of reef-building corals in the genus *Acropora* using mass spectrometry… *(you might consider similar rewording of the chapter title)*	(i)	The sentence has been rearranged as suggested. The revision in Chapter 5 on P130 is as follows: "This study reports three investigations into the quantification of DMSP in several species of reef-building corals in the genus *Acropora* using mass spectrometry with deuterated internal standard." I feel the title doesn't need to be altered since the words "Acropora spp." refers to more than one species of this coral genus.
	130, L32		…impact of the sampling AND preparation PROCEDURES on the measured…	(i)	The sentence has been reworded as suggested. The revision in Chapter 5 on P130 is as follows: "In the first investigation, common sample preparation procedures were evaluated, using the HS-GC-MS method, to assess the impact of the sampling and preparation procedures on the measured concentrations of DMSP in *A. aspera*."
	132, L15		Was the volume of the coral fragment included in the 5ml total volume of the sample? This would give a different liquid volume in the sample and standard, if both were brought to the 5 ml mark since the coral fragment is not liquid. This would affect headspace partitioning of the sulfur gases.	(iii)	The same volume of filtered seawater was added to the headspace vials for standards and samples to maintain consistency for analyte headspace partitioning.
	133, L5		Were the coral extract samples filtered before LC-MS analysis? If so, please describe procedure here and elsewhere, where relevant.	(i)	The sample extracts were not filtered for subsampling to the autosample vials. Instead, 1 mL of the clear methanol extract was taken from the top portion of each unshaken sample vial for analysis. The solution analysed was effectively the centrate following settlement under gravity. The coral skeletons were rinsed to remove traces of residue that had settled to the base of the tubes. The text on P133 has been edited to say: "These standards and samples were capped and mixed, then maintained at 4°C in a dark location prior to analysis. In the off-site laboratory, 1 mL of methanol from each unshaken culture tube was transferred to 2 mL capacity auto-sampler vials for LC-MS analysis."
	133, L8		Replace "4-figure analytical balance" by "to the nearest 0.1 mg".	(i)	The sentence has been reworded as suggested. The text on P133 has been edited to say: "Each dry tip skeleton was weighed to the nearest 0.1 mg, and the fresh weight of biomass on each tip was determined."

	133, L24		Heating to 85 C is not a specific procedure for DMSP, which is conventionally measured by alkalike cleavage at 25 C. I know you did some tests but they were not exhaustive – and you used 40 C and compared it to 85 C. It would have been better to compare 25C to 40 and 85 C. It remains a possibility that heating could have released DMS from other compounds besides DMSP.	(iii)	The reason the coral samples were equilibrated at 85°C for HS-GC-MS analysis is given in section 5.4.5.1 on P148. This elevated temp was compared with an equilibration temp of 40°C which was the lowest operating temperature of the HS oven as stated in section 5.3.8.1 on P137. Samples collected later in Nov 2015 and Feb 2016 were analysed using manual HS injection using a glass syringe (section 5.3.3, P134). As is normal practise with manual HS injection those samples were equilibrated at room temperature, and were comparatively analysed for DMPS using LC-MS. For clarity it is now stated in the revised text on P134 that "The headspace from each vial equilibrated at room temperature (23°C) was manually injected into the GC using a 250 µL gas-tight glass syringe (SGE Scientific, Australia)." These samples equilibrated at room temperature were not different from samples equilibrated in the headspace oven at 85°C and 40°C.
	134, L9		Perhaps here would be the place to describe the expected natural abundance isotopomers of DMS. This will help avoid confusion about why you measured masses 62, 63, and 64. You have it later with Table 9, but it seems it should come earlier.	(iii)	Reasons for measuring the triplet ions m/z 62-64 for DMS and m/z 68-70 for d_6-DMS can be obtained from Smith et al., (1999) which is cited on P134 L12 in the Materials and Methods (section 5.3.3). Since Chapter 5 has an analytical focus, it is considered inappropriate at this point in the Materials and Methods to provide a discussion as to why the specified ion triplets were measured. That information is presented in detail in the first part of the Results and Discussion (section 5.4.1, P139-144), where Table 9 is provided to assist that discussion. It is understood, however, that it would assist the reader to have some initial insight into the applied experimental approach. Therefore, the Materials and Methods section (P134, L8-12) has been modified to say: "Based on DMS isotopomer abundances (Table 9), DMS response from samples and standards was determined from the sum of peak areas obtained from extracted ions *m/z* 62, 63 and 64 ($PA_{62\text{-}64}$), while the d_6-DMS response obtained from the internal standard was determined from the sum of peak areas for extracted ions *m/z* 68, 69 and 70 ($PA_{68\text{-}70}$) (Smith, et al., 1999)."
	138, L30		…prepared for DMSP analysis BY ALKALINE CLEAVAGE …	(i)	The sentence has been reworded as suggested. The revised sentence on P138 is as follows: "After this period, each tip was sequentially removed from the freezer and allowed to thaw prior to being prepared for DMSP analysis by alkaline cleavage."
	145, L33		Seems odd that the Henry's Law constant would be the same for	(ii)	It is not the mass of the molecule but the intermolecular forces that primarily determine volatility, which is directly related to vapour pressure (VP). The higher the VP of a substance the higher will be its partial pressure in the gas phase above a liquid in an equilibrium state, which is expressed by the Henry's law volatility constant

			d6-DMS and DMS given that the d6 version is about 10 % heavier.		(K_H, section 1.4). It is unlikely that K_H for d_6-DMS is identical to that of DMS but since it can't be experimentally distinguished (within a 3% relative measurement uncertainty) it can act as a surrogate for DMS as explained on P145.
	150, Table 11		Table 11 is confusing . It's not really clear what the treatments and controls represent. For the oven temperature, was the treatment 85 C and the control 40 C? The controls were the same for the first 4 treatments, but different for the Thawing treatment. The thawing was done in 10 min increments so what exactly does the value of 27.1 represent? I think the units of the measurement should be in the column heading. A complete reworking of this table might be in order.	(iii)	The values given in Table 11 on P150 are the mean concentrations (µmol g^{-1} fresh weight) of DMSP, as stated in the caption. The applied treatments are listed under the 'Treatment' heading in the first column of the table. The control samples were fresh branch tips prepared in filtered seawater, as stated in the caption. The caption has been edited to say that all measurements were made using HS-GC-MS. It is agreed that the headspace oven equilibration temperature comparison may be confusing so it is now clarified in the 'Treatment' column to say "(85°C vs 40°C control)". The controls were the same for the 5 treatments presented in the Table 11. i.e. fresh branch tips prepared in filtered seawater, as stated in the caption. The value of 27.1 is the mean concentration of DMSP measured in all the branch tips (n=7) that were thawed for up to 1 hour. Even though the tips were thawed at 10 min increments, the DMSP concentration variability was <10%. Comparison of the mean concentration of DMSP measured in unfrozen control tips was almost the same, and the statistical comparison of the variability shows that the means are not significantly different. If there had been a measurable decrease in the DMSP concentrations in the thawed branch tips over time, the mean would have been statistically different to the control. What that result says it that the DMSP concentration in a frozen branch tip of *A. aspera* that is thawed for up to 1 h is not expected to be significantly different to the DMSP concentration in a fresh branch tip that is immediately prepared for analysis. This is a useful thing to know when preparing frozen coral fragments for DMSP content analysis. Table 11 and its caption on P150 have been revised according to the above explanations, and now appears as follows: **Table 1: Comparison of sample preparation procedures on the mean concentrations of DMSP in branch tips of *Acropora aspera*, reported as µmol g^{-1} fresh weight, (± 1σ in brackets).** *The control samples were fresh branch tips prepared in filtered seawater. All samples were analysed using HSGC-MS. The statistical analysis provides a comparison of the means using a two-tailed t-test.*

					Treatment / Treatment samples / Control samples / Result, statistical significance Headspace oven equilibration (85°C vs 40°C control): 27.7 (4.3, *n* = 7) vs 26.3 (2.4, *n* = 12); No difference temperature $T_{2.11} > t_{1\text{-}0.05/2,17} = 0.93$, $p = 0.37$ Airbrushing fresh branch tips: 24.4 (2.7, *n* = 6) vs 26.3 (2.4, *n* = 12); No difference $T_{2.12} > t_{1\text{-}0.05/2,16} = 1.15$, $p = 0.15$ Airbrushing frozen branch tips: 24.5 (0.7, *n* = 5) vs 26.3 (2.4, *n* = 12); No difference $T_{2.13} > t_{1\text{-}0.05/2,15} = 1.63$, $p = 0.12$ Biomass extraction in methanol: 25.1 (4.4, *n* = 6) vs 26.3 (2.4, *n* = 12); No difference $T_{2.12} > t_{1\text{-}0.05/2,16} = 0.75$, $p = 0.46$ Thawing frozen branch tips for up to 1 h: 27.1 (2.4, *n* = 7) vs 27.3 (2.3, *n* = 12); No difference $T_{2.11} > t_{1\text{-}0.05/2,17} = 0.18$, $p = 0.89$
	153, L6-8		This needs to be described better. Maybe just changing “by comparison” to “compared” will help.	(i)	The sentence has been reworded as suggested. The revised sentence on P153 is as follows: “This comparison resulted in equivalent DMSP concentrations in *A. aspera* only; for the other *Acropora* species examined, HS-GC-MS consistently gave significantly higher DMSP concentrations in the branch tips compared to the concentrations determined using LC-MS (Table 13).”
	153, L9-14		I was confused by the mention of these data from February 2015, which you dismiss as overestimates. Why mention these? And if you mention, then more explanation is needed. It doesn’t fit with the other text before or after.	(i)	It is agreed that mention of DMSP concentrations measured in branch tips collected in Feb 2015 using HS-GCMS is not required. According to comparative HS-GC-MS and LC-MS analysis of DMSP in *A. millepora* in Feb 2016 (Table 13), it is very likely that the high DMSP concentration in this species measured using HS-GC-MS a year earlier is overestimated but this is speculation and can’t be substantiated. Therefore, mention of the HS-GC-MS data from Feb 2015 has been deleted.

	180, L12-19		As mentioned above, the air exposure treatment was short in this experierment so the results should be interpreted with caution. And it did not include the other factors that a natural coral might be exposed to during a low tide, like wind (exacerbating the drying), UV-radiation and generally high solar radiation. Some discussion of these points would be good. Likewise, the hyposalinity exposure test also was a short duration (1 h) so the lack of effects needs to be interpreted cautiously. I would imagine that for a coral animal, it might take time for diffusion of solutes to manifest osmotic effects.	(ii)	The reason that 10 min increments were used for the air exposure experiment was because I thought I might see an incremental increase in DMSP concentrations in the coral within 1 h for this particular treatment. Since no significant change in DMSP concentrations in the coral was observed up to 1 h it would certainly be worthwhile extending the air exposure experiment for a longer time. Section 6.5.3 on P180 provides discussion on previous published information relating to the effect of air exposure on DMSP concentrations in coral. While I agree that 1 h may have been insufficient time to observe changes in DMSP concentrations in the coral due to air exposure, my experimental protocol was influenced by previous published information that air exposure of hard coral for only three minutes caused a doubling of the average DMSP concentration. Another prior air exposure experiment, however, indicated that a period of 5 h may be required to detect a significant increase in DMSP within the coral (refer to section 6.5.3). I consider my experimental design to be reasonable given such varying background information. The following sentence has been added to the text in section 6.5.3 on P180 to address the valid concerns raised regarding interpretation of the air exposure results: “However, this finding needs to be interpreted with caution; in the environment coral may be aerially exposed for periods exceeding one hour at low tide, while also subjected to factors such as wind-induced desiccation and intense solar radiation that might cause DMSP concentrations within the coral to be altered.” Section 6.5.3 also provides discussion on previous published information relating to the effect of hyposalinity on DMSP concentrations in coral. A previous hyposalinity study had reported exposure of *A. aspera* to hypo-saline seawater of ~27 PSU for two days to produce no significant difference in DMSP concentrations in the coral relative to control samples. According to this background information I wasn’t expecting to see a change in DMSP up to 1 h under hyposaline conditions. However, since I was applying a unique analytical approach, I decided for consistency to use the same experimental protocol for the hyposalinity experiment (i.e. 10 min increments up to 1 h as ‘look and see’ starting point). Again I agree that it would be worthwhile extending the hyposalinty experiment for a longer time. My air exposure and hyposalinity experiments were a preliminary investigation of how these environmental variables might affect DMSP concentrations in coral using isotope dilution LC-MS. From an environmental perspective I agree that the results need to be interpreted with caution; however, the results are expected to be more reliable than other reported results obtained from experiments where the DMSP was indirectly quantified after conversion to DMS.

	181, L37		Homarine, and perhaps some of the other zwitter ions, might be derived from the coral's diet. That should perhaps be mentioned.	(i)	Since the polyp animal feeds on zooplankton that have fed on phytoplankton this is a possibility. Much of a polyp's body is made up of its stomach which is filled with digestive filaments, so I reason that the zwitterions identified are mainly metabolic products rather than directly sourced from its food. However, since this is a possibility, a sentence has been added to P182 that says: "While the zwitterions identified are expected to be coral metabolites, it is possible that the polyp's diet may also provide a source of these chemicals."
	181, L12		DMSA is not a precursor of DMS in alkaline solution at room temperature.	(i)	Thank you for this information about DMSA. The end of section 6.5.4 has been edited to include this information with a citation to "R. Kiene, Personal communication". Additional discussion has been included in section 6.5.4 on P182 to address the quantitative discrepancy for DMSP observed between HS-GC-MS and LC-MS analysis shown in Table 13. For *A. millepora* and *A. valida* collected in Nov 2015 (spring) DMSZ-179 accounts for most of the observed discrepancy. This conclusion is drawn by comparing the ratio of DMSZ-179/DMSP (Table 15) to the ratio of LC-MS/HS-GC-MS for these coral species (Table 13). For *A. millepora* collected in Nov 2015 these ratios (expressed as a percentage) are 24.2% (Table 15) and 28.6% (Table 13). For *A. valida* collected in Nov 2015 the ratios are 26.7% (Table 15) and 26.6% (Table 13). For *A. millepora* collected in Feb 2016 (summer) the ratios are 11.1% (Table 15) and 24.4% (Table 13), which indicates that DMSZ-179 alone could only account for approximately half of the DMSP quantitative discrepancy. The following information has been added to the end of section 6.5.4 on P182 to provide cross discussion of the results presented in Chapters 5 & 6: "Clearly it is imperative that further research is conducted to identify DMSZ-179 and to determine whether it liberates DMS in alkaline solution. If this is so, DMSZ-179 is able to account for 85 and 100% of the discrepancy observed between HS-GC-MS and LC-MS quantification of DMSP in *A. millepora* and *A. valida* collected in November 2015, respectively. This conclusion is drawn by comparing the ratio of DMSZ-179/DMSP (Table 15) to the ratio of LC-MS/HS-GC-MS DMSP concentrations (Table 13) for these coral species. However, for *A. millepora* collected in February 2016, DMSZ-179 can only account for 42% of the HS-GC-MS vs LC-MS quantitative discrepancy for DMSP (Tables 13 & 15). This suggests that another metabolite(s), additional to DMSZ-179, is seasonally produced by the coral holobiont that liberates DMS in alkaline solution. DMSA can not account for this additionally required source of DMS in alkaline solution; DMSA was estimated to be 1% or less in the coral species examined here, and according to a previous study DMSA is not a precursor of DMS in alkaline solution at room temperature (R. Kiene, personal communication)."

	Chapter 7 183, L7-9		You mention here the upregulation of DMSP by stressors, but you did not observe this response.	(ii)	The text on P183 states that the results of the experiment described in Chapter 2 "supports current evidence of significant up-regulation of DMS(P) production in corals under stress conditions". This is a reasonable conclusion to draw from the experimental results.
	183, L10		… AEROSOL particles IN THE ATMOSPHERE may…	(i)	The text has been edited accordingly for clarification that the sentence refers to the atmospheric environment. The revised sentence on P183 is as follows: "Given that the formation of new aerosol particles in the atmosphere may ultimately depend on the local atmospheric concentration of H_2SO_4 for nucleation with oxidised VOCs, this coral-derived source of DMS and isoprene is potentially important."
	183, L11-12		Change "of apparent importance" to potentially important.	(i)	The text has been edited accordingly. The revised sentence on P183 is as follows: "Given that the formation of new aerosol particles in the atmosphere may ultimately depend on the local atmospheric concentration of H_2SO_4 for nucleation with oxidised VOCs, this coral-derived source of DMS and isoprene is potentially important."
	183, L14-15		Reword. …Heron Island and over the wider GBR as observed in other studies.	(i)	The text has been reworded as suggested. The revised sentenceon P183 is as follows: "Oxidation products of the sulfur and non-sulfur VOCs identified in headspace samples and the reef atmosphere are capable of producing the new particles observed at Heron Island and over the wider GBR as observed in other studies."
	183, L15		Perhaps better to say more susceptible to oxidation than "less resistant to oxidation"	(i)	The text has been edited accordingly. The revised sentence on P183 is as follows: "Coral-derived DMDS and CH_3SH, which were minor but more susceptible to oxidation than DMS, could be relatively important in the nucleation of new particles."
	183, L20		Sources of ORGANIC MATTER FOR PRIMARY AEROSOL from the GBR were identified…	(i)	The text has been edited accordingly. The revised sentence on P183 is as follows: "Sources of organic matter for primary aerosol from the GBR were identified and discussed because marine aerosol is typically a complex assemblage of secondary and primary particles."

	183, L26		…current understanding of particle formation processes IN THE MARINE ATMOSPHERE.	(i)	The text has been edited accordingly for clarification that the sentence refers to the atmospheric environment. The revised sentence on P183 is as follows: "According to current understanding of particle formation processes in the marine atmosphere, the significant emissions of aerosol precursor compounds associated with *Acropora* spp. coral and reef seawater are capable of producing submicron marine aerosol and influencing CCN chemical composition and size distribution over the GBR."
	183, L27		Delete the word apparently	(i)	The text has been edited accordingly. The revised sentence on P183 is as follows: "According to current understanding of particle formation processes in the marine atmosphere, the significant emissions of aerosol precursor compounds associated with *Acropora* spp. coral and reef seawater are capable of producing submicron marine aerosol and influencing CCN chemical composition and size distribution over the GBR."
	184, L8		What is a possible flow-on effect??	(i)	The flow-on effect mentioned refers to how current rapidly-accelerating anthropogenic changes may influence coral reef VOC emissions leading to an alteration of the regional climate of the GBR. A flow-on effect might be a change to aerosol optical depth over the GBR. The following sentence has been added to P184 as an example of a flow-on effect: "Such a flow-on effect might, for example, lead to changes in aerosol optical depth (AOD) over the GBR."
	184, L13		Reword. "… required to gain these required insights …" I have no suggestion – I'm not sure what you are trying to say.	(i)	What I'm saying is that in order to gain the insights required to understand how VOC emissions from the GBR affect regional aerosol production and its properties, it is necessary for future studies to examine things such as the microphysical properties of low-level marine clouds, SST relationships and solar radiation dose. The remaining sentences in section 7.1 on P184 have been edited as follows for clarity: "Future research is required to determine the impact that coral reef-derived new particle production may have on the regional climate of the GBR. Initial steps to gaining this climatic understanding is to examine how VOC emissions affect the production and properties of GBR aerosol. Future studies that investigate the microphysical properties of low-level marine cloud (mainly cumulus and stratocumulus clouds) and SST relationships (Leahy, et al., 2013) in combination with solar radiation dose analysis (Vallina & Simó, 2007) are required to gain these required insights into a possible regional climate feedback over the GBR."

	186, L18		"…assisted the identified need for continued effort to improve…" Reword this and make it clearer.	(i)	The sentence in question on P186 has been reworded to say: "Since coral is a difficult analytical matrix, methods to quantify DMSP in coral are not well established; the research presented in Chapter 5 was, therefore, conducted to improve and extend methodology to quantify DMSP in intact corals (Yost & Mitchelmore, 2010)."
	186, L23		…with NEED FOR FREEZING IN liquid nitrogen, …	(i)	The sentence in question on P186 has been reworded to say: "The isotope dilution methods presented can be used to prepare coral samples *in-situ* at a reef location without the need for freezing in liquid nitrogen, while also optimising DMSP analytical precision and quantitative accuracy by addition of the d_6-DMSP internal standard."
	186, L27		The addition of the isotopicallylabled internal standard is not a perfect check on possible enzymatic degradation of DMSP during sample preservation. The standard is added to the bulk extraction solution and it has to diffuse to the site of the enzymes in the cells. Meanwhile, the natural DMSP is at or near the site of the enzymes so it could react faster than the standard.	(iii)	Agreed. The isotopically-labelled internal standard needs to be equilibrated throughout the sample to properly act as a surrogate of the native compound. As you say this takes time and the possibility exists that DMSP within the coral could initially change to some extent in the sample prior to equilibrium being established with the internal standard. Equilibrium is expected to occur relatively quickly (within minutes rather than hours), and once equilibrium is established, the isotopically-labelled internal standard allows samples to be stored for an extended period prior to analysis. This ability for extended sample storage due to compensation for analyte degradation is what is discussed in this summary of Chapter 5 on P186.
	186, L31		The addition of the d6-DMSP does not protect against loss of DMSP, it COMPENSATES for losses (but see my comment above).	(i)	The analytical result is protected from bias because the isotopically-labelled internal standard can compensate for loss of the analyte. It is agreed that it may be clearer to say that the d_6-DMSP compensates for analyte loss. The sentence in question on P 186-187 has been reworded to say: "Important features of these methods are that minimal sample handling is required, and d_6-DMSP is concurrently added with the coral sample to the extraction solution to compensate against loss of DMSP from the time the sample is prepared."

	187, L4		..in NaOH-HYDROLYZED methanol extracts…	(i)	To make it clear that this treatment refers to samples prepared for HS-GC-MS analysis rather than LC-MS analysis, the sentence in question on P187 has been reworded to say: "Neither was there any apparent change in DMSP concentration in NaOH treated methanol extracts by comparison to the control samples prepared in filtered seawater."
	187, L13		HILIC-LC-MS	(ii)	HILIC is the abbreviation for hydrophilic interaction liquid chromatography (refer to list of abbreviations on p27) so it is a duplication to insert LC in the abbreviation HILIC-MS.
	187, L35		…internal standard to COMPENSATE for any analyte degradation DURING SAMPLE HANDLING AND STORAGE,….	(i)	The sentence in question has been reworded as suggested. The revised sentence in Chapter 6, section 7.5 on P188 is as follows: "Results from the air exposure study, conducted using deuterated internal standard to compensate for any analyte degradation during sample handling and storage, contrasts with results from two other studies that showed DMSP to increase in coral exposed to air (Section 6.5.3), indicating that further research into the dynamics of air exposure on DMSP production in coral is required."
	187, L36		Give detail on what those other studies found.	(i)	The sentence in question has been reworded as suggested. The revised sentence in Chapter 6, section 7.5 on P188 is as follows: "Results from the air exposure study, conducted using deuterated internal standard to compensate for any analyte degradation during sample handling and storage, contrasts with results from two other studies that showed DMSP to increase in coral exposed to air (Section 6.5.3), indicating that further research into the dynamics of air exposure on DMSP production in coral is required."
	188, L16		GLYCINE betaine	(ii)	Use of the word 'betaine' on P188 does not refer to glycine betaine alone. 'Betaine' refers to the two betaines (glycine and proline betaine or stachydrine) that dominated the zwitterionic profile in *S. pistillata* (refer to Table 17 & Fig 28).
	188, L28		"likely to contain an abundance of DMSP precursor…" is vague.	(ii)	According to the information presented it is reasonable to suggest that *A. horrida* is likely to contain relatively more DMSP than other zwitterions. This comment is a suggestion for further research into this topic. If the query refers to what the DMSP precursor liberates, the sentence in question on P188 has been modified to say: "The zwitterionic analysis reported in Chapter 6 indicates that *A. horrida* is likely to contain an abundance of the DMSP precursor for DMS relative to other zwitterions."

	189, L2		Unequivocal is a strong word.	(i)	The evidence presented in the thesis for environmental DMS emissions from coral reefs is much stronger than any previous environmental study. My use of "environmental" here means a real world non-chamber study. Given that the release of DMS from coral reefs is based on firm circumstantial evidence according to detailed meteorological and tidal analysis, the word "unequivocal" has been deleted. This edit is consistent with the edit made to the Figure 18 caption (P118) according to the previous comment for Chapter 4, P118, L5. The revised sentence now reads as follows: "On-site monitoring at Heron Island provided environmental evidence that coral reefs can be point sources of DMS_a (Chapter 4) which, in combination with other VOCs, may generate new atmospheric particles (D_p < 20 nm) composed of sulfate and moderately oxidised organics volume fractions in approximately equal proportions (Chapter 2)."
	189, L5		…organics IN volume fractions OF approximately…	(ii)	It is appropriate to refer to organics volume fractions. This is common terminology used to report aerosol composition based on mixing ratios by volume. Mixing ratios are used to describe relative concentrations of atmospheric trace gases and impurities.
	189, L7		Give the range of sizes for CCN and be consistent with what you say in other places.	(i)	The size range for CCN is now consistently reported as > ~50-100 nm throughout the thesis. The sentence in question on P189 is as follows: "These new atmospheric particles have hygroscopic properties that allow them to grow and produce climatically active CCN (D_p > ~50 - 100 nm) over the GBR."
	189, L13		Reword this muddled phrase "…mass air-sea flux of coral reefgenerated DMS-derived sulfate…" Maybe just taking out the word mass works.	(ii)	The sentence in question was carefully constructed. The word "mass" is important in this sentence to convey that a mass balance remains to be demonstrated. The CLAW hypothesis remains a hypothesis because the mass of DMS-derived sulfate emitted from the global oceans and the number concentration of CCN formed from that source of non-sea-salt sulfate has not been reconciled.

	191		The description of all the equipment being deployed in the new research is nice but not really relevant. Best to just describe that your work informs the next steps in the research.	(ii)	The range and type of equipment deployed informs the reader what data is expected to be gained from the internationally attended research study on the GBR in Sep-Oct 2016. The information about the equipment used is also provided to make it known that this was the most comprehensive study of aerosol formation and its evolution yet to be undertaken across the GBR. This investigation was generally known as the 'Reef-to-Rainforest' study which is now mentioned in Section 7.6 on P190 L35 as follows: "This project which is known as the "Reef-to-Rainforest" campaign was led by Prof. Zoran Ristovski (Chief Scientist) of the Queensland University of Technology." I was asked to undertake atmospheric DMS measurements for the Reef-to-Rainforest study that were additional to that required to complete my thesis. Consequently, I consider my involvement in the Reef-to-Rainforest study to be an extension of my thesis research that deserves to be incorporated into my thesis as far as is possible at this point in time. In order to report results from my research work at Garners Beach in my thesis a web link to data gathered at that sampling site has now been included at the end of Section 7.6 on P192. That web page hosted by the University of Melbourne will show a time line plot of my atmospheric DMS measurements at Garners Beach in Sep-Oct 2016. Another web link has also been included at the end of Section 7.6 on P192 that provides a list of the instruments used at the Garners Beach land site for the Reef-to-Rainforest study.
					Thank you for the detailed thorough review of my thesis.

RECOMMENDATION OF AWARD OF DEGREE

Once a candidate has been recommended award of degree by the Dean Graduate School (that is, the Dean approved the Table of proceed changes/responses), the candidate is required to provide the final documentation to the Graduate School, so that they can be awarded their degree.

The final documentation consists of:

- Final thesis with all track changes/comments accepted or removed so the final thesis that will go into the SCU Library research Portal.
- 100- & 400-word abstracts
- The SCU Thesis deposit and verification form completed and signed by the student and the Principal supervisor.

On receipt of the final documentation the Graduate School will complete the candidate's degree. This will involve advising the Results team in Student Services, the Graduation Office and all the supervisor's and DHDRT that the candidate has completed their degree and are eligible to Graduate with their award.

For PhD and Professional Doctorate only: It is only appropriate to use the title of Doctor once you have been conferred the award either in notice by letter or by ceremony (whichever comes first).

Prior to that your status is that of a Graduand. If you've been using the work-title PhD Candidate you might consider changing to PhD Graduand to indicate this status: that you're awaiting conferral but you've met the substantive criteria for fulfilment of your degree.

REFERENCES

1. (National Health and Medical Research Council, 2018)