

## School of Chemistry and Molecular Biosciences Strategic Plan 2014-2017

### **Context**

The School of Chemistry & Molecular Biosciences consists of the disciplines of Chemistry, Biochemistry & Molecular Biology, Microbiology, Parasitology and Biotechnology. The School has an extensive research portfolio supported by funds from research councils, industry and other sources and has a substantial research higher degrees program. The School teaches courses associated with undergraduate and postgraduate science, applied science and as well as professional degrees in the health, veterinary and engineering areas. Members of its staff have won competitive awards for the quality of their research and teaching. Engagement with employers, industry partners, government, national and international research and higher education institutions, prospective students and alumni, is also a hallmark of the School's history.

### **Mission**

The School's mission is to enable our students and staff to fulfill their learning and discovery aspirations in the chemical and molecular life sciences by creating an environment that promotes learning and discovery, rewards excellence and innovation, and encourages School-wide engagement with stakeholders. In doing so, the School supports and develops the enablers of its mission – its staff, systems, infrastructure and governance.

### **Direction**

We will continue to strengthen our research activity, including mentoring young researchers and enhancing our collaboration with external partners. We will focus on encouraging more students to pursue studies and a career in the sciences, and on delivering a meaningful and enriching learning experience. We will build on our links with our stakeholders in industry, government, international institutes, alumni and secondary schools with a view to mutual benefit.

Specifically we aim for UQ's School of Chemistry and Molecular Biosciences to be recognised nationally and internationally for its excellence in:

### ***RESEARCH***

- Research in a defined set of research strengths that are underpinned by a coherent critical mass of outstanding research staff and students, infrastructure and technical support.
- Research training for students and staff that is focused on areas of research strength, internationalisation and a future career in research.

### ***TEACHING***

- Undergraduate teaching that is impactful and innovative, that is research-focused and informed by our specific areas or research strengths, and that inspires a future career in science.
- Advanced coursework training and professional development opportunities that are research-focused in specific areas of recognised research strengths and that attracts students from a wide selection of professions and countries.

### ***ENGAGEMENT***

- Active and productive engagement with stakeholders in industry, government and international institutions, alumni and secondary schools, resulting in a flow of student and staff exchanges and new enrolments, and other benefits.

## Strategic Plan

### 1. RESEARCH AND RESEARCH TRAINING

Strategic Plan	Operational Plan	Action Plan	Key staff	Targets	Progress @ 6/2014
The School is recognised by its strengths in particular key areas.	Build a limited number of recognisable research strengths that are underpinned by a critical mass of high quality research staff, spanning levels A to E, and includes outstanding students, infrastructure and technical support.	Identify areas of true research strength (using a combination of traditional indicators).	Research Committee	Seven true research strengths	Research groupings finalized 2014.
		Resource these groupings effectively (eg allocated PSO, funds to support monthly meetings and annual research symposia, and funds for strategic cross-theme / cross institutional activities). Strengthen OH&S and compliance support.	School Executive Committee	Functional research groupings; improved support for regulatory compliance	Research themes established 2012. Regulatory Compliance Officer appointed 2014.
		Develop a way to profile this effectively, eg, via the School web-site, and improved media exposure (eg media releases after prizes are awarded / high profile papers are published).	Research Committee and Community & Industry Engagement Committee	Informative and attractive web-site and other marketing material	Web-site changes made since 2012 with more in train. Research achievements profiled through UQ News, FoS website, SCMB website, Facebook
		Audit profile and research productivity of all academics in each group. Align / mentor less productive groups with more experienced ones OR manage workload in accordance with activity (eg engagement with other teaching and service roles. Lobby for improved and purpose built spaces for research.	School Executive Committee, academic staff appraisers, Research theme leaders	An increase in research productivity (income and outputs) of all groupings, eg Minimum of 1 grant / academic pa / academic. Minimum of 3 RHD students/academic Minimum of five publications / academic /	SCMB mentor program established for new academic staff 2014. SCMB:UQDI mentoring program. Plans for Bldg 76

				year	refurbishment. Grant readership program in place
		Increase the success of our ECRs and RHD students through improved scholarships, travel grant, fellowship and grant funding success, through more rigorous appointment and appraisal process, through sponsored programs of career development, and through structured mentoring within research themes. Resource with an expanded SCMB travel support scheme.	SCMB PGC and ECR coordinators, RHD Studies Committee, School Executive Committee, Research theme leaders.	Travel awards to 20% of ECRs. 10% of students/staff undertaking research overseas / on international collaborative papers. Travel funds (maximum \$6K) available to all PhD students. 20% of ECRs are named associate advisors for RHD or Hons students. 5% ECRs teaching into Hons courses	ECR funding schemes (Travel awards to 32 out of 70 as at June 2014 – 42%) RHD funding schemes RHD career development sessions ECR involvement in SCMB symposia SCMB and SCMB:UQDI auxiliary mentoring programs ECRs running journal club for Hons ECR career development workshop planned for 2014
		Increase honours and RHD recruitment, by introducing School funded honours scholarships and near miss scholarships for international PhD students.	RHD Studies Committee, Honours Sub-committee.	20% increase in Hons and 10% increase in PhD students	Honours scholarships and near miss RHD scholarships in place. Substantial rise in BSc Hons numbers in 2014 - 56% increase over 2013 (follows 48% rise over 2012)

<p>The School is recognised by its productive collaborations within the School and with outside institutions including industry.</p>	<p>Identify, increase, resource and promote a limited number of high calibre productive collaborations.</p>	<p>Identify and promote areas of productive research collaboration across the School and with high profile external institutions.</p> <p>Encourage all staff to regularly meet with visitors to the School and give seminars at external institutions.</p> <p>Consider opportunities to resource new multidisciplinary research initiatives across the School and with high profile external institutions.</p> <p>Identify and facilitate linkages with industry, through engagement with UQCIEF and ARC schemes.</p>	<p>Research Committee, Community &amp; Industry Engagement Committee, Industry Advisory Board</p>	<p>Research theme webpages showing intra-school collaborations</p> <p>New and productive cross disciplinary programs, funded from a diverse range or sources, including industry.</p>	<p><b>AID Research Centre.</b>  <b>Engagement of affiliates in SCMB research themes.</b>  <b>Staff encouraged to engage externally and apply for linkage grants through appraisal process.</b>  <b>Research internationalization primarily with universities in South America, driven by SCMB funded delegations – growing grant and Fellowship opportunities, workshops planned for 2015</b>  <b>Increased engagement with UQ Institutes – co-retreat planned for 2014.</b></p>
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## 2. TEACHING AND LEARNING

Strategic Plan	Operational Plan	Action Plan	Key staff	Targets	Progress @ 6/2014
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<p>The School's undergraduate study options are attractive to local and international undergraduate students.</p>	<p>Improve the quality of our teaching material, and consider more effective means of delivery, for both core and service teaching activities.</p>	<p>Annual review of course content and presentation. (eg Reduce # of powerpoint slides / lecture to 20). Increase % of lectorials (cf didactic lectures) in each course.</p> <p>Appoint a dedicated academic coordinator for first year Chemistry.</p> <p>Allocate first year lectures to our best lecturers.</p> <p>Review assessment practices.</p> <p>Improve the quality of our practicals, through the engagement of more senior tutorial staff (eg ResTeach and external part-time staff). Prac courses as separate courses. Lobby for improved facilities for advanced MBS practical teaching. Run night pracs if necessary.</p> <p>Consider alternate means of delivery that promote more active learning.</p> <p>Improve the vertical integration between our year levels through annual review of linkages between yr 1, 2 and 3.</p> <p>Provide particular support for courses with relatively low SECaT scores.</p>	<p>Teaching and Learning Committee, majors convenors, TF academic staff, Coursework Students Advisory Group.</p>	<p>An increase in the retention rates (especially in Chemistry, eg 1<sup>st</sup> year to 2<sup>nd</sup> year from 10% to 20%*)</p> <p>An increase in SECaT course scores (especially in courses scoring &lt;3.5 on Q8)</p> <p>Increase low scoring service course Q8 SECaTs by 0.5.</p> <p>75% of all courses with a Q8 SECaT score of &gt;4.0</p> <p>An improvement in 'Chemistry core skills matrix' scores.</p> <p>*Need to establish best practice by comprehensive benchmarking.</p>	<p>1<sup>st</sup> year Chemistry curriculum review underway.</p> <p>Director FYC appointed.</p> <p>1<sup>st</sup> year Chemistry Lead Tutor appointed.</p> <p>Most FYC lecturers are delivered by senior core academic staff.</p> <p>Faculty assessment review scheduled for 2014.</p> <p>Researchers engaged to develop new practicals.</p> <p>Building advanced prac lab on 68-4.</p> <p>Refurbishment of 76 including prac labs (to level 1) planned.</p>
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	<p>Improve the effectiveness of our teaching staff.</p>	<p>More structured engagement of TF staff with T&amp;R and RO academics, eg workshops and seminars by TF staff to facilitate the development of T&amp;R and RO staff with regard to new and effective teaching practices, and enable better outcomes from SoTL projects.</p> <p>Encourage staff to undertake GCHEd and other Teaching related staff development programs.</p> <p>Develop a mentoring program to pair junior teaching staff with more experienced teaching staff.</p>	<p>Teaching and Learning Committee, TF academic staff, academic staff appraisers.</p>	<p>GCHEd graduations/ StDev program completions. Increase in SoTL grants and publications. Improved SeCAT teaching scores (especially for courses with Q8 scores &lt;3.5, see above).</p>	<p>Gwen as Director FYC Chem is liaising with Chem academics re chem teaching. Susan ran BMB retreat 11/13. Jack ran Micro retreat 11/13. All new T&amp;R appointments expected to complete GradCertHEd. Susan mentoring Jack and Justin, Gwen mentoring Philip.</p>
	<p>Improve cohort experience for students majoring in our disciplines.</p>	<p>Develop activities – networking and professional (eg advanced practicals with high calibre tutors) – that enable students to bond with each other and with the School (eg camp for 2<sup>nd</sup> year students). Harmonise honours program. Spaces for majors/honours students.</p> <p>Market our majors and hons program to first year students.</p> <p>Support proposal for a BAdvSci, with a major that will distinguish our school and our graduates (e.g. Biological Chemistry)</p>	<p>Teaching and Learning Committee. Coursework Students Advisor Group.</p>	<p>An increase in the number of students majoring in our School disciplines.</p>	<p>Straddie camp 2012 and 2013. Majors networking events organized by Mark (10/13 and 8/14). Spaces for majors students in new 68-4. Honours program more harmonious! Honours program marketed in prac manuals. BAdvSc started 2014 – Jack Clegg coordinating (includes a Chemistry major)</p>

	Develop unique aspects of our teaching programs	Incorporate elements of the 'UQ advantage', ie undergraduate research experience, industry experience, international experience (eg via Study Abroad). Incorporate material that reflects our areas of research strength and diversity (eg BAdvSc (Biological Chemistry)).	Teaching and Learning Committee, Industry Advisory Board	<p>An increase in the number of students majoring in our School's disciplines.</p> <p>An increase in the number of students converting to honours and RHD studies in our School.</p> <p>An increase in the number of students engaging in Study Abroad program in our disciplines.</p> <p>An increase in the number of courses incorporating a research-based experience.</p>	<p>- Industry placement development per IAB feedback 6/14.</p> <p>Increase in the number of undergraduate courses with embedded research experience - ? in 2014.</p>
The School is an attractive destination to domestic and international students.	Develop additional PGCW (and CPD) options in areas in which we have clear research strength.	Explore the opportunities to develop a Master in Infectious Diseases, Master of Nanotechnology, Master of Medicinal Chemistry or a Master of Science Education.	Teaching and Learning Committee, School Executive committee.	An increase in enrolments in our PGCW programs. An increase in the quality of enrolling international students. A decrease in plagiarism. An increase in conversion to RHD programs.	<p>CPD for teachers established.</p> <p>CPD in regulatory compliance in development.</p> <p>Science Education in discussion (SR)</p>
	Make access to information about SCMB undergraduate, honours, and postgraduate research projects simpler	Modify the current Honours booklet to become a "one stop shop" that covers all UG and PG research opportunities in the school and use this as an online resource for all student research projects	All staff	<p>Number of Website hits on the book site.</p> <p>Numbers of students enrolled in our programs (URE, Winter and Summer programs, Honours, Masters, PhD, DSc, MPhil)</p>	James Fraser has developed new templates for this book and is ready to implement them post TLC and SEC approval.
The School is recognised for its teaching resources that can be used for professional development.	<p>Develop high quality teaching resources.</p> <p>Collate and curate SCMB teaching materials (lecture notes, animations, videos,</p>	Explore the possibility of developing video and other resources that can be used in our own courses, for upskilling school teachers or training staff in industry (eg clinicians).	Teaching and Learning Committee, Community & Industry Engagement Committee. Outreach coordinators.	<p>Marketable resources.</p> <p>Number of new/revamped workshops within</p>	<p>Video resources developed for some courses.</p> <p>Some interest in developing MOOCs.</p>

	practical laboratory notes, OH&S paperwork) appropriate for broad distribution in professional development programs.			existing CPD programs Increasing attendance numbers at CPD programs Quality of feedback from CPD participants on our offerings.	
The school is recognised for the quality and innovation of its undergraduate teaching program, for its communication with students, and for the ability of our students to document and publicly present their performance.	<b>Provide exceptional undergraduate laboratory experiences</b>	Based on available funding, appoint dedicated Lead Demonstrators to 2 <sup>nd</sup> /3 <sup>rd</sup> year chemistry and to 2 <sup>nd</sup> /3 <sup>rd</sup> year biochemistry to (i) provide support for course coordinators; (ii) improve the skills of laboratory demonstrators through mentoring; (iii) assist in the development of new practicals that focus on skills relating to industry and improve the quality of our existing practicals; (iv) assist in the development of ALUREs	New staff	Student satisfaction on surveys. Student retention from second through third year and higher. Preparatory staff satisfaction. Academic staff satisfaction. Increased quality and coherence of practical classes in higher-level chemistry and biochemistry courses.	
	<b>Increase the SCMB use of e-delivery tools for supporting material, just-in-time teaching, and course feedback.</b>	Explore and encourage use of tools including ipad drawing apps (e.g. Educreations), podcasting (e.g. Mobile podcaster and Wordpress), course Facebook sites (where the academic has access).	All staff	Number of items provided to students using these technologies. Number of courses using these items. Better student responses to evaluation questions about "feedback".	
	<b>Provide an online poster-board for each course where students can post useful resources, then vote on them to indicate which are the most helpful.</b>	Work with IT and the rebuilt ITALI to develop a centralised resource for all students allowing crowd-sourcing, rather than having students looking individually for materials.	Admin/IT/ITALI	Number of student hits on the sites Frequency of student uploads of material. Frequency of student voting	



				for “useful” and “not useful” resources.	
	<b>Provide (in association with UQ central) online e-portfolios for our students</b> so they can showcase their work to potential employers and gatekeepers for other educational opportunities.	Work with IT and the rebuilt ITALI to develop a centralised portfolio facility for our students.	Admin/IT/ITALI	Number of curated items. Use of the portfolio by students during and after their degree to gain employment or study admission.	
The school has simple, efficient, and practical methods for storing exam questions and providing assessment item quality control.	Develop a system for depositing and curating past exam questions and their solutions		Admin/IT	Academic satisfaction Administrative/Support staff satisfaction Number of hits on site during the year Reduced numbers of exam “errors”.	In discussions with SBMS to adapt and adopt the system that they use.
	Develop a system of review of assessment items (esp. criteria)	Assessment items are reviewed by staff who are not currently teaching into the course. This would be a means to: broaden input into the design of assessment; disseminate good assessment methodology.	All staff	Improved responses to Q5, Q6 on SECaTs Reduced re-mark requests Implementation of excellent assessment protocols across multiple courses.	

### 3. ENGAGEMENT

Strategic Plan	Operational Plan	Action Plan	Key staff	Targets	Progress @ 6/2014
<p>The School is recognised for its high quality engagement with industry.</p>	<p>Maintain a functional Industry Advisory Board.</p>	<p>Liaise with IAB to improve industry informed teaching, student placements and internships. Invite members of the IAB to address our undergraduate students about employment opportunities. Develop existing or new courses to enable meaningful (&gt;6month) industry placements.</p> <p>School to consider proposals for strategic funding, eg for industry placement scholarships.</p>	<p>Community &amp; Industry Engagement Committee, IAB and SEC.</p>	<p>Increase in enrolments in courses that include an industry placement (eg yr 3 Chem, Biotech).</p> <p>Industry sponsored student prizes or undergraduate scholarships.</p>	<p>IAB is active. Industry placements incorporated into Honours with associated scholarship program. Now expanding industry placements to all program career levels.</p> <p>Need to engage IAB in career events.</p>
		<p>Liaise with IAB and UniQuest/Research Partnerships Office to improve industry funded contact research projects, ARC Linkage, fee for service use of facilities or collaborative projects. Run research symposia to which IAB members are invited.</p> <p>Encourage staff to engage with UQ CIEF scheme to attract pilot funding for collaborative research with industry.</p>	<p>Community &amp; Industry Engagement Committee, Research Committee, IAB, SEC and academic staff</p>	<p>Increase SBPF (Cat 2 and 3 income and % grants with industry collab) score from 1 to 2.</p> <p>Increase in industry funded projects / contracts.</p> <p>At least 5 UQCIEF or ARC Linkage grants per year</p> <p>Industry funded equipment.</p>	<p>Analytical Facilities flyers completed.</p> <p>Expertise matrix in development (J De V)</p> <p>Planning for prac lab hire by companies over teaching breaks.</p>
		<p>Liaise with IAB to inform the development of professional training programs that can be used for training staff in industry.</p>	<p>See above (T&amp;L)</p>	<p>Marketable CPD product.</p>	<p>Yet to be actioned.</p>

<p>The School is recognised for its engagement with a range of institutions overseas.</p>	<p>Attract enrolling students from a broad range of countries to study in our undergraduate and postgraduate programs.</p>	<p>Develop on-line and print resources that can be used for promoting our programs nationally and internationally (eg IDP roadshows, academic visits). Leverage engagement with occupational trainees, staff travelling OS and staff on sabbatical for marketing our programs.</p> <p>Diversify marketing of existing programs (Google Adwords, and targeted adverts in NZ and Asia).</p> <p>Develop relationships with additional institutions in Asia, which are likely to be a source of future enrolments (e.g. Eijkmann, Chulalongkorn).</p>	<p>International recruitment/development representatives on TLC and RHD Studies Committee, Faculty Engagement Unit.</p>	<p>An increase in international student enrolments.</p>	<p>Academics engaged in international recruitment drives: Chile, Brazil, China, Indonesia and Germany. Note above in Research and Research Training. Formation of an Internationalization working group with representation from the T&amp;L, RHD, Research and Engagement committees.</p>
	<p>Identify and develop functional linkages with one or more high profile institutions overseas.</p>	<p>Identify cognate institution that would be a good candidate for 'twinning' arrangement (eg McGill, Birmingham) with the purpose of collaboration in teaching and research, undergraduate and postgraduate student exchanges/joint PhD degrees. Leverage engagement with occupational trainees, staff travelling OS and staff on sabbatical for profiling our school as a destination for research collaboration and RHD student exchange.</p> <p>School to consider proposal to resource this by supporting strategic travel / joint appointments.</p>	<p>TLC and RHD Studies Committee, Faculty Engagement Unit.</p>	<p>Increase in collaborative outcomes and student exchanges and enrolments.</p> <p>Increase SBPF (Avg Int Income and % grants with international income) to Stage 2.</p>	<p>Eijkman Zhejiang U Sao Paulo U Concepcion UNESP Heidelberg</p>

The School is recognised by secondary schools as an excellent destination for their students.	Identify and develop functional linkages with a limited set of key 'feeder' schools in the Brisbane area.	Work with the Faculty and University to identify and optimise outreach activities with particular relevance to the School, by targeting (and ideally diversifying) marketing activities. Develop high quality staff development (CPD) resources that are valuable to teachers and enable them to excite their students.	Community & Industry Engagement Committee, Teaching and Learning Committee	Increase enrolment of high quality students who have been inspired to pursue a career in science.	Teacher CPD workshop annually since 2012
Alumni maintain a strong relationship with the School.	Maintain a database and functional relationship with our alumni.	Invite alumni to all School events. Send alumni School newsletter at least twice a year. Reunion events. Facebook page. Engage alumni in the development and success of CPD programs.	Community & Industry Engagement Committee.	Alumni sponsored student prizes, equipment or scholarships	In place. New industry/alumni sponsored prizes since 2012 (Argaet, Kapeleris, Hamilton)

#### 4. ENABLERS - ORGANISATION AND RESOURCES

Strategic Plan	Operational Plan	Action Plan	Key staff	Targets	Progress @ 6/2014
Maximise discretionary spending	Increase income. Reduce expenditure through efficiencies.	Ensure that academic appointments continue to be made in a strategic manner and that these are balanced with appointments in teaching and research support.	School Executive Committee	Reduce proportion on salaries to <75%. Improve support available to academics and strategic school activities.	All recent academic appts have been strategic. Salary budget still ~78% due to income

		<p>Explore other sources of income for operational funding (eg. Industry, Programmatic, Govt initiatives) funding opportunities.</p> <p>Use of facilities by external users that pay full cost recovery.</p>	School Executive Committee, Research committee and Space and Facilities Management Committee	Increase income (5% of total operational budget from external sources).	<p>Continuing to explore opportunities</p> <p>Facilities flyer developed - Advertised at AusBiotech and to breakfast attendees</p>
		Further refine budget forecasting and expenditure monitoring to provide a better service to project account holders and the School Executive. Analyse income and expenditure by various inputs and outputs.	School Manager and Finance Manager	Minimise loss of funds through carry-forward.	Budget predictions for 2014 better than 2013
School staff who are effective in their positions to the benefit of themselves and the School.	School staff, including ECRs, who are recognised for their contribution to the School, are allocated responsibilities in accordance with their strengths, capabilities and availability, and who are provided with the support they need to be effective.	Develop a fair and reasonable academic workload allocation model.	School Executive Committee	Increase in productivity, particularly of high potential ECR staff.	<p>A new academic workload model was developed in consultation with academic staff late in 2012 and will be implemented with the new electronic system 2014.</p> <p>To better support academic staff a higher level RHD officer and a regulatory compliance officer were appointed from 2014.</p>
		Consider options for better resourcing existing academic staff through new appointments in teaching support, and or research support.			
		Funding initiatives that support ECRs (computers, travel, networking activities)	Research Committee (including the ECR Sub-committee)		

		Develop a useful SCMB ECR web-site that provides resources to promote career development, intra-school collaboration.			ECR web-site developed including info on career development. Career progression workshops run in February.  Applying for fellowship workshop run (Murray Stewart, 2013)
		More robust appraisal process, eg annual review documents are not accepted until they reach the required standard.			
		Develop high level specialised courses to improve the training and professional development of our ECR staff.			
The School is recognised by its excellent buildings and facilities and safety record	The School is housed in functional, comfortable and safe buildings.	Develop and submit proposal for completing the refurbishment of the Chemistry and MBS buildings.	School Executive Committee and Space and Facilities Management Committee	Complete refurb of both buildings.	Refurb of final levels of 68 (1,3 and 4) underway.  Concept plans for refurb of Bldg 76 under development.
	The School be supported by high quality and accessible large equipment facilities	Work towards having each facility aligned with a research strength and supported by a PSO.	School Executive Committee, Research Committee, Space and Facilities Management Committee	Improved capabilities and accessibilities of core facilities.	Achieved for Genomics and Molecular Genetics (Michael Nefedov). In progress for Structural Biology and Biochemistry. Analytical facility flyers developed for attracting external users.
		Consider increasing the availability of the School's state-of-the art major equipment facilities to external users to be charged a higher rate of cost recovery.			
A School that complies with OH&S legislation and provides a safe working	Regular and documented safety audits of all research and teaching laboratories.	OH&S Committee and School Executive Committee	Reduction in incident reports. Reductions in academic staff time	OH&S Chair on SEC and regularly presents at school	

	environment for our staff and students.	Regular communication of safety issues to School staff and students.		losses spent on OH&S compliance. Quality of Risk Assessment Database entries above UQ/FoS benchmarks.	meetings. Regulatory Compliance Officer commenced 2014. RA dbase metrics exceed benchmarks.
		Audit the resourcing of our OH&S staff.			
A School that is highly commended for its performance by an objective and international review committee	Implement accepted recommendations of 2013 septennial review in consultation with the Academic Board.	Prepare and enact approved 12-month implementation plan.	School Executive Committee, RC, T&L, CIEEC and all staff	As stated in response to review recommendations	12 month response in development for 8/14 submission to Ac Bd.