



## **Athena SWAN Bronze department award application**

<b>Name of university:</b>	University of Cambridge
<b>Department:</b>	Computer Laboratory
<b>Date of application:</b>	April 2015
<b>Date of university Bronze and/or Silver SWAN award:</b>	Silver Award September 2014
<b>Contact for application:</b>	Caroline Stewart
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1. Letter of endorsement from the Head of Department:



**UNIVERSITY OF  
CAMBRIDGE**  
Computer Laboratory

**Andy Hopper CBE FRS FREng FIET**  
*Professor of Computer Technology*  
*Head of Department*

Ms Sarah Dickson  
Senior Policy Advisor (Athena SWAN)  
Athena SWAN Charter  
Equality Challenge Unit  
Queen's House  
55-56 Lincoln's Inn Fields  
London  
WC2A 3LJ

27 April 2015

Dear Ms Dickson

I am writing to confirm my unequivocal support for the Computer Laboratory's Athena SWAN Bronze Award application.

The Department recognises how important an Athena SWAN award is for its future success, and I am determined to embed it irrevocably in the Department's culture. The outcomes of the self-assessment panel meetings have highlighted the most essential Athena SWAN actions; as a result we are able to show the steps we intend to take to tackle the gender imbalance which is currently the disappointing reality across our discipline.

For example, the panel meetings have provided a forum for us to review our working practices and focus on where improvements might be made. At a Departmental level we are ensuring that all staff involved in admissions and recruitment undertake the online Equality and Diversity (E&D) course offered by the University's E&D Office and that they are made aware of factors such as unconscious bias, which might have an influence on their decisions. I am also keen for the Department to meet the objective of co-ordinating with College Directors of Studies to ensure that the selection process for undergraduate students is free from any possible bias. Ultimately the decision to admit a student to the University and thus to the Department rests with the Colleges, however, we have been enhancing our outreach activities with the aim of enthusing more young women to study Computer Science: the inaugural Cambridge Coaching Academy Summer School for girls aged 16-19 years will be held this year and the Raspberry Pi initiative continues to empower younger schoolchildren to turn their ideas into reality through coding.

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The self-assessment panel meetings have also highlighted the need to formulate a stronger, more focussed strategy at Departmental level to attract more female candidates to apply for both academic and research positions as the current ratios are low. This topic was an agenda item at a recent academic and research staff meeting; it was agreed to use contacts in the wider Computer Science community to proactively reach out to prospective female candidates to encourage them to apply, rather than passively waiting for them to do so.

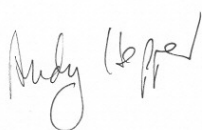
Although the Department has a good record of successful promotions for female staff, higher than the University's average, we acknowledge that support should be provided for women to help them maximise their chances of a successful outcome. As such we will be actively promoting use of the Senior Academic Promotions CV Scheme, which is a key initiative supporting Athena SWAN at the University. We have also successfully encouraged applications to the Returning Carers Scheme, another key Athena SWAN initiative.

In 2003, Professor Ursula Martin and Dr Mateja Jamnik, keen to address the under-representation of women in our discipline, founded the group women@CL to provide networking and support opportunities for women engaged in computing research, and to help women aspire to leadership roles in both academia and industry. In 2014 the first Oxbridge Conference for Women in Computer Science was organised by women@CL and hosted by the Department, and in 2014 the 10<sup>th</sup> anniversary of women@CL was celebrated with Jeanette Wing, the Corporate Vice President of Microsoft Research, delivering the prestigious Wheeler Lecture. This visible celebration of women and their achievements in Computer Science is one of our actions and we intend to hold other such events in the future.

We were disappointed not to have reached a Bronze Award at our first attempt but have taken on board feedback and increased our efforts to raise awareness, consult widely and address gender inequalities in the Department.

I have personally committed the Department to providing all necessary resources to support the acquisition and maintenance of our Athena SWAN award and I look forward to the developments that will take place as we set our action plan in train over the next three years.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Andy Hopper', with a stylized flourish at the end.

Professor Andy Hopper

## 2. The self-assessment process:

### a) The Self-Assessment Panel

**The self-assessment panel includes academic, academic related, research and assistant staff and one research student. The current members are:**

**Professor Ann Copestake (Chair)** is Professor of Computational Linguistics and was Deputy Head of Department with responsibility for Teaching until December 2014. She spent 15 years working as a researcher on short term contracts at Cambridge and at Stanford before taking up a permanent position in Cambridge in 2000. Her experiences of work-life balance include moving to the US because of a partner's employment, long-distance relationships and serious health issues.

**Miss Claire Chapman** is a Graduate and Undergraduate Education Assistant and Secretary to the Departmental Secretary. She joined the Laboratory in November 2014 and has experience of organising Gender Equality events in the Clinical School. She is secretary to the SAP and website editor for Athena SWAN.

**Professor Mike Gordon** is Professor of Computer Assisted Reasoning and Deputy Head of Department with responsibility for Research. He is Chair of the Graduate Education Committee. He joined the Computer Laboratory as Lecturer in 1981 following short term research positions at Stanford and Edinburgh. He is married and has two sons. He represents the departmental senior management team on the panel.

**Dr Jonathan Hayman** is a Senior Research Associate and Director of Studies in Computer Science, Emmanuel College. Jonathan completed his PhD in the Department in 2009, then left for a year in industry before returning to the Computer Laboratory. He is responsible for admissions to Emmanuel in Computer Science and for monitoring progress and arranging undergraduate supervision. On the panel, he represents postdoctoral researchers and advises on undergraduate admission issues.

**Dr Vivien Hodges** is an Equality and Diversity Consultant based in the University's Equality and Diversity Section. Her role is to advise on the process of Athena SWAN applications and input into the management and presentation of the data and provide examples of good practice from within and outside the University. Vivien is also Secretary of the Athena SWAN Governance Panel.

**Dr Mateja Jamnik** is a University Senior Lecturer at the Computer Laboratory since 2002. From 2002 till 2012 she also held an EPSRC Advanced Research Fellowship. Mateja started the women@CL network within the Department and across the UK almost 11 years ago. Mateja is married with three young children and works part-time.

**Professor Ian Leslie** is Professor of Computer Science and was previously Head of Department from 1999 to 2004. From January 2004 to 2009 he was the University's Pro-Vice Chancellor for Research. He is a Fellow, Director of Studies in Computer Science and currently president of Christ's College. He led the recent redevelopment of the undergraduate course (see action 6.3) and liaised with the Panel on that.

**Dr Bogdan Roman** is a visiting Research Fellow at the Computer Laboratory and Research Associate at the Department of Applied Mathematics and Theoretical Physics and also Director of Studies at Homerton College. His main role on the panel is outreach: he is a member of the Outreach Committee and the Joint Teaching Strategy Committee and co-organiser and presenter at the Oxford and Cambridge Student Conferences.

**Ms Yoli Shavit** is a PhD student, a member of Churchill College and a committee member of women@CL. Her main roles on the panel have been to represent PhD students and help develop the student survey.

**Mrs Caroline Stewart** is the Secretary of the Computer Laboratory. She is responsible for the administration of the Department, including human resources and student provision. She has one daughter and worked full-time while bringing her up so recognises the difficulties in balancing work and home life and the need for support from an employer.

**Dr Simone Teufel** joined the department in 2001: She is a Reader and a Fellow of King's College. She is Academic Director of women@CL and represents it on the panel. She also has a key role in the redevelopment of the undergraduate course (see action 6.3).

## **b) An account of the self-assessment process**

Preliminary discussions to identify the panel membership took place in September 2013. The panel has held 9 meetings since October 2013 as well as numerous informal subgroup meetings. Athena SWAN has been discussed in all the main departmental committees (details omitted for reasons of space).

1. October 2013: Introduced the Athena SWAN scheme to panel members and established the need for data collection.
2. December 2013: discussed the submission in more detail and agreed how panel members could contribute. Agreed to submit a Bronze Award application in April 2014.
3. February 2014: considered each section of the application and discussed responses. Application drafted.
4. March 2014: considered the draft application, reviewed the action plan. Application submitted.
5. November 2014: discussed the resubmission. Additional actions suggested including the Summer School (Action 6.2) and other enhancements to outreach (Action 6.1). Student and Staff Surveys discussed and responsibilities assigned.
6. 6/1/2015: Review of progress on actions, in particular surveys.
7. 29/1/2015: discussion of draft action plan prior to consultation with Head and Deputy Head of Department.
8. Student survey carried out between 15/1/2015 and 2/2/2015.
9. 4/2/2015: Presentation of action plan at a formal meeting attended by all academics (4 apologies for absence) and senior administrative staff.
10. 24/2/2015: progress report and discussion of Summer School. Results from the student survey discussed in detail.
11. Staff survey carried out between 2/3/2015 and 30/3/2015 as part of a School of Technology wide survey.

12. March-April 2015. Draft resubmission prepared, circulated and discussed with the Panel. Revisions incorporated.

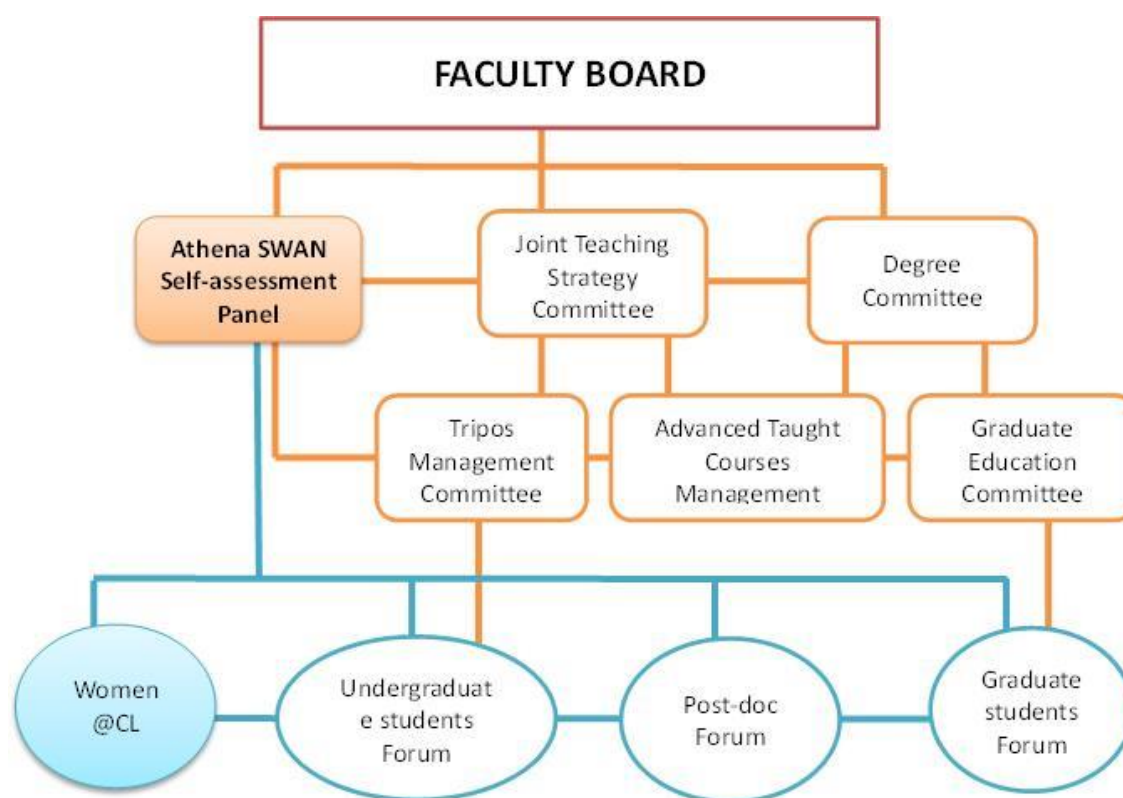
**c) Plans for the future of the self-assessment team**

The self-assessment team will meet at least three times a year. Relevant findings and statistical data will be published on the Department's Athena SWAN webpages.

Athena SWAN has a designated webpage on the Department's website which displays panel members' details, meeting dates and minutes. Other relevant items of interest, as well as links to some of the more relevant HR policies, are also placed on the webpage.

Progress on the Action Plan will be reported to the Head and Deputies of Department and communicated to staff through staff meetings and via the website. A yearly formal report will be made to the Faculty Board and to the University Athena SWAN Governance Panel. A detailed report will be presented annually at the academic off-site day.

**Departmental Organogram with Athena SWAN reporting and interactions**



**Action 1.1: Athena SWAN self-assessment. Integration of Athena SWAN into Departmental activities**

993 /1000 words

### 3. A picture of the department

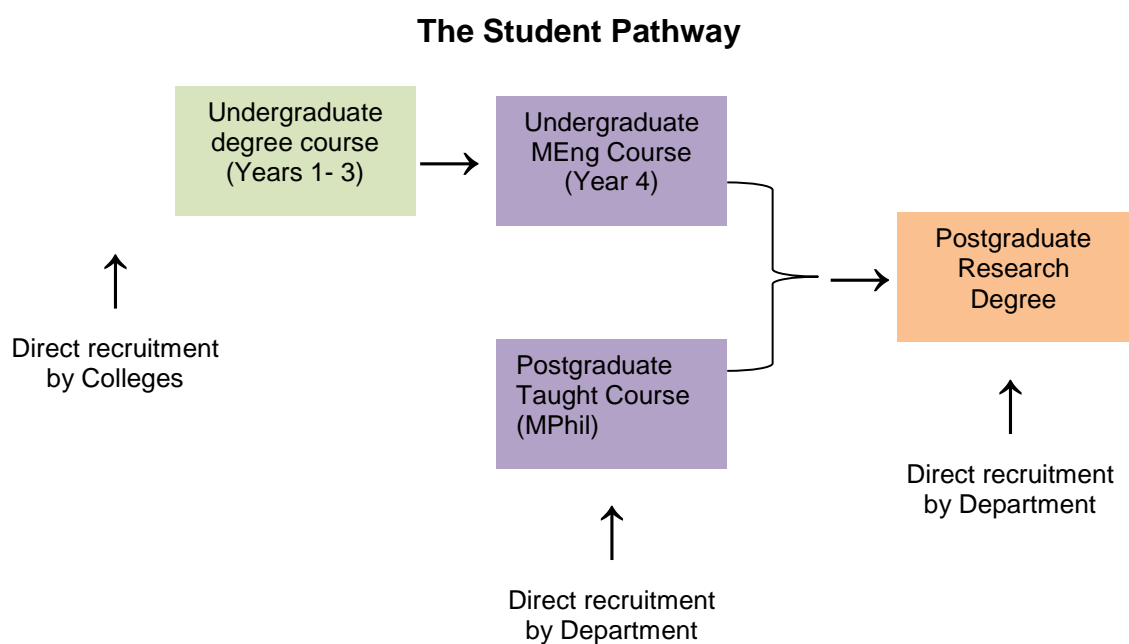
The Computer Laboratory is an academic Department within the School of Technology in the University of Cambridge that encompasses Computer Science, along with many aspects of Engineering, Technology and Mathematics. The Laboratory has an exceptionally broad range of research interests at internationally leading standard and consistently ranks in the top 10 computer science departments worldwide. The management team concentrates on providing an environment and a support structure in which teaching and research can flourish, providing a lightweight steer on appropriate ways to enhance these activities and a long-term strategic view on recruitment and research funding. At present there are 41 academic staff, 29 support staff, 5 research fellows, 81 post-doctoral research workers and 119 PhD students. At any one time, there are about 300 undergraduate and 40 MPhil students. The physical infrastructure and facilities for research are in the William Gates Building, completed in 2001. The number of academic staff has expanded by about 50% in the last six years.

At present there are 40 academic staff (10.5% female), 25 support staff (52% female), 5 research fellows (40% female), 101 post-doctoral research staff (20% female) and 120 PhD students (24% female). At any one time, there are about 300 undergraduate (~14% female) and 40 MPhil students (17% female).

**women@CL** (<http://www.cl.cam.ac.uk/women>) is a major initiative relevant for many aspects of the submission. **women@cl** was established in 2003 with the goal of supporting women in the Computer Laboratory (undergraduate and graduate students and staff) and helping “women to aspire to leadership positions in both academia and in industry”. **women@cl** holds weekly activities in term time. Lectures with an average attendance of 40-50 (female and male) are given by women who are experts/leaders in their field. **women@CL** also organises visiting days at sponsor organisations, gaming events, career panels, CV clinics, and informal socialising. Thanks to industrial sponsorship, all events are free. Most are student-led and student-run. The Department officially recognises the role of academic director as a major administrative role and also provides support staff time.

**women@CL**’s ‘Big Sister-Little Sister’ initiative offers informal mentoring and support to new female students by more experienced female students. It was developed (and named) by female students based on a Carnegie Mellon University initiative. It aims to encourage informal interactions within and between undergraduate and postgraduate female students and create a sense of community and an active support network.

**a) Student Data**



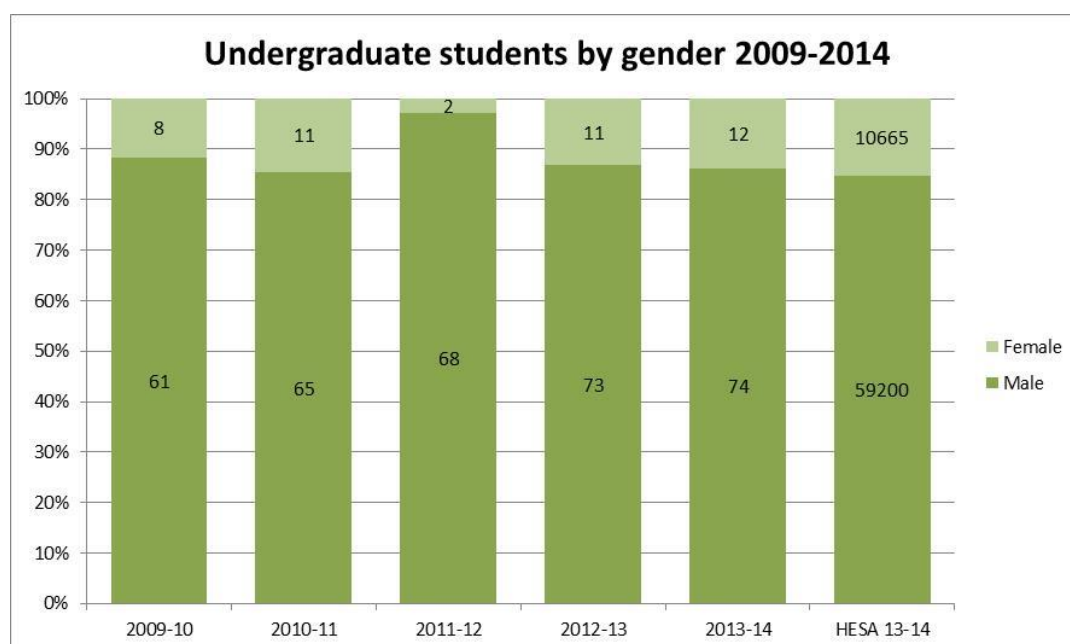
**(i) Numbers of males and females on access or foundation courses**

The Department does not offer access or foundation courses.



(ii) Undergraduate male and female numbers

Figure 1:



The department offers a three-year, full-time undergraduate Computer Science degree. An optional research-oriented fourth year (integrated Masters) was introduced in 2012. *Figure 1* shows numbers of first year students each year. Since 2009, the percentage of women has been roughly constant (12-14%) with the exception of 2011-12 when there were only two female students (3%). We have found no explanation for this anomaly. As discussed further below, undergraduate admissions in Cambridge are organised by 31 colleges. Admissions decisions for each college are made by its Director of Studies for Computer Science and its Senior Tutor.

Nearly all Computer Science courses in the UK have very low percentages of female students (the US, Australia and most European countries are similar). Because of HESA's policy of rounding up numbers, the percentage breakdown is uninformative for individual universities. However it seems that courses with a broad curriculum tend to have a higher percentage of women. The current percentage of female students at Cambridge is 14% (the UK national average is 15.3%).

**Initiatives:**

**women@CL** (discussed above) while women@CL has good visibility among current students, its visibility among potential applicants could be greatly improved.

**Action 1.2: women@CL development**

**Action 2.3: External profile of the Department includes recognition of its initiatives to support women**

**The Coding Summer School** (detailed under Outreach, §v) is an important new initiative which will run for the first time in August 2015.

**Action 6.2: Introduce Summer School for girls**

**Changes to the undergraduate course structure and curriculum:**

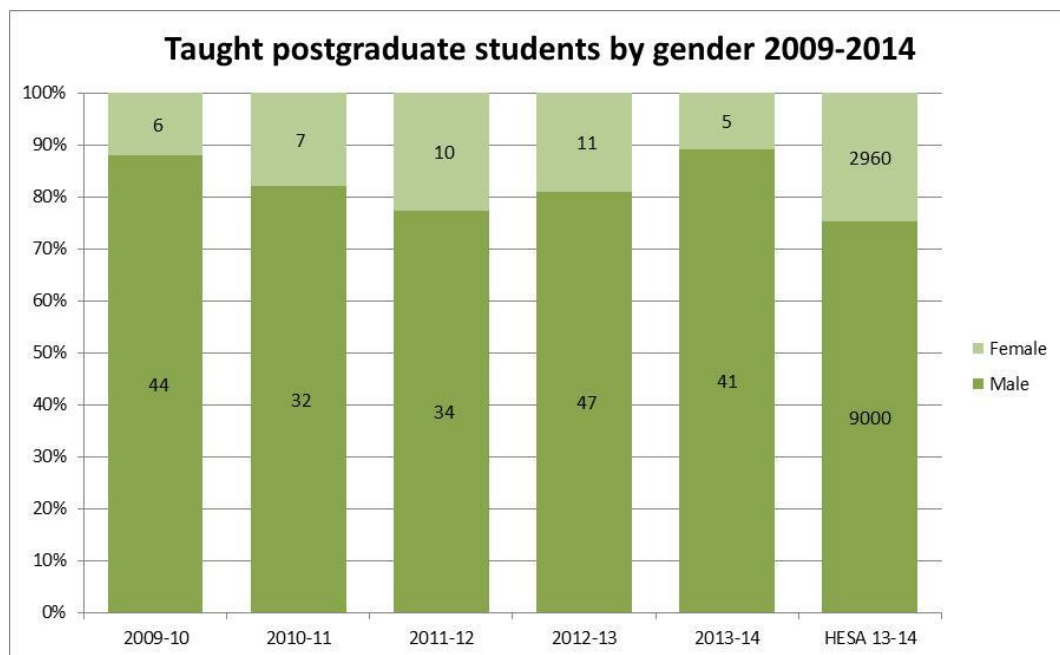
From 2016-17, the undergraduate course will expose first and second year students to a broader curriculum with more options. This is intended to increase diversity, including attracting more female applicants.

**Action 6.3: Restructuring of undergraduate course**

**Overall Action 6.4: Increasing the numbers of female students on undergraduate course.**

(iii) **Postgraduate male and female numbers completing taught courses**

*Figure 2:*



In 2009, the Laboratory introduced a full-time MPhil in Advanced Computer Science (ACS) designed to prepare students for PhD study (in Cambridge or elsewhere). About a quarter of the class continue to a PhD at Cambridge. Unlike undergraduates, graduate students are admitted by the Department. The fourth year of the integrated Masters is very similar to the ACS, so is included here.

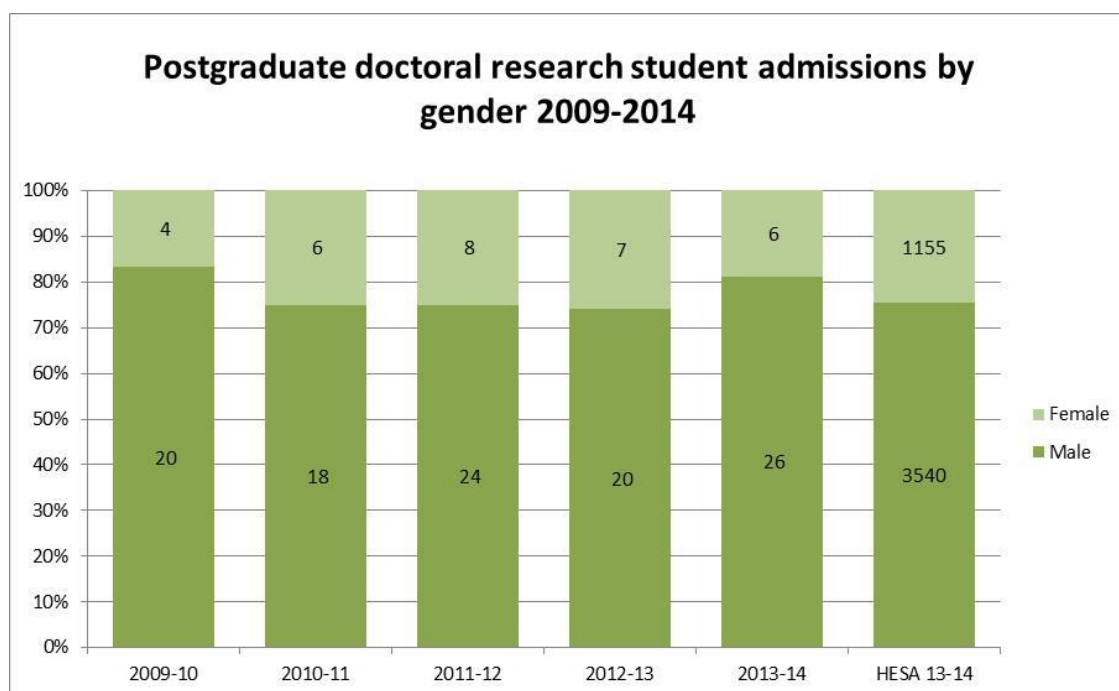
*Figure 2* shows that the proportion of women has varied from 11% to 23%. The overall percentage is 16.5% and although there was a drop in 2013-14, the unofficial 2014-15 figure has increased back up to 17%. Obtaining detailed benchmarking data is even harder than for undergraduates. There are subareas of Computer Science which attract a higher proportion of female students, so Masters courses with a concentration in those areas often have a higher percentage of women than general computer science courses such as ours. Until last year, our figures were comparable to the national average, but there was an increase in the percentage of women in the HESA data for 2013-14 which we have not kept up with.

**Initiatives:** As for undergraduates, increasing the profile of women@CL to potential applicants should improve the numbers of women. We have also started to promote interdisciplinary applications more strongly.

**Action 6.5: Increasing numbers of female Masters students on taught postgraduate course**

(iv) **Postgraduate male and female numbers on research degrees**

*Figure 3:*



All new research students are registered for the Certificate of Postgraduate Studies in Computer Science (CPGS) in the first instance. Having passed the first-year review, students are registered retrospectively for a PhD Degree. Students may alternatively leave at the end of the first year with the CPGS. Of the six students who chose to do this between 2009 and 2014, two were female.

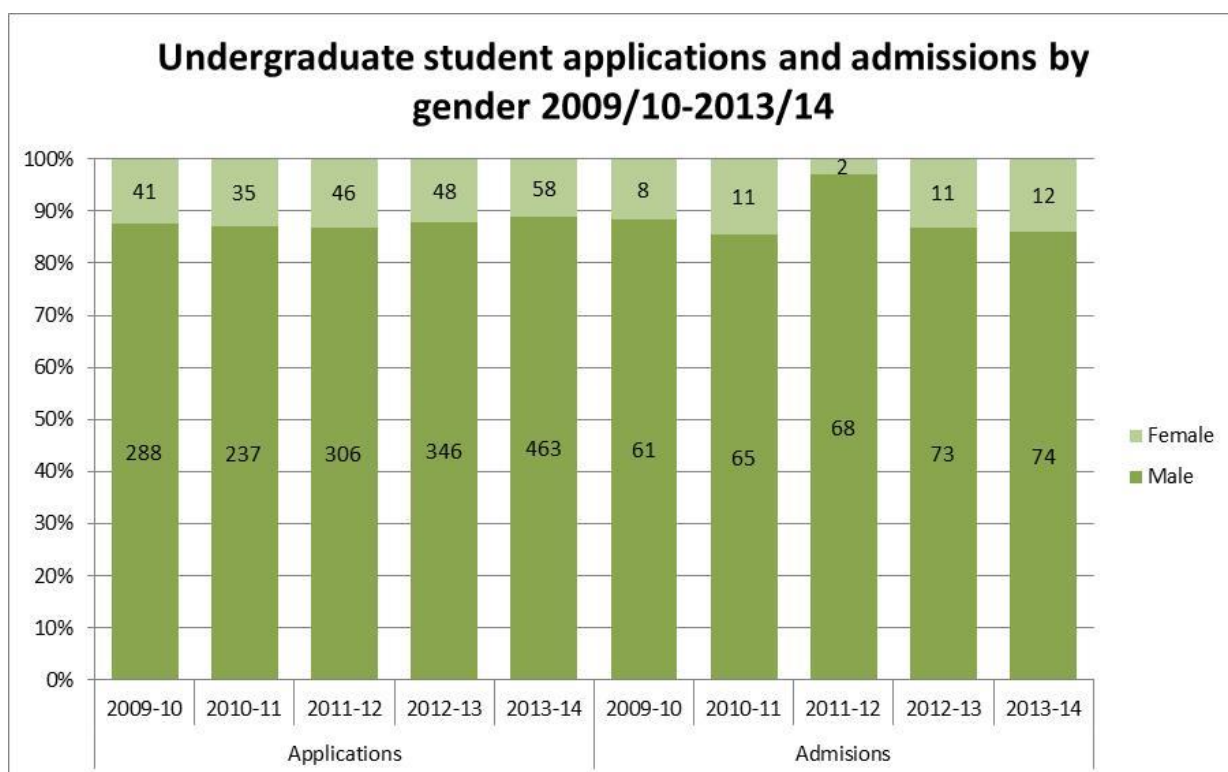
The percentage of female students admitted varied from 17% to 25% (a considerable improvement on 2004-2009 when the average was 13%). Our internal statistics show 24% for the current academic year (2014-15), roughly equivalent to the 2013/14 National benchmark of 25%.

**Initiatives:**

Many PhD applicants have done the ACS so are aware of initiatives to support women in the Department. Attracting more female applicants to the ACS should increase the numbers of female PhD students and the Department will continue to encourage students to apply for a PhD.

**Action 6.6: Increasing numbers of female PhD students**

(v) **Ratio of course applications to offers and acceptances by gender for undergraduate, postgraduate taught and postgraduate research degrees**



**Figure 4:**

**Undergraduate admissions** are organised and controlled by the colleges: the Department has no influence on which students are admitted and only limited access to the detailed data on admissions. For the four years under consideration, the ratio of applications to arriving students has been roughly the same for male and female students, apart from the 2011 anomaly. However a number of factors complicate interpretation. The vast majority of female applicants are from outside the UK and, overall, non-UK applicants are less likely to be admitted than UK applicants. Women are less likely to be accepted by their first choice college but more likely to be selected from the 'pool', which is a procedure whereby applicants squeezed out by the competition at a very popular College may receive an offer from another. There is some evidence female applicants tend to perform less well at interview.

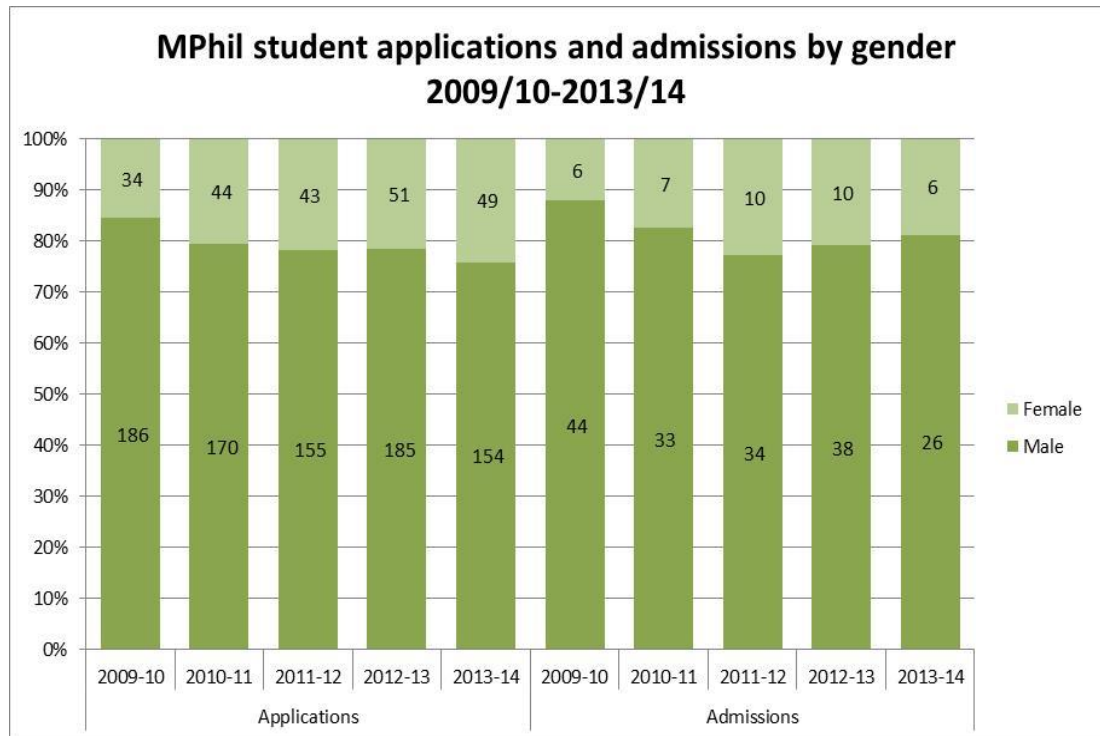
**Initiatives for undergraduate admissions:**

We have had continuing discussion of the issues in the Joint Teaching Strategy Committee (which has representatives from both the colleges and the Department). In addition, as part of the University's Silver action plan, greater engagement with the Colleges will be addressed.

**Action 3.3: Improved monitoring of student admissions and performance**

**Action 4.3: Introduction of unconscious bias training**

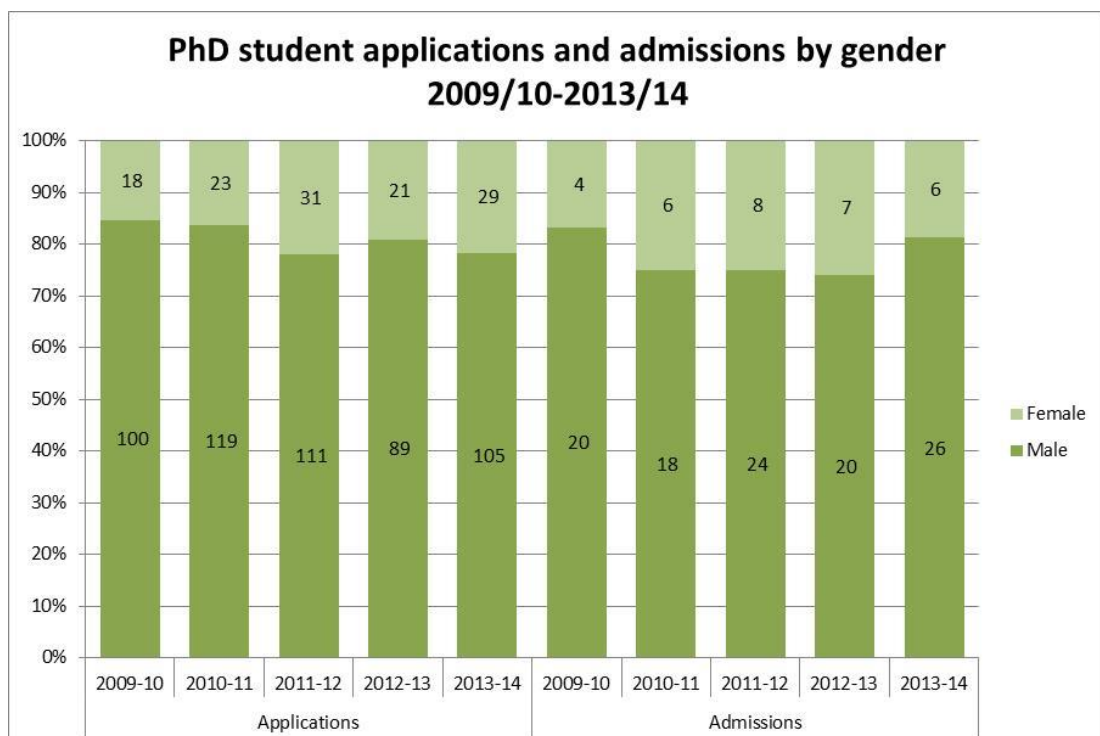
**Figure 5:**



**MPhil admissions:** *Figure 5* shows the number of arrivals: acceptance for the MPhil has several stages so we monitor arrivals instead. Overall, in the last three years, the arrival/applicant percentage was between 18% and 20% for female and male students.

**Action 6.5: Increasing numbers of female students on taught postgraduate course**

**Figure 6:**



**PhD admissions:** Over the last five years, there has been no disparity between the acceptance ratios of female and male students (19% of applicants and 22% of acceptances were female). Of the 38 female students offered research places during the period sampled, 31 (82%) were eventually admitted having been successful with funding applications and meeting the other conditions. This is higher than the equivalent figure for men (80 admissions after 139 offers: 58%). The difference probably reflects differences in funding between research groups due to success with grant applications: some groups (chiefly the more interdisciplinary ones) attract a much higher proportion of female applicants.

Everyone involved in admissions will be asked to participate in E&D and unconscious bias training.

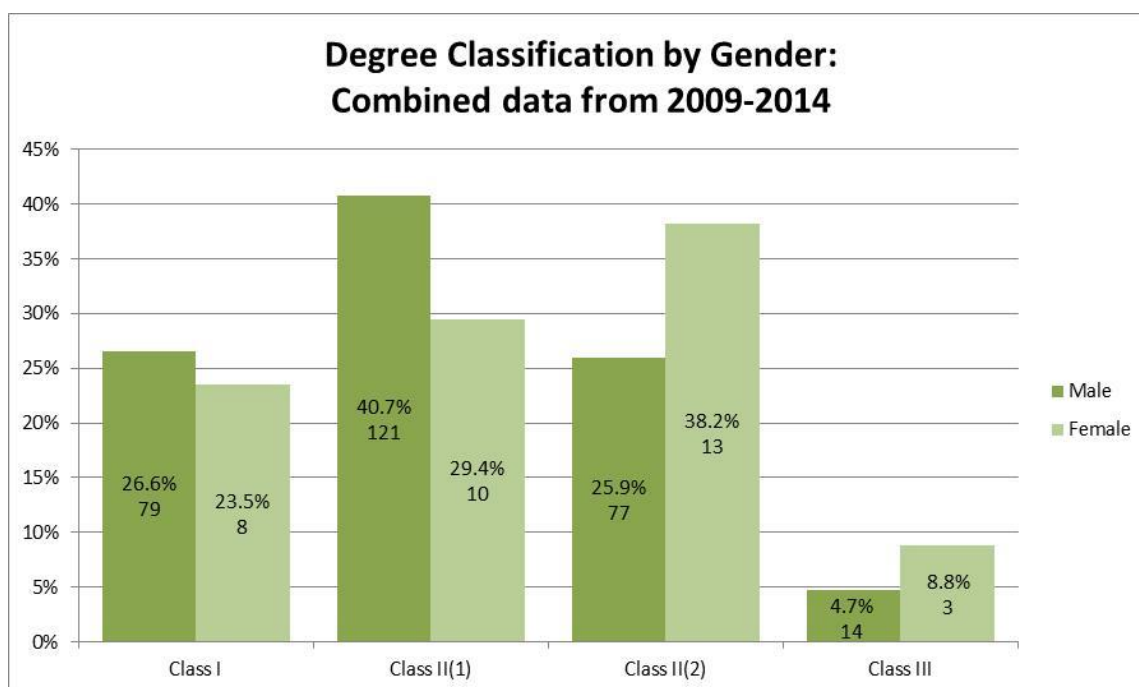
**Action 4.1: Increase E&D training completion rate**

**Action 4.3: Introduction of unconscious bias training**

**Action 6.6: Increasing numbers of female PhD students.**

(vi) Degree classification by gender

Figure 7:



Undergraduate degree performance is shown in *Figure 7*, combining data from 2009/10 to 2013/14 since the number of female students is so small (34 in total). The percentage of firsts for male and female students is similar and a female student had the top final-year marks in 2012. However there is an excess of II(2) degrees awarded to women compared to II(1), although the numbers of female students are very low. The survey responses from female undergraduates (section 5) suggest some possible concerns which will be followed up via focus groups.

**Action 3.1: Student consultation**

**Action 3.3: Improved monitoring of student admissions and performance**

**Action 5.1: Determine how to improve undergraduate support in conjunction with colleges**

**Postgraduate taught**

The failure and withdrawal rate on the Masters courses is very low: no female students withdrew or failed in the years sampled. The proportion of Distinction grades awarded to male and female students has been roughly equal. In the PTES (Postgraduate Taught Experience Survey) 2014, students recorded 96% overall course satisfaction.

**Initiatives:**

All female MPhil students are invited to join women@CL and are assigned a research student as a 'big sister', who acts as a mentor.



**Research**

The performance of male and female research students in the Department is very similar. Of the 35 female students admitted since 2009-10: 9 submitted (26%) and have been approved for the PhD and 69% are still active; 2 students left after year 1 with the CPGS; no female student was deregistered. Of the 127 male students admitted over the same period: 33 submitted (26%) and have been approved for the PhD and 68% are still active; 4 male students left after year 1 with the CPGS; 4 male students were deregistered.

In the PRES (Postgraduate Research Experience Survey) 2013, the doctoral students reported 92% satisfaction (100% for female students).

**Initiatives:**

All female research students are invited to join women@CL and are assigned a more senior research student as a mentor. They themselves will become 'big sisters' to new students. women@CL has introduced Monthly Talklets given by female researchers in the Department (attendance has been between 40-50 people). The second Oxbridge conference for women in Computer Science had 70 women attending in total.

## Staff data

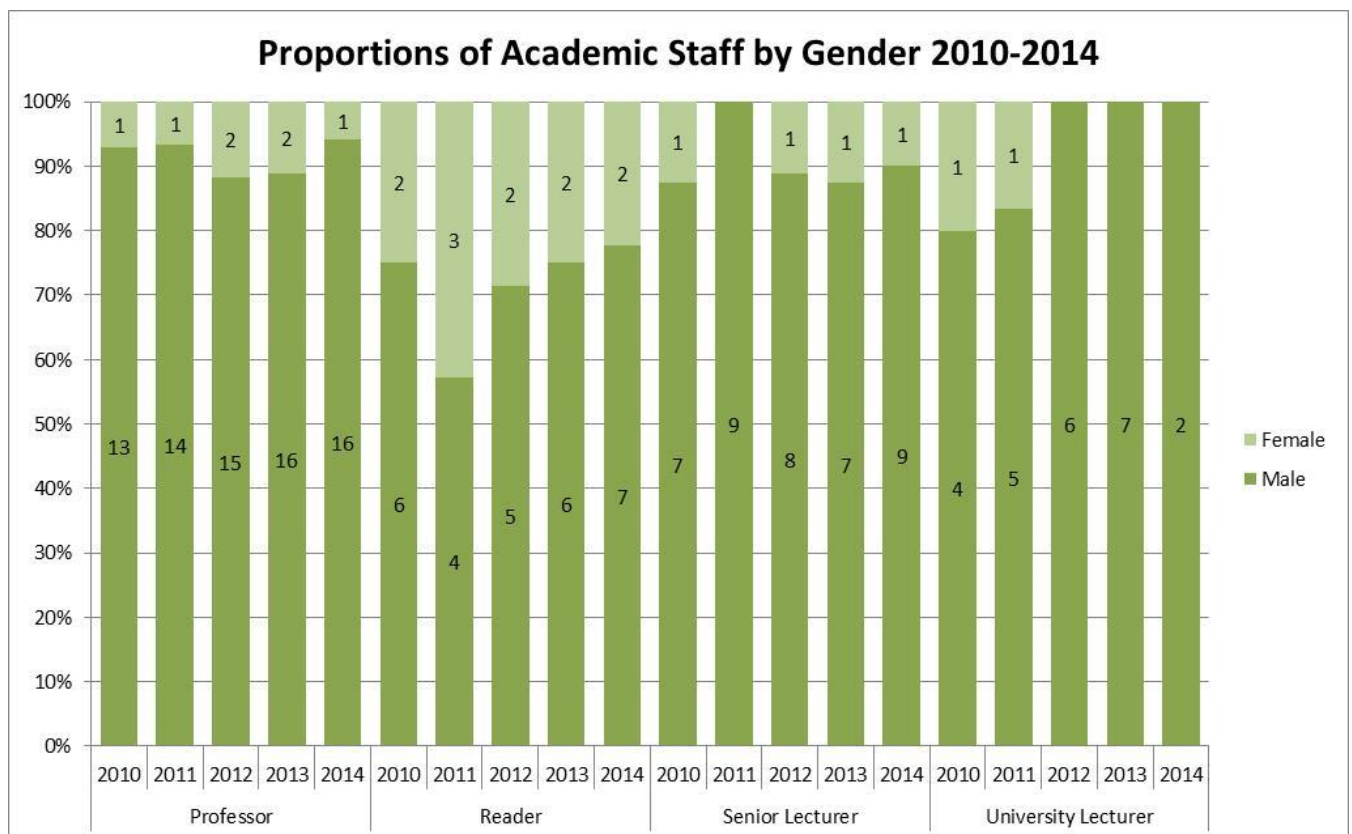
### (vii) Female:male ratio of academic staff and research staff

*Figure 8* shows the relative proportions of female:male academic staff. The Laboratory has a highly-skewed gender profile, with the worst percentage being for established academic staff. A similar skew is found in other UK Computer Science departments, but a few do much better.

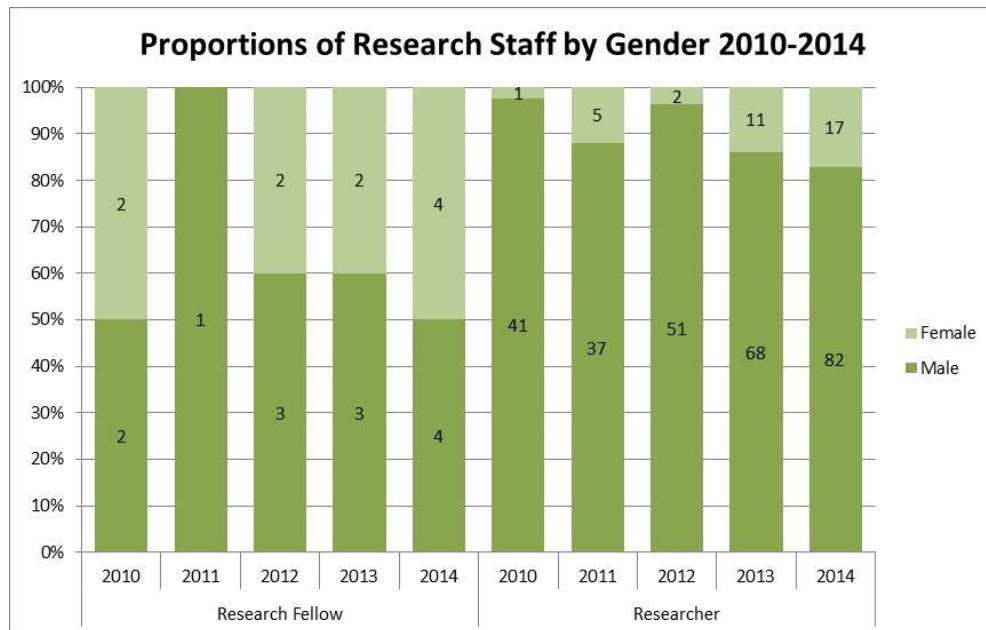
The Department has found it difficult to attract female applicants for lectureships. Only one woman meeting the minimum criteria applied for the last two vacancies.

Those women who have been recruited are now senior lecturer, reader or professor and none have resigned. One Professor retired in 2014.

*Figure 8:*

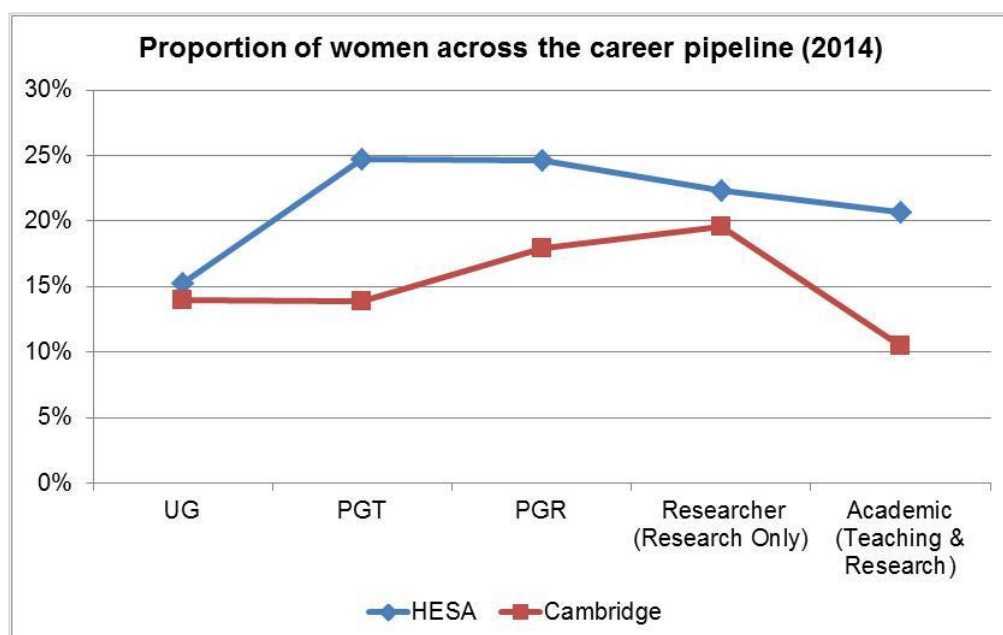


**Figure 9:**



Since 2010, the number of female academic staff decreased from 5 to 4, due to retirement. The number of female research assistants/associates improved significantly from 1 to 17 (<3% to 17%). Over the four year period, 11% of the research assistants/associates were female and 43% of the research fellows. In 2014, 17% of the researchers were female and 50% of the research fellows. The substantial fluctuation reflects the fact that certain subareas (predominantly more interdisciplinary ones) generally have more female researchers. Thus the numbers can change substantially depending on the balance of grant funding.

**Figure 10:**



In comparison with the national averages across the career pipeline, the proportions of women at Cambridge are lower.

Comparison of percentages of women with the School of Technology as a whole and reveals similar proportions of women:

- 10.5% Academic Staff in the Department, 11.4% in School of Technology.
- 6% Professors, 6.4% in School of Technology.
- 20% Researchers, 25% in School of Technology.

**Initiative:**

After discussion at staff meetings, an active search procedure is being developed for the latest lectureship, led by the Chair of the selection panel. The Department's appointment panel has been proactively seeking applicants and encouraging them to apply for the latest Lectureship position. This has resulted in multiple emails, phone calls and face-to-face meetings with interested applicants wanting further details (>50% women).

The Department is in a phase of growth and will be seeking to continue to address this in further recruitment rounds via proactive recruitment processes which specifically target women.

**Action 3.5: Monitoring staff recruitment and promotion**

**Action 6.7: Proactive staff recruitment process to improve diversity of applicants**

(viii) Turnover by grade and gender

Turnover						
		2009-10	2010-11	2011-12	2012-13	2013-14
Researcher (including Fellows)	Female	(2) 66.7%	(1)16.7%	(0)0.00%	(3)21.4%	(4)19.0%
	Male	(17)39.5%	(18)47.4%	(15)27.8%	(19)26.7%	(21)24.4%

Average Turnover		
	Male	Female
Academic	(2)1.2%	(1)5%
Researcher	(90)33.2%	(10)24.7%

Staff turnover amongst academic staff is minimal, with one male member of staff leaving in 2013/14 to work in industry, and the other was a temporary lectureship. The data shows that the turnover of female staff over last five years is lower than their male counterparts. The Department adopts the University's policy of employing staff on open-ended contracts whenever possible, but there are projects where there is no continuation of funding and an individual researcher's specialist skills can no longer be accommodated.

When the member of staff is approaching the end of a fixed-term contract, the Departmental Secretary contacts the individual to provide detailed advice and specific options, in line with the University's Redeployment policy.

**Action 3.2: Staff consultation**

**Action 3.4: Collect and monitor destination data for staff and students**

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#### 4. Supporting and advancing women's careers

##### Key career transition points

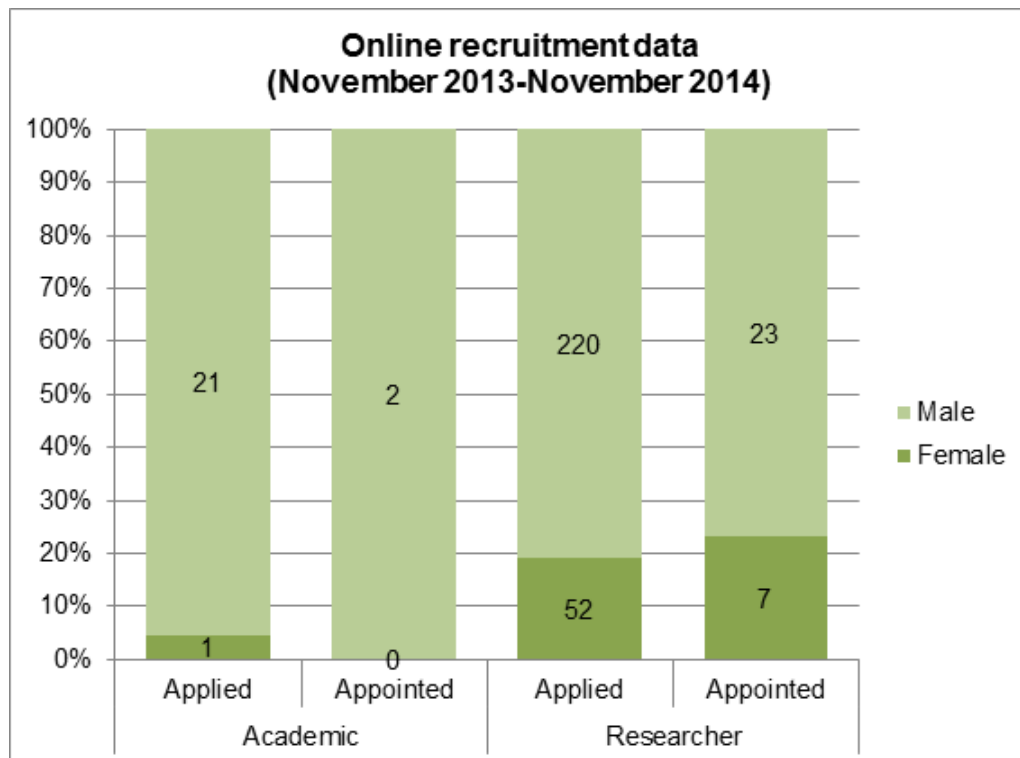
- a) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

(i) Job application and success rates by gender and grade

In the past, the Department has not held recruitment data based on success rates by gender. However, we have recently adopted the University's on-line recruitment administration system which allows us to review this data and which should be more informative over a longer period of use.

These early statistics show that the proportion of female researchers appointed is in line with applications (19% of applications, 23% of appointments).

Figure 11:



Action: 6.7 Proactive staff recruitment process to improve diversity of applicants

(ii) Applications for promotion and success rates by gender and grade

The Department has a considerably higher success rate for academic promotions than the University average. There is no statistically significant difference between female and male promotion rates (about 80%). Precise success rates cannot be given in this submission for reasons of confidentiality: because of the small number of female academic staff, individuals who had failed to obtain promotion could be identified. In the last five years, all members of the department who failed to

achieve promotion at the first attempt reapplied within one or two years and were then successful. Promotion is available to academic staff in the Department through the University's Senior Academic Promotions (SAP) scheme. In line with the SAP guidance, the Head of Department, with the assistance of appropriate senior colleagues reviews the position of all eligible academic staff in Department with a view to encouraging those considered to have a good prospect of success in the exercise to apply. Those who make an application are encouraged to discuss their applications with the Head of Department and other senior academic staff and are made aware of the SAP CV Scheme.

The University's Senior Academic Promotions process has been updated with a focus on enhancing gender equality. The Senior Academic Promotions (SAP) CV Scheme, available to all applicants, aims to encourage and support more female academics to apply for promotion within the University. It provides an opportunity for CV and promotion paperwork to be reviewed by an experienced academic before it is submitted. Specific support for women considering promotion includes annual programmes covering a range of themes from gaining recognition to career development provided by the Women's Staff Network, Senior Gender Equality Network and Personal and Professional Development (PPD).

The SAP criteria explicitly take into consideration the responsibilities for teaching, research and general contribution, although at reader and professorial level the research criterion is given triple weighting (compared with single weighting for teaching and general contribution). Candidates must pass a threshold for all three categories to be considered for promotion. It also offers the opportunity to request that personal circumstances be taken into account when evaluating an application and such circumstances have been considered on a number of applications made recently in the Department.

From 2013 the University has run SAP Open Fora giving potential applicants the opportunity to hear more about the process and ask questions. These are hosted by the Pro-Vice Chancellor for Institutional Affairs.

The procedures for promoting research staff (and deciding on grades for new research staff) are much less well codified at university level than the procedures for Senior Academic Promotions. The Department has historically left such decisions up to PIs, with the Faculty Board overseeing promotion to (and appointment at) Senior Research Associate level based on PI recommendations, plus applicants' CVs. This procedure can only work when a department is sufficiently small and close-knit that the standards are essentially shared. In 2014, as a result of the Athena SWAN process, it became apparent that, as the Department has grown, divergences in practices have emerged between research groups. Since the different research groups have strikingly different proportions of women, this could have led to indirect bias. Since the last submission we have taken measures to ensure fairness in grading and promotion for researchers by producing and circulating a policy, based on the University's guidelines, which can be found on the Laboratory's website and from a link on the Athena SWAN pages.

The University has a new framework and procedure for senior researcher promotions (Senior Research Associate (SRA) to Principal Research Associate (PRA) and Director of Research (DoR)) which runs annually in parallel to SAP.

Permanent academic staff are entitled to one term of sabbatical leave on full pay for each six terms of service so that one year can be accumulated by six years of continuous service. Most staff make full use of this entitlement to refresh their research outlook and expertise, often at other universities overseas and for which the University or Laboratory frequently assists towards travel costs.

**Action 3.5: Regular review of staff recruitment and promotion**

**Action 4.4: Monitor and analyse RA promotion and recruitment process**

**Action 5.3: Appraisal satisfaction**

**b) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.**

**(i) Recruitment of staff**

Vacancies are advertised using the University jobs webpage and Jobs.ac.uk. The Department has difficulty attracting female applicants to positions and as mentioned in Section 3.a.vii, this is something we are addressing via an active search process. It has been agreed that we should actively encourage appropriate females to apply for posts and highlight family friendly policies, our commitment to Athena SWAN and women@CL in information for potential applicants. The Department's recruitment procedures are carried out consistently and transparently to ensure we comply with the University's policies and procedures, however it was agreed that we should continue to ensure that our selection and interview processes comply with Equal Opportunity policies. All recruiting staff and Appointment Committee members are required to undergo the University's Equality and Diversity training. The gender representation on the Appointments Committee panel is currently 2 females to 5 males. The Secretary to the Committee is a female (academic related).

**Action 3.5: Regular review of staff recruitment and promotion**

**Action 4.1: Increase E&D training completion rate**

**Action 4.2: Increase recruitment training**

**Action 4.5: Effective communication about Athena SWAN**

**Action 6.7: Proactive staff recruitment process to improve diversity of applicants**

**(ii) Support for staff at key career transition points**

A key attrition point in the Department is the researcher to academic transition. The University has a Director of Post-Doctoral Affairs who champions the cause of post-docs in Cambridge and the office of Post-Doctoral Affairs has piloted a number of researcher mentoring schemes in 2014. At departmental level, we have set up a forum for post-doctoral researchers which, among other things, will look at ways to



support researchers' career development. The specific needs of female post-docs will be considered as part of this process. women@CL has also been widened to cover post-doc staff. Specific actions will depend on the feedback we get from post-docs (via the forum): this might include developing an active mentoring scheme.

From 2015-16 onwards, two career panels run by women@CL (one for academic careers, the other for careers in industry) aimed at women computer scientists will be held in the Department.

**Action 3.1: Student consultation**

**Action 4.4: Monitor and analyse RA promotion and recruitment process**

**Action 4.5: Effective communication about Athena SWAN**

## **Career development**

- a) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

### **(i) Promotion and career development**

The Department has a good track record of training its post-doctoral researchers to be excellent independent researchers with successful careers subsequent to their time at Cambridge. We will introduce a formal procedure of recording destinations of post-doctoral staff. However, to give some indication of the track record of the Department's researchers we have collected some informal data. This shows in the last 5 years we have had 12 fellows funded by the Royal Academy of Engineering, the Royal Society, the Engineering and Physical Sciences Research Council and the EU. Details of their career journeys are as follows:

5 are currently still in the Computer Laboratory  
2 are lecturers at the University of St Andrews  
1 is Assistant Research Professor at the IMDEA Software Institute, Madrid  
1 is Lecturer at the University of Bristol  
1 is an Independent Research Group Leader at the Max-Planck-Institut fur Informatik  
1 is Maitre de Conferences (roughly equivalent to a Senior Lecturer) at the Universite Paris Diderot  
1 is Reader at the University of Cambridge

The University adheres to the Concordat to Support the Career Development of Researchers, and the Heads of Department at the Laboratory and across the School of Technology are committed to providing support for Early Career Researchers. These researchers have a wide variety of backgrounds, prior experiences and future goals. Therefore, a variety of training opportunities are provided working within the standards of the Employment and Career Management Scheme for

Researchers. These range from short classes considering career issues to the more intensive Emerging Research Leaders Development Programme. Access to a Career Management Tool and specialised advice from the Careers Service are also available.

The Department has fully implemented the University's Staff Review and Development (SRD) (appraisal) scheme and has had an excellent success rate in participation in the appraisal process but it has been commented that some appraisers do not take the process seriously and as a result appraisal could be viewed as unproductive. It was agreed that we should consult further with staff and we have suggested staff undertake appropriate training and encourage them to ensure it is a meaningful process. We have also drawn their attention to the University's PPD online training module to support SRD.

**Action 3.4: Collect and monitor destination data for staff and students**

**Action 3.2: Staff consultation**

**(ii) Induction and training**

The Department aims to offer support to new starters from initial offer to actual start date, as well as in the early period of employment. The induction process is informal and the panel recognises that this is an area that requires some updating. It was agreed that we should ensure the induction process informs staff of the changing policies and support available within the University, including awareness of the flexible attitude of the Department towards individual's needs. It should also make staff fully aware of family friendly policies and personal and professional development opportunities, and equality and diversity training. The current induction procedure includes the introduction of new staff to key individuals, such as administrative and computing support staff, and points new starters to information on the Department's website. The University also offers a wider Induction course to the University and information is given to each new starter.

In the last four years the following training has been undertaken by academic and research staff and research students:

**University Professional Development Training Uptake**

	Female	Male	% female
Academic	4	9	31%
Researcher	21	93	18%
Research Student	6	115	5%

Training undertaken by academic and research staff includes supervision, appraisal, communication, teaching and leadership programmes. For research students there was a greater focus on presentation and communication skills.

Although female research students and researchers attend less University training than their male counterparts, there is high attendance at departmental professional

development opportunities run by women@CL. We will highlight and encourage all staff to attend University run development courses.

## **Action 5.2: Review and update induction process**

### **(iii) Support for female students**

Two female students have been offered financial support whilst on maternity leave. This is an informal process but wherever possible, the Department aims to find funds for this purpose. 1 MPhil student has recently taken maternity leave and has returned to continue with a PhD. She has taken the opportunity to work flexibly.

As referred to throughout the submission, one of the Department's important initiatives to support female students is women@CL. It was established in 2003 with the goal of providing "... local, national and international activities for women engaged in computing research and academic leadership. ... to help women aspire to leadership positions in both academia and in industry and to support them in their careers...". women@CL holds weekly activities in term time to encourage women to engage and lead within academia and industry as well as informal activities to encourage openness and support within the scientific female community (e.g. dinners) and designated activities to improve skills and enable research based open discussion. Other student led activities are resourced by the Department.

An aim of the student survey was to identify any further support female students might need. Here we give additional data on the survey which was carried out online as part of the Athena SWAN self-assessment between 15/1/2015 and 2/2/2015. The survey was aimed at undergraduates, Masters students and PhD students in the Department and was designed by a subgroup of the self-assessment team. Several different question sets were discussed by members of the SAT and by other members of the Department, in particular members of women@CL, before the final choice was made. The final survey had 42 questions and included a number of free-form text entry boxes. The response rate was 43% (192 out of 442 students). 18% of respondents identified as female, 79% male and 3% chose the 'prefer not to say' option. The response rate was roughly equivalent for female and male students.

For many of the questions there was no significant disparity between female and male students. Some of the more striking findings:

- 90% of male and female students (both postgraduate and undergraduate) feel comfortable asking questions in supervisions (this refers to small group teaching for undergraduates, research supervision for postgraduates). However women in particular are less comfortable about asking questions in lectures (73% of female undergraduates and 25% of postgraduates indicated they were uncomfortable, as opposed to 52% and 12% of males in those groups).

- Both female and male postgraduate students generally feel comfortable about giving talks about their work (77% female, 70% male). Undergraduates are less confident, especially women.
- 90% of female Postgraduates (compared to 67% males) agree they have opportunities to showcase their work and research.
- 57% of female students agreed they had sufficient opportunity to engage with role models in the Computer Laboratory as opposed to 46% of male students.
- Text responses show high awareness of women@CL.
- There was some negativity in response to some of the questions about activities relating to women in the department. The most extreme example was that 19% of men but 0% of women thought that an unconscious bias workshop would be unhelpful/very unhelpful.
- The question “Do you agree that the percentage of women in the Computer Laboratory is too low?” had 77% agreement among female students and 76% among male (6% of female and 8% of male students disagreed).
- 8 out of 15 female undergraduates and 6 out of 18 female postgraduates answered “yes, occasionally” to the question about whether they had ever felt uncomfortable because of their gender.

We have indicated in other parts of the submission where we have used survey results to help design actions. However, the results suggest the need for follow up in the form of focus groups. One has just been carried out, but the results are not yet written up.

**Action 1.2: women@CL development**

**Action 2.2: Improve visibility of women**

**Action 3.3: Improved monitoring of student admissions and performance**

**Action 5.1: Determine how to improve undergraduate support in conjunction with colleges**

## Organisation and culture

### a) Male and Female representation on committees

In many cases, membership of committees is mandated alongside specific administrative roles. For instance, the role of Deputy Head of Department responsible for teaching involves membership of six of the committees. This role has recently changed from female to a male and so contributes to the lower representation of women faculty on committees. In the previous application last year, the DHoD was female and so the data gave a very different perspective.

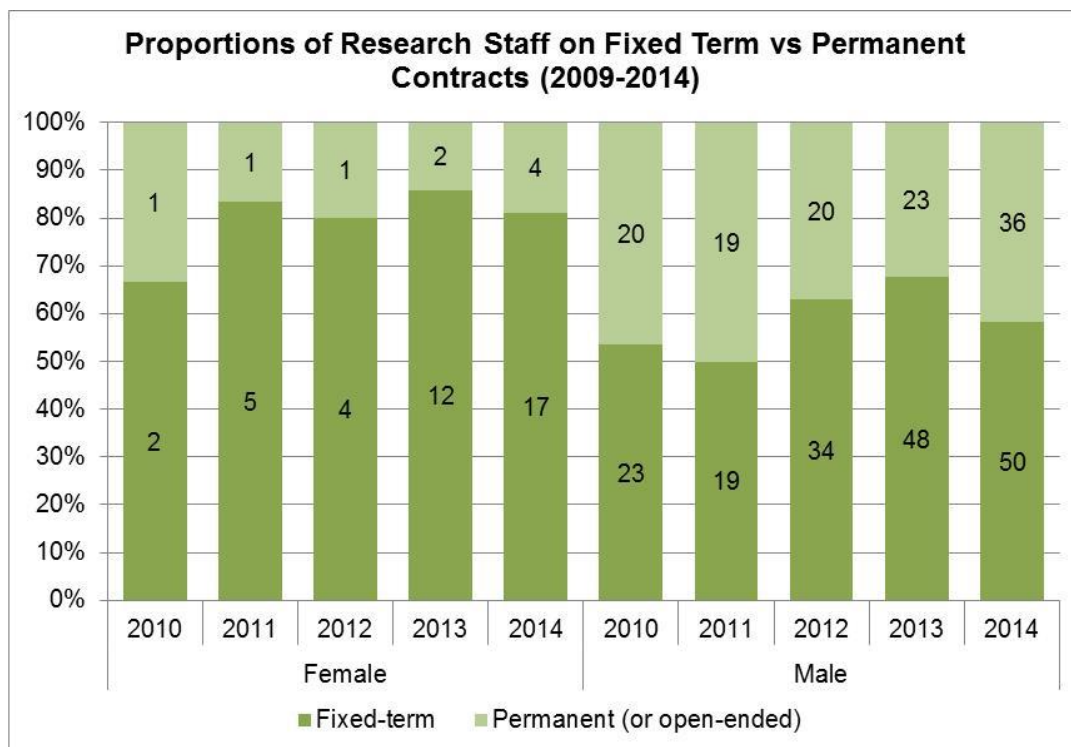
Other members are selected with a view to ensuring the committees have the right range of expertise and an appropriate balance between different non-voting grades of staff.

DEPARTMENTAL COMMITTEE	2014/2015		2013/2014		2012/2013	
	Female	Male	Female	Male	Female	Male
Faculty Board	7 (35%)	13	7 (35%)	13	7 (35%)	13
Degree Committee	4 (24%)	13	6 (35%)	11	5 (28%)	13
Undergraduate Teaching Management Committee	4 (36%)	7	2 (25%)	6	3 (37.5%)	5
Joint Teaching Strategy Committee	4 (36%)	7	5 (42%)	7	4 (36%)	7
Health and Safety Committee	5 (55%)	4	5 (55%)	4	5 (62.5%)	3
Appointments Committee*	2 (28.5%)	5	2 (28.5)	5	2 (28.5)	5
Faculty Promotions Committee*	2 (43%)	4	2 (43%)	4	2 (43%)	4
Ethics Committee	2 (40%)	3	2 (50%)	2	2 (50%)	2
Outreach Committee	3 (60%)	2	3 (60%)	2	3 (60%)	2
Graduate Education Committee	2 (33%)	4	2 (33%)	4	2 (33%)	4
Advanced Taught Courses Committee	3 (37.5%)	5	4 (50%)	4	3 (37.5%)	5
Staff Student Consultative Committee (undergraduate forum)	10 (62.5%)	6	7 (47%)	8	6 (40%)	9
Graduate Students Forum	3 (25%)	9	1 (11%)	9	1 (9%)	11
Post-Doc Forum	5 (50%)	5	Forum not in operation		Forum not in operation	

\* Secretaries to the Committee (academic-related staff) excluded from membership

(i) Female:male ratio of research staff on fixed-term contracts and open-ended (permanent) contracts

Figure 12:



We are pleased to have achieved a gradual increase in the appointment of female research staff. The fact that a high proportion of those are on fixed term contracts is largely due to the University generally giving open-ended contracts to research staff only after two years employment. Given the rapid recent increase in the appointment of female research staff, many female staff have been in post for less than two years and hence are currently on fixed-term contracts, but we anticipate most of them will be transferred to open-ended contracts next year. We will continue to monitor fixed term contracts by gender.

- b) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.

**(i) Representation on decision-making committees**

The table showing membership of Departmental Committees indicates the female:male ratio. However, it should be noted that all senior administrative staff supporting these Committees are female. Female members of academic staff are encouraged to spread their time in order to ensure an appropriate gender representation relative to the proportion of staff but the Department is concerned that this can cause overload. Following discussion with senior female staff, it has been agreed that attempting to include female academic staff on all committees is not in their best interest. The Department tries to help address the gender balance by involving senior administrative (academic-related) female staff in all decision making committees.

**Action 5.7: Effective workload model for established academic staff**

**(ii) Workload model**

As the Department has grown in size, the previous informal methods for assessing workloads when allocating administrative responsibilities have ceased to work and we are now experimenting with more explicit methods involving a combination of departmental data (based on committee membership, administrative roles, teaching etc.) and self-reporting. This procedure will be gradually refined. Career development needs are always taken into consideration when assigning the more significant roles.

**Action 5.7: Effective workload model for established academic staff**

**(iii) Timing of departmental meetings and social gatherings**

Following consultation with the academic staff, the Department is committed to ensure that departmental meetings are scheduled to take place during the working hours of 09.00 – 16.00. Due to the morning lecture timetable, many departmental meetings take place in the afternoon. Where meetings are set up ad hoc, Doodle Poll is used with the aim of ensuring all members can attend. There was a feeling amongst some of the panel that the Department should work towards more flexibility for carers with young children and take into consideration primary school hours. However, given the lecture timetable, it has proved difficult to allow staff both the opportunity to take a lunch break and finish meetings by 15:00. Lunchtime meetings are a possibility but some staff have commented that they prefer the opportunity to have a break.

We have been made aware that one or two Research Groups have not taken into account the individual needs of members and so it was agreed that Research Groups will also be asked, where possible, to hold meetings between the hours of 09:00 – 16:00. The Department continues to discuss the timing of departmental

meetings and seminars with an aim to be supportive of all staff with caring responsibilities.

#### **Action 5.4: Timing of meetings**

#### **(iv) Culture**

The Department aims to create a strong sense of community and comments from staff that “the Computer Laboratory is a really nice place to work” are commonly reported. Over the past two academic years the Department has been working to enhance this by creating one “big social tea” event per term. These are aimed at all building users (staff, students and official visitors) and are timed at 15.30 in the hope that attendees can spend around 30 minutes talking to others that they don’t usually collaborate or work with. Full attendance is actively encouraged and free drinks and food are provided.

There is a range of other opportunities for formal and informal interactions between staff groups and students. These include Happy Hour (social gathering run by PhD students and post-doc staff and open to all), free small group running and pilates classes and research group lunches. These activities bring together students, researchers and staff.

At the very start of the academic year, women@CL actively invites all new female undergraduate and postgraduate students (little sisters) to attend the welcoming/ice-breaking event where they are paired with existing students or post-docs (big sisters) in order to provide peer-to-peer informal mentoring opportunities and a friendly introduction to the Department. women@CL continues to provide events for the sisters to meet and continue their relationship if they so wish.

One of our action points from the last submission was to investigate how women@CL should develop. We recognised a need to ensure that the activities of the Athena SWAN self-assessment panel, women@CL, the new post-doc forum and the existing graduate student forum and staff-student committee work together to ensure that women's voices are properly heard and indeed that this is seen as an integral part of the Department. Since then, a representative from women@CL has been included on the post-doc and graduate students forum and the staff-student consultative committee. Undergraduate, MPhil and post graduate students were already represented on Faculty Board, this has been widened to include a representative from the post-doc forum. Currently 3 of these 4 representatives are female.

Informal conversations with female colleagues by members of the panel have not suggested any general trend of discrimination. The only issue of concern is whether the researchers with an interdisciplinary background feel fully part of the Departmental culture. We have reports of occasional negative comments relating to areas which are seen by the speakers as being outside "core" computer science. While this could affect both female and male researchers, there is a tendency for the interdisciplinary areas to have a better gender balance than the rest of the



Department and hence this might result in women being more likely to feel they are treated as outsiders. A staff survey has recently taken place and this will be investigated further when the results are made available. The Athena SWAN panel will also continue to monitor this issue.

**Action 1.2: women@CL development**

**Action 2.3: External profile of the department includes recognition of its initiatives to support women**

**Action 3.2: Staff consultation**

**Action 4.5: Effective communication about Athena SWAN**

**(v) Outreach activities**

There is a wide range of departmental outreach activities from national broadcasts, school visits, competitions, presentations to training & workshops. All outreach activities are now recorded and highlighted on the departmental Athena SWAN webpage. Currently 37 separate activities are included, 30% of which were led by women.

The Computer Laboratory runs annual open days which are aimed at opening the eyes of potential students who may not have considered computer science as an option for studying at university. It especially concentrates on targeting girls and positively encourages females to apply. The open day show-cases the work of the various research groups within the Department and tries to use undergraduate students to act as ambassadors as well as various academic staff such as Directors of Studies.

The Department is very committed to ensure representation at the Oxford and Cambridge Student Conferences and actively searches for females to talk at these events. Attendance at these conferences is between 100-150 people with a 1:7 ratio of females to males. The conferences are designed to provide up-to-date information on the course content and structure, including what Computer Science represents, how it is viewed at Cambridge, what lectures and materials they will study and the skills and job prospects they will achieve after their degree. The events are aimed at students who have already completed their GCSE/Standard Grade (or Intermediate 2) examinations and are now undertaking further study. Attendees at these events travel themselves from all corners of the UK to listen to the presentations and find it an excellent opportunity to ask questions. At a recent conference in March, feedback given by two females to one of our lecturers was 'they loved the talk and will definitely apply to Cambridge over Oxford'.

A major initiative of the Department to address the low numbers of female students is an inaugural Coding Summer School, running in August 2015. This will be one week long, for girls only, aged 15-19 with little to no programming experience. The aim is to introduce them to Computer Science, going from zero experience to building a fully working computer game, then all the way to implementing it on physical flying drones. Guest lectures from industry and academia will also be featured. Sponsorship was obtained from 4 major companies

for 80 subsidized places, subsidized accommodation was secured for at least 40 rooms in historical Cambridge colleges, and the Department has funded two Research Assistant positions to develop the programme content. We hope this summer school will increase female applications to Cambridge and introduce girls to Computer Science in general. To our knowledge, this is the first initiative of this scale.

A number of our academic staff, research associates and post graduate students which include at least one female member of staff regularly visit schools, where they run code clubs and programming workshops. As a result of the Athena SWAN process, details of all outreach activities involving departmental staff are collated and displayed on our outreach activities website.

The Industrial Supporters' Club is the vehicle by which the Computer Laboratory helps companies (from small scale local businesses and start-ups to multi-national corporations) engage with the Laboratory and recruit its students. The Club provides a number of offerings including the annual recruitment fair. The fair, held at the Laboratory, provides both undergraduate and postgraduate students with an excellent chance to find out about career opportunities (and internships).

**Action 2.1: Collecting and making visible information about activities and resources**

**Action 6.1: Targeted outreach for undergraduates**

**Action 6.2: Summer School for girls**

## Flexibility and managing career breaks

- a) Provide data for the past three years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance and how they have affected action planning.

### (i) Maternity return rate 2010-2014

Staff Group	Maternity return rate
Academic UL/SL	(100%) 1/1
Academic Related	None
Assistant grade 4	0% 1/0
Researchers grade 7	(100%) 2/2

The maternity leave data from 2010 – 2014 shows 100% return rate for Academic and Research staff. The 1 member of assistant staff who took maternity leave emigrated to Australia and so did not return to the Department. One member of assistant staff is currently on maternity leave but this is not included in the statistics as it falls outside the formal data period. She has informed the Department that she intends to return to work full-time.

There is only one member of established academic staff who has taken maternity leave in the last 15 years. That particular member of staff comments that was that she found it incredibly useful to have the University graduated return programme. Of the returning Research staff, one opted for a graduated return and breastfeeding facilities were provided. As female staff in the Department increase, we recognise the importance of being able to provide a dedicated space for pregnant and nursing mothers, offering resting facilities and refrigeration.

In August 2013, the University established a Returning Carers Scheme for academic and research staff to assist in the career and professional development of returning carers. The scheme offers funds to help build up the individual's research profile and other academic activities following a period away from work. When calls for applications are made, we aim to target eligible staff within the Department encouraging them to apply for funds and in the last two years the two applications made have been successful. It is hoped that funds to support returning carers research will assist future opportunities for promotion.

The Department has noted occasions where Research Councils rules regarding maternity leave have not been straightforward due to grants ending whilst a member of contract research staff is on leave. The Department is hopeful that all such issues will be resolved but in the meantime, has undertaken to fully fund any period of maternity leave where there is such dispute. It sees the importance of research staff being reassured that funding will be available from the outset.

**Action 5.5: Underwriting maternity leave for contract research staff**

**Action 5.6: Active promotion of family leave policies**

**(ii) Paternity, adoption and parental leave uptake**

**Paternity and parental leave for the period 2009-2014**

<b>Paternity Leave</b>	<b>10</b>
Academic	3
Assistant	0
Researcher	7
<b>Unpaid leave - Parental Leave</b>	<b>1</b>
Academic	1

The figures for paternity leave are too low to show improvement or deterioration, but the applications have been made across staff categories in the Department which we hope demonstrates that individuals appreciate and understand that the policies are in place to support staff. Family friendly policies including additional paternity leave will be highlighted as part of the improved induction process as well as information about the new Shared Parental Leave Policy.

**(iii) Numbers of applications and success rates for flexible working by gender and grade**

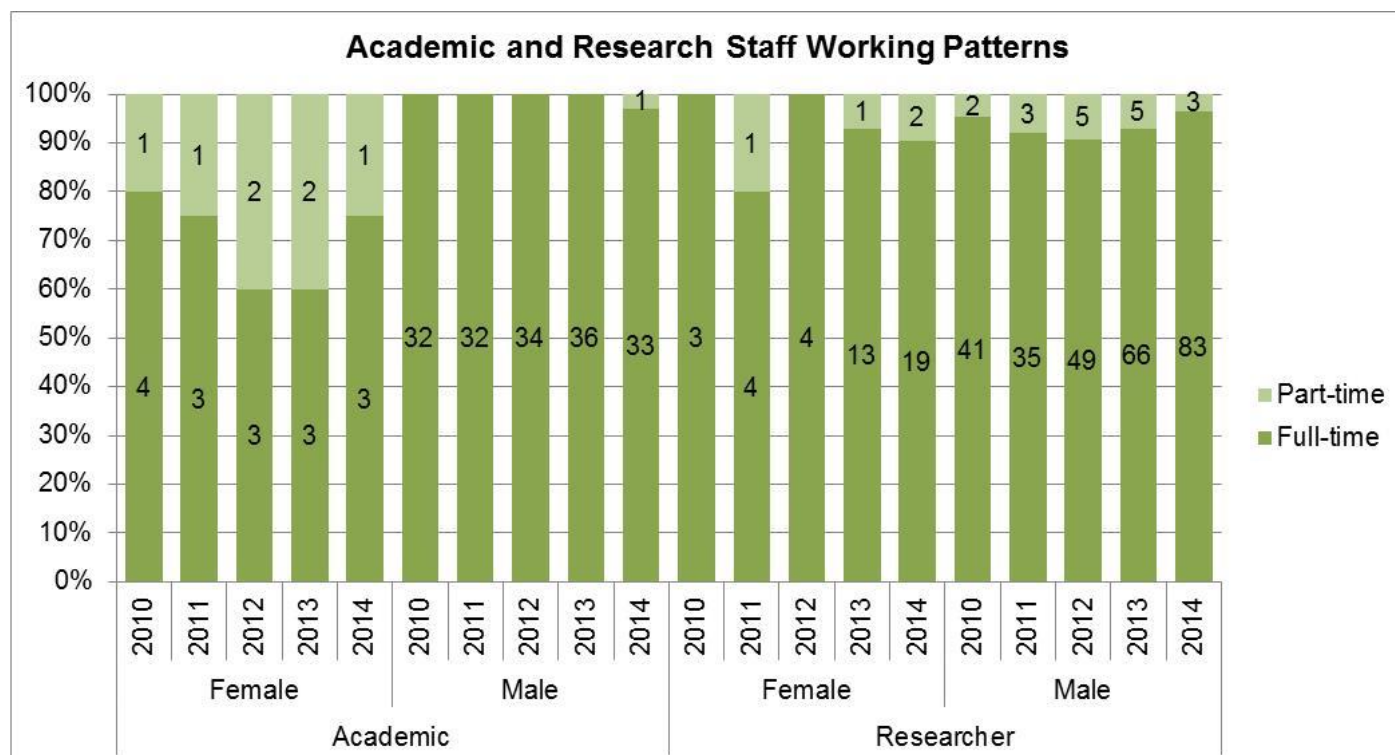
Very few formal applications to work flexibly are made but all applications that have been made have been approved.

**b) For each of the areas below, explain what the key issues are in the department, what steps have been taken to address any imbalances, what success/impact has been achieved so far and what additional steps may be needed.**

**(i) Flexible working**

Figure 13 shows the data for staff working patterns which vary between 20% - 80% time. These are all formal arrangements but the actual hours/days of work are dealt with informally. There is also one member of staff who has been granted permission to work from home (overseas) for family reasons. We believe the lack of formal requests for flexible working is due to the fact that the Departmental culture is such that working hours for research staff are highly flexible. It should be noted that many computer scientists do not need specialist equipment and so their research can easily be done at home and this allows us to be very flexible with work patterns. The staff survey results should provide us with further information on staff perceptions of flexible working options.

Figure 13:



## (ii) Cover for maternity and adoption leave and support on return

In line with University policy, where necessary, the Department advertises or uses the University's temporary employment service or secondment to cover maternity leave for support staff groups. Amongst support staff, other staff are occasionally encouraged to undertake additional duties, with the appropriate guidance, so that roles are covered adequately for the duration of the leave. This has become more difficult in recent years because the Department has a limited support staff structure. However, where this has been possible, it has been beneficial and results in staff learning new skills and being rewarded with acting up financial allowances. Covering academic staff duties is often more problematic but the main aim is to ensure that teaching is covered during the period of leave. As mentioned in the previous section, we have only had one member of academic staff using maternity leave but as with sabbatical leave, where possible, teaching officers would be asked to cover lectures or as is sometimes necessary, temporary lecturers will be used.

When individuals return to work, the option of graduated return is often taken up, i.e. there is a phased return or a permanent change in working hours. To make the transition as smooth as possible the Department is willing to make adjustments to working patterns if needed. This applies across the staff groups, although the Laboratory's culture is that academic staff organise their own time, which gives parents and other carers the freedom to organise their work around their caring responsibilities. Requests for flexible working would normally be supported, subject to the business needs of the Department.

There is an on-site University nursery on the West Cambridge site, with another nursery, run jointly by two Colleges and a private sector provider, situated half a mile away. Some members of staff make use of this childcare provision on site.

**Action: 5.4 Timing of meetings**

**Action: 5.6 Active promotion of family leave policies**

**4,682/5000 words**

## 5. Any other comments: maximum 500 words

The Department has taken on board the feedback from the previous unsuccessful submission. The text below summarises the response to the feedback and highlights specific areas where additional data and clarification have been provided. The narrative has been extensively rewritten and we have tried throughout the text to provide a greater link between the narrative and actions and to make the actions stronger.

The link between Athena SWAN and the Departmental strategy to attract more women has been clarified and Athena SWAN is now regularly discussed at academic and research staff meetings. The Head of Department meets regularly with the SAT chair and Departmental Administrator to discuss Athena SWAN progress and identify and approve actions and has also provided feedback on the draft submission. Annual reports to the University Athena SWAN Panel and the presence of an Equality and Diversity Consultant at all SAT meetings provide the link to university strategy and initiatives.

More regular SAT meetings have been held with multiple additional subgroup meetings to organise staff and student surveys and develop the submission. Four additional members of staff including 2 male Professors and another male researcher have joined the SAT. Informal consultation with different staff groups has been carried out since the introduction of the SAT in 2013 but in 2015 formal consultation was carried out via students and staff surveys. The timetabling of the staff survey was beyond the Departments control as it was part of School of Technology survey. To maintain the current momentum of Athena SWAN activity and engagement within the Department the decision was made to apply before the full staff survey results were available. Issues for women staff were already clear in many cases (as the numbers of women are low) and the survey will be used to identify further staff issues and actions.

The key issue for the Department is increasing the proportion of women on the undergraduate computer science course, as well as all other stages of the pipeline. Evidence from computer science degrees across the UK suggests a higher representation of women on courses with a broad curriculum. The revised curriculum will be highlighted in the University Prospectus and the changes to the course emphasised on the departmental website with the aim of attracting a higher number of women students. Recruitment data from the new University system has been included. All staff involved in recruitment are now required to undertake E&D training. More detail has been provided on the Department's newly adopted active recruitment process. Gender representation on appointments panels is 28.5% (2 women) significantly higher than the proportion of female academics (10.5%).

Additional information has been added to contextualise the Department within the School of Technology, one of 4 STEMM Schools within the University and internal and external benchmarking included (pipeline demonstrating HESA and Departmental proportions of women). Alongside a Departmental action to engage with Colleges, the University Silver action plan specifically addresses University-College interactions regarding Athena SWAN.

The outreach section has been significantly expanded and now the full range of activities are highlighted on the departmental website. More committee information has been included and committee overload will be addressed in the ongoing development of the workload model. More data and text has been provided on flexibility and managing career breaks. The staff survey will provide more insight into perceptions of flexible working so if there are issues, appropriate actions will be developed.

The action plan has been completely revised and organised into six broad groups. Actions to date have been included as well as inclusion of more measurable targets. Care has been taken not to front load the action plan and to make the actions SMART- taking into account the tensions between ambitious and realistic targets. Responsibilities have been shared across committees.

**489/500 words**



## Athena SWAN Bronze Department Award, University of Cambridge Computer Laboratory, April 2015

### ACTION PLAN

**General comments:** as one of the world's leading Computer Science departments, we recognise our responsibility to increase the number of women in the field as well as to ensure that our current staff and students thrive. Our long-term goal is to be seen as a model worldwide for encouragement and support of women in Computer Science, both in the department and in our engagement with national and international initiatives. The specific actions listed here are ones which we believe will lead towards that goal, while having measurable results within the next three years. We have organised the actions into six broad groups: departmental organisation; information sharing and visibility; information gathering and monitoring; internal best-practice sharing; support for existing staff and students; staff and student numbers. We have listed some completed actions which were part of our previous submission, as well as actions we are currently undertaking, in order to provide a fuller picture.

## 1. Departmental organisation

These actions are motivated by the need to ensure that the Athena SWAN process is fully integrated into the department's consultation and decision-making processes, and that women@cl is seen as a core part of the department's activities.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
1.1	<b>Athena SWAN self-assessment. Integration of Athena SWAN into departmental activities.</b>	<p>SAT set up in Sept 2013. 9 meetings since then, plus subgroup meetings. 4 new members from Nov 2014. See p5.</p> <p>Regular meetings between members of SAT and HoD.</p> <p>Regular discussions of process in main departmental committees.</p> <p>SAT-organised student survey and participation in staff survey. See also Action 3.1.</p>	<p>The Athena SWAN panel will be developed further as the Athena SWAN process develops. About one third of the membership will change yearly. Chairs will have a term of up to three years. A new Chair will be appointed by June 2015 to replace the current chair who is stepping down due to sabbatical in 2015-16. The full panel will meet at least three times a year to review the action plan, alerting senior management if serious problems arise and suggesting changes to the plan as necessary. Subgroups will meet more frequently, as required by individual actions. See also Action 4.5. There will be regular input from Postdoc, Graduate and Undergraduate Forums as well as from the departmental committees involved in the action plan. Support staff to review actions and update website weekly and also pass on information to the panel as required.</p>	CHAIR of SAT/DS	<p>Documented consideration of Athena SWAN in departmental activities (Faculty Board and other committees). Updates on action plan progress to the general staff meeting at least three times a year (after SAT meetings).</p> <p>There will be a yearly report to Faculty Board at the first meeting in the every academic year on action plan progress. Annual reporting to the University Athena SWAN Governance Panel</p>

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
1.2	<b>women@CL development</b>	<p>Women@CL was set up in 2003. Since then it has run weekly events and implemented a series of initiatives including lectures and mentoring. Postdoctoral researchers have previously been informally involved, but women@CL was formally expanded to include them in 2014 (p24). Representatives of Women@CL were formally included on the student and postdocforums from October 2014 (p32). 2015 student survey (p27) showed good awareness of women@CL and high approval.</p>	<p>Women@CL will continue to organise activities for female students and postdocs (weekly during term time), including mentoring and conferences (e.g. Oxbridge Women in Computer Science Conference). Some activities will be more closely integrated with the rest of the Department, including the speaker series and fundraising. By increasing the integration and publicising women@cl in outreach material, we aim to increase the profile of women@cl outside the department, in particular to possible student and staff applicants. We will investigate opportunities for further collaboration with other organisations for women in the university, both in other departments and in colleges.</p>	<p>Women@CL Academic Chair, women@cl committee.</p>	<p>At least 90% of female students and postdocs to be aware of women@cl in survey in 2017. At least 80% of female students and postdocs attend two or more events each year (according to 2017 survey response). Survey to also ask about awareness of women@cl prior to coming to Cambridge (target 50%).</p> <p>Suitable mentors provided for any female student or female post-doc who requests one (survey 2017). Sufficient funding raised to cover activities (ongoing). Student and postdoc forums show consistent record of women@cl involvement (ongoing).</p>

## 2. Information sharing and visibility

These actions are designed to ensure that the Athena SWAN panel is aware of activities that members of the department are already undertaking, that members of the department are aware of existing activities related in women in Computer Science, that the visibility of women within the department is improved, and that the department's determination to improve the position of women in Computer Science is recognised externally.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
2.1	<b>Collecting and making visible information about outreach activities and resources</b>	Women-directed departmental outreach activities and other women-directed initiatives involving members of the Department have been made visible on the Departmental website since January 2015. Links to external resources for women in computer science have also been added.	Outreach efforts to be further discussed with other Departments in Cambridge and in other universities and national organisations (see also Action 6.1 and Action 6.2 for specific activities). Feedback on website sought via focus groups.  Continued formal recording of outreach and public engagement activities.	OC/women@CL Academic Chair	Website actively used (demonstrated by log) and up-to-date and informed by feedback.  Focus groups in Spring 2016
2.2	<b>Improve visibility of women</b>	women@CL activities include weekly events with women speakers (p17).	Visibly celebrate women and their achievements: including profiling high-achieving women on women@CL website, including former members of department (see Action 3.4); actively seeking out more female speakers for main Department seminars. See also Action 6.3, for reform of the undergraduate course, which will increase visibility of female academic staff to first years.	SO/OC/women@CL Academic Chair	Webpages up-to-date, evidence webpages are being used (demonstrated by log). At least 20% female speakers for main departmental seminars by 2017-18 (percentage over last 5 years is 13%).

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
2.3	<b>External profile of the department includes recognition of its initiatives to support women</b>	The Industrial Supporters Club is a group of companies, ranging from the very small to the large, which actively support teaching or research in the Computer Laboratory including tech talks.	The Department's efforts to support female students and staff and increase numbers are recognised externally, e.g., within companies and other computer science departments. This is a long-term objective, to be reviewed annually.	OC/CHAIR of SAT	<p>By 2018: evidence of visibility in media and social media (articles, Twitter activity and so on).</p> <p>By 2018: increase in percentage of female applicants at all levels (Actions 6.4-6.7).</p> <p>Increase sponsorship of activities and events for women.</p>

### 3. Information gathering and monitoring

These actions concern the acquisition of further information necessary to identify issues and unmet needs to refine and augment the action plan. For the record, we include some completed activities here.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
3.1	<b>Student Consultation</b>	The Student Survey was run between 15 January and 2 February. The participants included undergraduates MPhil and PhD students. The response rate was 43% (192 out of 442: 18% of respondents were female, 79% male, 3% prefer not to say). The survey collected information and views about students' confidence, perception of gender related issues, and general culture in the Computer Lab. The initial results were considered by the panel in February 2015 (p5). One focus group following up on survey conducted in April 2015 (p27).	Focus groups to consider results and provide additional detail and information completed by June 2015. Panel to consider these results in Autumn 2015.  Results of the survey to be reported to students via the women@cl website.  Results to be discussed by TMC, ATCMC and GEC by end of November 2015.  Results of survey to be discussed by the JTSC and shared with the Directors of Studies at their meeting in July 2015 to feed into action point 5.1.	Survey subgroup in SAT/Chair SAT.	Any further Athena SWAN actions based on survey and focus groups to be agreed by SAT by December 2015.  Survey to be repeated in 2017 to evaluate progress.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
3.2	Staff consultation	The staff survey was undertaken with two other departments in the School conducted by an external organisation (ORC) in March 2015. It was a general survey of staff satisfaction but it includes questions relevant to Athena SWAN. 74% participation rate.	<p>Analysis of data by gender completed by July 2015 and compared to School-wide results.</p> <p>The need for anonymity to be preserved means that responses from women will necessarily be aggregated across staff groups, so more detailed follow-up with informal working groups will be necessary if the survey suggests problems.</p> <p>Staff survey to be repeated in 2018.</p>	HoD and staff survey working group.	<p>Reporting to staff on results in Autumn 2015.</p> <p>Any urgent actions which are clear from the survey results alone will be taken by July 2015.</p> <p>Other actions identified from survey and working groups by December 2015. Annual review of progress against survey actions.</p> <p>Review of progress demonstrated across a range of issues in 2018.</p>

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
3.3	<b>Improved monitoring of student admissions and performance</b>	<p>The TMC and ATMC already routinely consider admissions and performance data by gender.</p> <p>Concerns about lack of detailed information have been raised with Directors of Studies (DoSs) at the Departmental DoS meetings and JTSC and are currently being addressed, including female applicant interview performance.</p>	<p>Obtain detailed data for undergraduates from the Chair of Director of Studies to permit further analyses and identify a method for such data to be reported each year.</p> <p>Obtain detailed data for postgraduates from Graduate Education Manager.</p> <p>Report to Faculty Board in January 2016.</p>	Chair of Director of Studies forum.	From 2016, annual reports to Faculty Board discussing gender effects in admissions and performance have sufficient detail to identify, support and evaluate necessary actions.
3.4	<b>Collect and monitor destination data for staff and students</b>	Programme for staff for 2014/2015 is being trialled to test that the methodology is the most appropriate.	<p>Introduce formal survey of career destinations of staff who leave the Department. Improve contact with former members of the Department staff.</p> <p>Develop Department's existing alumni programme to allow more detailed data about career destinations of students to be reported.</p>	<p>DS/HR for staff.</p> <p>Director of alumni programme for students.</p>	<p>Data permits mapping of career trajectories and also supports the celebration of the achievement of women who have left the department (Action 2.2). Introduced by 2016 for staff, 2017-18 for students.</p> <p>At least 70% response rate.</p>



Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
3.5	<b>Regular review of staff recruitment and promotion</b>	<p>The Department has recently adopted the University's online recruitment tool which allows monitoring of recruitment by gender.</p> <p>Introduced active search process for academic positions.</p> <p>Promotion by gender already being monitored.</p>	<p>Continue to monitor recruitment and promotion by gender.</p> <p>Reviewing effectiveness of active search process for academic positions.</p>	DS/HR	<p>Up to date and accurate data available for annual reports and to support other actions (in particular action 4.4).</p> <p>See also action 6.7.</p>

#### 4. Internal best-practice sharing

This section covers training and other activities where the need is to ensure that members of the Department are aware of the possibility of unconscious bias and indirect discrimination and are prepared to actively counter this if it does occur.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
4.1	<b>Increase E&amp;D training completion rate</b>	Current uptake of online E+D training is < 10%.	Record and monitor completion of Equality and Diversity training, raise awareness of E&D issues. Completion of E&D e-learning modules by staff involved in recruitment is mandatory. Develop continuity training.	DS/HR	All staff with formal involvement in appointments by June 2015. 80% of academic staff by October 2015. >50% of all staff by end of 2016.
4.2	<b>Increase recruitment training (see also action 4.3)</b>	College Directors of Studies already have training for student admissions. The University offers recruitment training, but uptake is low.	Introduce an in-house recruitment workshop for all staff involved in recruitment. Raise awareness of unconscious bias specific to recruitment panels and offer relevant training (see below). Repeat workshop annually.	DS/HR	All staff involved in recruitment to have attended workshop and relevant training by end of 2015.  Review uptake annually.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
4.3	<b>Introduction of unconscious bias training</b>	Unconscious bias has been discussed in the JTSC and in staff meetings. Some Directors of Studies have now attended unconscious bias training.	Raise awareness of unconscious bias and engage in discussions with DoSs to consider the possibility of any such bias in undergraduate interviews. Continue to discuss at JTSC. Unconscious bias training should involve DoSs as well as members of the Department. The requirement is for a speaker who can clearly set out the evidence for unconscious bias (and stereotype threat) to this audience, and for subsequent workshop sessions to identify what changes might be necessary in our admissions procedure (e.g., with regard to interviewing undergraduates).	CHAIR of SAT to identify speakers and format of training. JTSC for design of workshops and DoS involvement.	First training delivered by end November 2015. Repeat sessions annually.  Attendance of at least 60% of those involved in selecting students by November 2017.  Training evaluated after each admission round has been completed.
4.4	<b>Monitor and analyse RA promotion and recruitment process.</b>	In 2014, the Athena SWAN process uncovered potential for indirect discrimination in promotion practices, due to different research groups having different informal standards for promotion from RA to SRA. This has been discussed at a meeting for all PIs. Formal criteria and procedures for promotion have been more carefully specified. Since then, two female promotions to SRA have already taken place.	Discuss recruitment practices among research groups in general PI meeting and revise procedures if necessary (as already done for promotion).  Ensure promotion practices within research groups continue to be comparable.	DS	Annual monitoring (Action 3.5) demonstrates equal criteria and procedures have been applied. Success rates monitored by gender annually.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
4.5	<b>Effective communication about Athena SWAN</b>	All members of established academic staff and teaching support staff are aware of Athena SWAN process (details in section 2 of main submission). Lively discussion of action plan at staff meetings. Webpages are in place.	Continue to communicate and engage with all staff and PhD students about Athena SWAN. Include commitment to Athena SWAN in recruitment material; publicise and populate website and keep it updated with case studies; collect and review feedback annually. Provide information at staff/student gatherings.	Chair SAT  HR for recruitment material	Recruitment material contains reference to Athena SWAN by end 2015; website presence already in place/continued development. Measure awareness of Athena SWAN in staff and student surveys.

5. Support for students and staff. Several of these actions concern specific issues which have been discovered during the Athena SWAN process.					
Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
5.1	<b>Determine how to improve undergraduate support in conjunction with colleges</b>	Student survey undertaken with analysis by gender and student group (p16).	<p>Identify how support for female undergraduates can be improved in conjunction with colleges.</p> <p>The results of the student survey will be presented to the JTSC and to other DoSs with the aim of identifying further measures to support female undergraduates.</p> <p>Liaise direct with Senior Tutors of Colleges as necessary.</p>	CHAIR of SAT/JTSC/Chair of DoSs.	<p>Measures identified and implementation begun by end of 2015. Equal attainment by gender.</p> <p>Review annually as part of TMC/Faculty Board analysis of performance by gender.</p> <p>Review after repeat survey in 2017.</p>
5.2	<b>Review and update induction process</b>	The Department has an existing induction process, documented on its webpages.	Review induction process for staff, adopting good practices from other Athena SWAN award holders within the University. Actions to be informed by staff survey. Add information about Athena SWAN and ensure our local induction follows University guidelines. Highlight family friendly policies including additional paternity leave and new shared parental leave. Information about the Office of Post-doctoral Affairs to be included for research staff.	DS/HR	<p>Full induction procedures revised by end of 2015. Report back to Athena SWAN panel by early 2016.</p> <p>Feedback from Post-doc Forum incorporated.</p> <p>Improved satisfaction in staff survey results 2018 (awaiting 2015 survey results).</p>

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
5.3	<b>Appraisal satisfaction</b>	Current appraisal rate 70%.	<p>Ensure appraisal is a meaningful process. Staff have been further consulted through the staff survey (see 3.2) from 2 March 2015. This will be investigated further when the results are made available. The Athena SWAN panel will also continue to monitor this issue.</p> <p>Workload management will be included for academic staff.</p>	DS/HoD/ Staff Survey Working Group/ SWAN	<p>Discussion and agreement with staff on approved appraisal process.</p> <p>Appraisal rate to be monitored annually.</p> <p>&gt;85% appraisal rate for research staff by 2018. Any requests by staff for an appraisal to be met within 3 months.</p>
5.4	<b>Timing of meetings</b>	All Departmental meetings now end by 16:00 from October 2014.	Ensure timing of all meetings takes into consideration the needs of participants. Discussion with PIs to ensure research group meetings are appropriately timed. Continuing discussion with Heads and Deputy Heads of Department regarding the timing of staff meetings and seminars.	HoD/DS	By December 2015: no members of staff are regularly excluded from key meetings due to timing. Monitored by staff survey/appraisal.
5.5	<b>Underwriting maternity leave for contract research staff</b>	Departmental underwriting of requests for grant extensions where maternity leave may be affected.	Keep this assurance in place. Use our formal and informal contacts with funding bodies to urge them to resolve this issue.	HoD/DS (for finance)	All members of staff are aware that their maternity leave will be in line with the University policy. Monitored by staff survey/appraisal.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
5.6	<b>Active promotion of family leave policies</b>	All family leave policies are communicated to staff via DS and via Athena SWAN website.	Publicise the University's new Shared Parental Leave Policy with enhanced benefits, which will be available to parents from April 2015.	DS	All staff are informed of the new measures in place to enable parents to choose how to share childcare during the first year following birth/adoption. Include in revised induction material.
5.7	<b>Effective workload model for established academic staff.</b>	Informal workload assessment no longer effective.	Development of explicit workload model involving a combination of Departmental data (based on Committee membership, administrative roles, teaching etc.) and self reporting.	HoD/DHoD	Appropriate model agreed and used to ensure transparency of workloads for established academic staff. Review of workload in appraisals.

## 6. Increasing number and proportion of women students and staff

This section contains the actions which are most difficult to achieve, because increasing numbers of women students and staff depends on external factors to such a great extent and because any actions we undertake will take time to have an effect. There is clear support in the department for ambitious goals and the targets we have set here are deliberately at the upper end of what we believe is achievable.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
6.1	<b>Targeted outreach for undergraduates</b>	Outreach activities are recorded and promoted on CL website. Oxford and Cambridge Conferences (undergraduate outreach) in 2015 included information about women@CL. Termly request from OC to all members of staff for input.	Outreach activities targeted at girls, including Open Day activities in 2015. Establish participation rates. Monitor outreach activities and revise the programme as we get experience of what works.	Outreach Committee	Clear year-on-year increase in numbers of girls expressing interest in Computer Science at Cambridge, including attending Open Days (precise target identified once participation rate is known).
6.2	<b>Introduce Summer School for girls</b>	Website created and application process available. April 2015	Girls-only coding summer school with up to 80 participants. August 2015. Repeat annually if successful.	Outreach Committee	Summer School delivered with at least 60 participants. Follow-up survey of participants to evaluate effectiveness.
6.3	<b>Restructuring of undergraduate course.</b>	Modifications to the undergraduate course have been designed with the aim being to improve diversity. The plan has been formally approved by the University (to start in 2016). Nationally courses with a broader curriculum tend to attract more women.	Restructuring the course will lead to more female faculty teaching first year undergraduates: at the moment, none of these courses are taught by women.  Changes reflected in the University Prospectus and clearly highlighted on Departmental webpage and via outreach events.	TMC	Revised course delivered in October 2016 with at least two female faculty members teaching first-year undergraduates. In addition to usual course evaluation, success determined by increased number of female applicants.



Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
6.4	<b>Increasing numbers of female students on undergraduate course.</b>	See 1.2, 2.3, 6.1, 6.2, 6.3. The current percentage of female students at Cambridge is 14% (UK national average 15.3%).	This action point is included so we have a clear statement of goals with respect to the undergraduate course. See 6.1, 6.2 and 6.3 above and also 1.2 and 2.3 for methodology.	TMC/JTCSC	To be in the top quartile of comparable UK courses for percentage of female students admitted in the 2018-19 academic year (see 6.3).
6.5	<b>Increasing numbers of female students on taught postgraduate courses.</b>	Online description of the Masters course has been rewritten to make it clearer that students do not have to have a first degree in Computer Science.	Advertise Masters courses more actively inside and outside Cambridge, highlighting interdisciplinary options; promote co-supervision of MPhil student projects with staff in other departments; make it clear that applicants from diverse academic backgrounds are welcome.	ATCMC	To be in the top quartile of comparable UK courses for percentage of female students admitted in the 2018-19 academic year. Current proportion of women is 17%.
6.6	<b>Increasing numbers of female PhD students</b>	women@CL has aided the transition from Masters to PhD for female students.	Improve webpages to ensure PhD applicants are aware of Athena SWAN and women@CL. Monitor admissions, performance and completion rates by gender. Reports on performance by gender continue to be considered at least yearly by the Graduate Education Committee.	GEC	>30% increase in numbers of female applicants by June 2018.

Action Number	Objective	Actions to date	Further actions planned	Responsibility	Success Measure and timescales
6.7	<b>Proactive staff recruitment process to improve diversity of applicants</b>	Female research staff numbers have improved over last two years but numbers of women applying for established academic positions is very low. There is currently one vacancy for an established academic member of staff: an active search is being carried out to identify possible female applicants.	Identify and encourage suitable applicants to apply for vacant academic and research positions, via national and international contacts. Systematically consider identification of applicants as part of recruitment. Review what further information is offered to candidates. Ensure those responsible for recruitment are actively encouraging female applicants.	HoD/DHoD for established staff.  DS/PIs/HR for research staff	Women on shortlist for at least two UTO positions by 2018; women shortlisted for at least 35% of postdoc positions by end 2016 (currently 19%).

**Key:**

HoD = Head of Department

DH = Deputy Head of Department (Teaching or Research)

DS = Departmental Secretary

DoS = Director of Studies

HR = HR Staff

TMC = Teaching Management Committee

ATCMC = Advanced Taught Courses Management Committee

GEC = Graduate Education Committee

JTSC = Joint Teaching Strategy Committee