



Athena SWAN Gold department award application

Name of university: Queens's University Belfast

Department: School of Mechanical & Aerospace Engineering

Date of application: November 2014

Date of Silver Athena SWAN award: November 2011

Date of university Bronze and/or Silver Athena SWAN award: University Silver Award 2012

Contact for application: Denise Price (or Joe Butterfield)

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Departmental website address:

www.qub.ac.uk/schools/SchoolofMechanicalandAerospaceEngineering/

An Athena SWAN **Gold Department** award recognises a significant sustained progression and achievement by the department in promoting gender equality and to address challenges particular to the discipline. Applications should focus on what has improved and changed since the Silver award application.

Not all institutions use the term 'department' and there are many equivalent academic groupings with different names, sizes and compositions. The definition of a 'department' for SWAN purposes can be found on the Athena SWAN website. If in doubt, contact the Athena SWAN Charter Coordinator well in advance to check your eligibility.

It is essential that the contact person for the application is based in the department.

Sections to be included

At the end of each section state the number of words used. Click [here](#) for additional guidance on completing the template.

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List of Abbreviations Used:	
AIAA	American Institute of Aeronautics & Astronautics
AP	Action Plan
BMC	Belfast Metropolitan College
DE	Director of Education
DR	Director of Research
DTC	Doctoral Training Centre
EOU	Equal Opportunities Office
FE	Further Education
GCSE	General Certificate in Secondary Education
HE	Higher Education
HoS	Head of School
HR	Human Resources
ILM	Institute of Leadership & Management
IMechE	Institution of Mechanical Engineers
IrFUW	The Irish Federation of University Women
NASA	National Aeronautics & Space Administration
PDRA	Postdoctoral Research Assistant
PGR	Postgraduate Research
PGRA	Postgraduate Research Assistant
PGT	Postgraduate Taught
PhD	Doctor of Philosophy
PPRC	Polymer Processing Research Centre
PS	Primary School
QGI	Queen's Gender Initiative
QUB	Queen's University Belfast
RAeS	Royal Aeronautical Society
REF	Research Excellence Framework
RTE	Irish National Television Broadcaster
SMAE	School of Mechanical & Aerospace Engineering
SAT	Self-Assessment Team
SB	School Board
SENTINUS	Association for promotion of STEM to schools
SMAE	School of Mechanical & Aerospace Engineering
SMB	School Management Board
SME	Small Medium Enterprise
SSG	SWAN Steering Group
STDU	Staff Training & Development Unit
STEM	Science Technology Engineering & Mathematics
THES	Times Higher Education Supplement
UCAS	University Central Admissions System
UG	Undergraduate
WAM	Workload Allocation Model
W5	W5 "whowhatwherewhenwhy" Northern Ireland's science and discovery centre

1. Letter of endorsement from the head of department: maximum 500 words

An accompanying letter of endorsement from the head of department should confirm how the SWAN action plan and activities in the department contribute to the overall department strategy and academic mission, and spell out what is next for the department, what difficulties might be experienced, and what the department most looks forward to.

The letter is an opportunity for the head of department to confirm their support for the application and to endorse and commend any women and STEMM initiatives that have made a significant contribution to the achievement of the departmental mission.



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Sarah Dickinson

Athena SWAN Manager

Equality Challenge Unit, 7th floor, Queens House, 55/56 Lincoln's Inn Fields, London WC2A 3LJ

25th November 2014

Dear Sarah,

We began our journey on SWAN just prior to our Bronze award in 2010. As a School emerging from a long history of male only staff and working practices reflecting those of the 20th century engineering industry we recognised that this journey would be long, but also that the reward would be a transformed working environment that would be welcoming to all, and one which would reflect the energy, initiative and personality that female engineers bring to the workplace.

My own personal journey in supporting females in engineering began in 1990 when my younger sister was faced with barriers to her own career choice to study engineering at university. Her school was trying to prevent her from studying A Level mathematics, despite her 'A' grade at GCSE. After intervention she was allowed to progress and graduated with a degree in aeronautical engineering. As a partner to a female engineer and father to a science A Level student, opportunity for females in engineering continues to be something of which I am passionate; and to lead the School of Mechanical and Aerospace as it is transformed by SWAN gives me great satisfaction.

Since attaining our SWAN Silver in 2011 we have progressed much, with more female staff, equal pay and leadership positions now held by female colleagues, as outlined in the submission. This is a remarkable transformation from the lonely vigil of a single female in 2006. In our working practices, and in activities such as our staff breakfasts, we have engendered a strong sense of collegiality, bringing staff together, fostering collaboration and enabling all staff to contribute to growth and success. In this period we faced a major challenge in the economic downturn, but the team spirit, seeded and nurtured through SWAN, was a key factor in our recovery and rapid growth. We have promoted SWAN through beacon activities such as our celebration of Women in Engineering Day and we look forward to many more activities in our Current Action Plan. We aim to be the leading engineering school in the UK promoting the SWAN ethos. However, we foresee significant challenges ahead. The numbers of female applicants to our degrees, whilst in line with national averages, is far from the level needed to truly change our future. But this noble goal is our focus and we look forward to an exciting future with many female students being taught by successful female academics whose career has flourished in our School.

While we have challenges ahead in continuing to address female underrepresentation, our progress so far has been remarkable and we believe we are building a better future for our current female staff, and for those yet to enter academia. I am delighted to have the opportunity to lead an excellent school through this transformation, and an Athena SWAN Gold Award would not only be recognition for our strides thus far, but an incentive to lead UK engineering schools in their transformations.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Mark Price', written in a cursive style.

Professor Mark Price, Head of School

[Total 499 /500 words used]

2. The self-assessment process: maximum 1000 words

Describe the self-assessment process. This should include:

- a) A description of the self assessment team: members' roles (both within the department and as part of the team) and their experiences of work-life balance.

The SWAN Team draws upon personal experiences across a spectrum of School members and comprises:

Mrs **Denise Price** has been SWAN Champion since March 2011. A Chartered Engineer, she manages the School's PPRC. She works reduced hours (80%) on a flexible basis and took a short career break in 2009. She is a STEM Ambassador and has acted as Mentor and Mentee in a scheme run by the QGI and is married with a teenage daughter.

Dr **Joe Butterfield** has been an academic since 2008 and SWAN Co- Champion since 2013. He is Programme Director for the MSc in Advanced Aerospace Engineering and a member of the Student Recruitment team. He is married to a practising female Engineer and has three young children.

Mrs **Wendy Boyd** is a member of academic-related staff and School Manager since October 2007 with responsibility for managing the School's support staff. A recently qualified Queen's Coach, she helps staff with role transition and career progression. Wendy is married with two teenage sons.

Dr **Danielle Soban** joined the School as a Lecturer in 2010, after seeking an academic home that was professionally challenging and supportive of an appropriate work/life balance. She is a STEM Ambassador, leads the Internationalisation Team and is a member of School Management Board (SMB). She and her husband, also an active supporter of gender equality, have two young children.

Professor **Fraser Buchanan** has been an academic in the School since 1998. Recent roles included Research Excellence Framework (REF) Champion for the 2014 submission and membership of the QUB International Research Development Group. He has supervised over 20 PhD students and PDRAs in biomaterials, 60% of whom have been female. He is married with three teenage children.

Dr **Beatrice Smyth** joined the School as an academic in January 2013. A member of the SWAN Team since March 2013, she has recently become a member of the Student Recruitment Team. She is a STEM Ambassador and has participated as a mentee in a Queen's Gender Initiative (QGI) scheme.

Dr **Paula Douglas** has been a Research Fellow in the School since 2007 providing training, material characterisation and analysis based work for both QUB and the external industrial community. Her position provides the team with the post-doctoral research assistant (PDRA) perspective.

Miss **Claudia Mullan** is in the writing-up stage of her PhD. She joined the School in 2006 and graduated with a MEng in Aerospace Engineering in 2010 before undertaking a PhD.

Miss **Roisin McConnell** is in the third year of her PhD. She joined the School in 2008 and graduated with a MEng in Aerospace Engineering in 2012 before starting her PhD.

Professor **Mark Price** has been Head of the School since 2011. He joined QUB as a Lecturer in Aeronautical Engineering in 1998, becoming a Senior Lecturer in 2002 and Professor of Aeronautics in 2007. He is married to a female engineer and has one daughter studying science and mathematics at A-Level.

[Sub-total 488 words]

- b) An account of the self assessment process: details of the self assessment team meetings, including any consultation processes that were undertaken with staff or individuals outside of the university, and how these have fed into the submission.

The School has had a formal SWAN Team since 2010, gaining a Bronze Award (2010) and Silver Award (2011). The Team meets monthly to progress delivery of the Action Plan. More frequent, smaller focus-group, meetings take place in relation to activities such as celebration of National Women in Engineering Day (Figure 1) and preparation of this application. The Team maintains contact through emails and networking opportunities provided by School events.

The SWAN Team reports to the Operations Board ensuring that the SWAN ethos is embedded across the School. SWAN activities play an integral role in the daily life of the School and, in addition to being the Self Assessment Team, organises activities and events promoting equality, diversity and work/life balance.



Fig. 1 SWAN Team Sub-Group for National Women in Engineering Day 2014 Celebration

Development of this application and progress on the delivery of the Action Plan was reported at School Operations Board, School Board, School Management Board meetings. All staff and PhD students reviewed the application and their feedback taken into account in this final submission.

The SAT was co-led by two SWAN Champions, one female and one male, who gathered information from sources across the University including Planning, Admissions and Equal Opportunities Offices and participated in meetings with other QUB Champions organised by the QGI office, where good practise across the University was shared. Additionally the Team consulted with the QUB SWAN Steering Group for guidance informing the Current Action Plan and providing input to this application.

The School has both a male and female Champion to increase male engagement in the SWAN process and to share the workload and ensure continuity.

The Team also received input from Rose Mary Stalker, (Figure 2), a graduate of the School with a successful career in industry.



Having held global senior positions with Ford Motor Company, Boeing and Rolls-Royce Civil Aerospace she is committed to developing industrial capability in Northern Ireland, and serves on the Boards of Invest Northern Ireland and The Northern Ireland Science Park.

She is Executive Chairman of Catagen, a QUB Spinout serving the global automotive industry. Drawing on her experience, she provided an external view of the needs and realities for gender equality in the engineering sector which helped immensely with this application

Fig. 2 Rose Mary Stalker (Co-opted SWAN SAT Member)

[Sub-total 362 words]

- c) Plans for the future of the self assessment team, such as how often the team will continue to meet and how the department will deal with the turnover of team members, any reporting mechanisms and in particular how the self assessment team intends to monitor implementation of the action plan.

The Head of School is a permanent member of the SWAN Team the make-up of which is reviewed annually with School Workload Allocation. Members normally serve two years to help consolidate learning and ensure continuity. We have not yet had reason to replace a staff member within their two year term. There has been turnover due to the graduation of PhD students in which cases an early stage student is invited to join the Team to ensure continuity of student representation.

Following this application, the Team will revert to its operational role and will continue to meet on a monthly basis to progress the Action Plan and deliver initiatives and events in conjunction with other Operational Teams in the School.

The School uses a standard project management approach and the SWAN Team has Terms of Reference and annual goals framed by the Action Plan reviewed monthly within the Operations Board.

[Sub-total 150 words]

[Total 1,000/1,000 words used]

3. A picture of the department: maximum 2000 words

- a) Provide a pen-picture of the department to set the context for the application, outlining in particular any significant and relevant features.



Fig. 3 Mechanical Engineering Graduation circa mid-1970's (11 staff & 24 students all male)



Fig. 4 Aeronautical Engineering circa late 1970's (3 staff & 8 students all male)



Fig. 5 School of Mechanical & Aerospace Engineering Summer Graduation 2014

Since its founding in 1912, our School has seen dramatic transformations. Up to the appointment of our first female academic in 1993, our School solely comprised male academics and, although the seeds of equality were planted in 1993, true transformation did not begin until the founding of our SWAN Team in 2010.

In 2014 we are proud that our female staff ratio is 20% and from our first female graduate in 1973, our undergraduate female population has grown to 15%, 3% above the national average.

The School has 40 academic, 18 research, 7 academic related, 11 clerical and 15 technical staff. We have 1,000 students of whom 13% are international. We have a long track record in delivering internationally excellent education and research and were rated in the top 10 in the field in the last three Research Assessment Exercises.

The School make-up has changed significantly since the appointment of its first female academic and at the beginning of academic year 2014/15, we have eight female academic staff and a further female colleague due to join us in January 2015. Females play an increasing role in the management of the School with 35% of the Operations Teams led by females and female representation on all of the School Committees.

We offer accredited degree programmes in Mechanical, Aerospace and Product Design Engineering. Since 2011 we have introduced two new MSc programmes; Advanced Mechanical Engineering and Advanced Aerospace Engineering. With a strong regional commitment, we provide a Foundation Degree in Mechanical Engineering in conjunction with a local Further Education College. An Aerospace Foundation Degree will be introduced in 2015/16.

Recognising the need for improving student employability, we introduced a Leadership, Employability and Placements Programme and presently half of our cohort is on placement. In parallel, QUB has invested over £25m in our offices, laboratories and classrooms creating a modern working and learning environment.

The School has transformed in the last five years developing a strong collaborative and supportive team culture. Our working environment has improved significantly and, combined with team spirit, has enabled the School to double the number of students with only a 30% increase in staff levels.

Despite rapid growth in staff numbers, the School experienced retirement of a number of senior staff resulting in 30% of academic staff being on probation. The combined effect of loss of experience and integration of new staff resulted in a temporary dip in research activity and income as new staff established their research portfolios. This was a particularly challenging time as student numbers were simultaneously growing resulting in an increased teaching load.

This shared challenge has brought positive change embedding an awareness of diversity, culture and gender across the School, and a strong collective desire to continually improve and to be a beacon in developing opportunities for women in academia.

As a consequence of observing and assessing the positive impact of the successful implementation our previous SWAN Action Plans we now see the forward actions with more clarity and hence our Current Action Plan is based on five important pillars embedded in the culture and operation of the School (Figure 6).

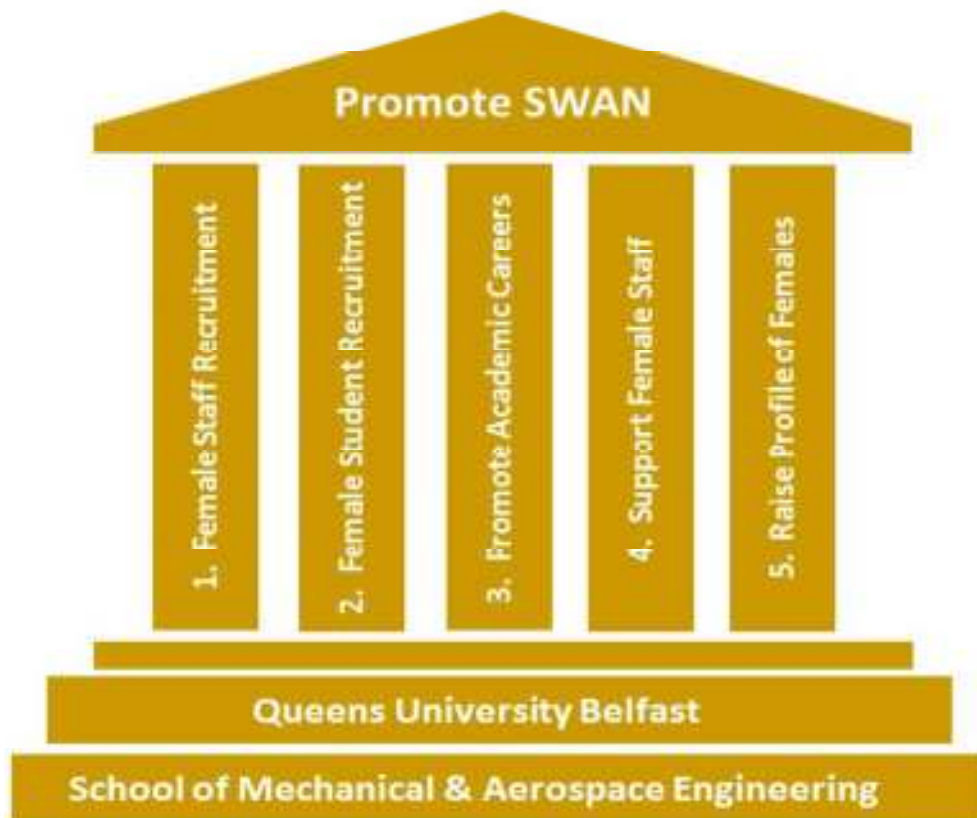


Fig. 6 Schematic of SWAN Contribution to School of Mechanical & Aerospace Engineering. The 'Five Pillars of SWAN'

[Sub-total 518 words]

b) Provide data for the past five years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance, how they have affected action planning, and any improvements since the department’s Silver award.

Student data

(i) **Numbers of males and females on access or foundation courses** – comment on the data and describe any initiatives taken to attract non-traditional groups of women to the courses.

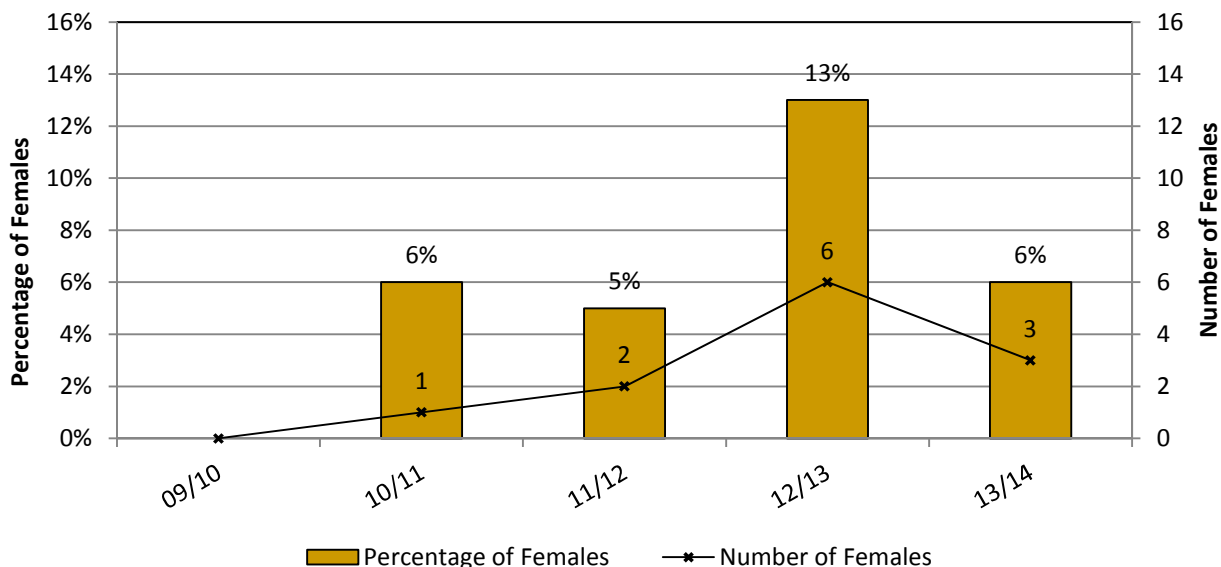


Fig. 7 Student data: Number of Males and Females on Access or Foundation Courses

Foundation degrees have been offered in collaboration with Belfast Metropolitan College (BMC) since 2010/11 as part of our widening participation agenda. Students can progress to Stage 2 of the Mechanical, Aerospace or Product Design Engineering BEng programmes.

Recruitment is carried out using promotional materials featuring female role models emphasising this alternative route to Higher Education. Figure 7 shows that the programme has been successful in attracting some females to this alternative route. The SWAN work in this area has highlighted the lack of awareness among female A Level (and equivalent) students of this opportunity.

We believe many able students obtaining a B grade in Mathematics at GCSE are not encouraged or permitted by their schools to take A Level Mathematics meaning they are ineligible for the Foundation course. Therefore, under our Current Action Plan, we will further investigate and explore potential ways to bridge the mathematics gulf. An additional challenge encountered has been the cap on numbers to these courses in BMC and we will explore mechanisms to increase the number of places available.

[Sub-total 174 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S2.4 Increase participation of females in Foundation Programme
Current Action Plan Items (see Action Plan for details)
G2.1 Use outreach and recruitment events as a platform to interact with female students and monitor success of these events
G2.2 Facilitate STEM events
G2.3 Analyse and understand female enrolment statistics across the School programme
G2.4 Increase participation of females in Foundation Programme
G2.5 Develop supportive environment for female students and communicate this to prospective students
G5.1 Provide emphasis and information on professional activities and successes by current female School members
G5.2 Promote extra curricular achievements of School staff and students

- (ii) **Undergraduate male and female numbers** – full and part-time – comment on the female: male ratio compared with the national picture in the discipline. Describe any initiatives taken to address any imbalance or negative trends and the impact to date. Comment upon any plans for the future.

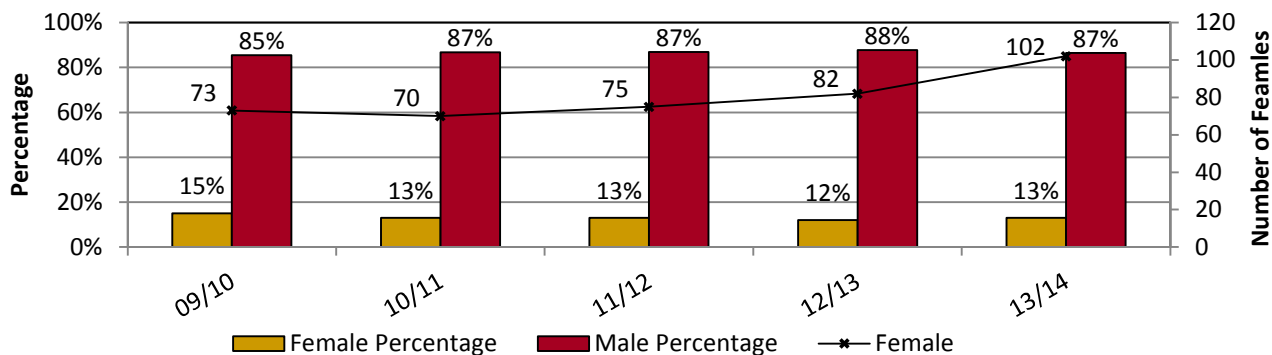


Fig. 8 Student Data: Numbers of Males and Females on Undergraduate Courses

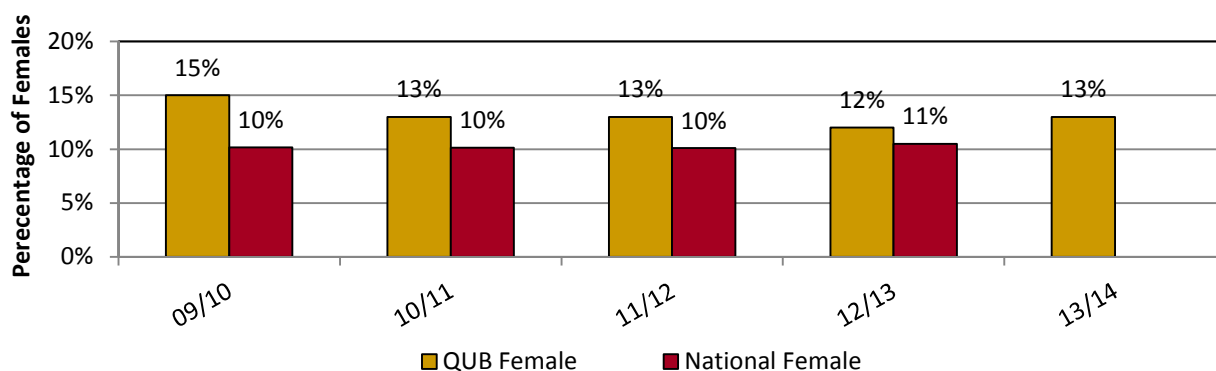


Fig. 9 Student Data: SMAE Undergraduate Female Ratio in Comparison with National Data (National Data for 13/14 not available)

The female:male ratio for undergraduates has remained relatively stable for the past five years (Figure 8), with the percentage of female students consistently higher than the national average of 10% (Figure 9).

Numbers of part-time students are low resulting simply from individuals repeating an academic year. Part-time female numbers are negligible because their academic performance is better relative to their male peers.

Within our Action Plans, the focus is on maintaining female staff and female postgraduate involvement in outreach activities, including mixed and female-only open days and STEM events. Feedback from participants has been positive, and analysis of subsequent programme enrolment is ongoing.

Two years ago the School relaxed entry requirements allowing any science to accompany mathematics. This was in direct response to SWAN, through which we recognised that many females choose Chemistry or Biology rather than Physics A Level. Internal analysis showed that only 14% of STEM females in Northern Ireland study Physics A Level compared to 29% studying Biology. We expect this change will have a long term positive effect on student female numbers.

Analysis of previous actions identified the importance of strong female representation on our Student Recruitment Team which is now chaired by a female academic.

[Sub-total 200 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S2.1 Fully utilise recruitment opportunities at Parent Open Days
S2.2 Continue to facilitate female-only STEM events
S2.3 Analyse and understand female enrolment statistics across the School programmes
Current Action Plan Items (see Action Plan for details)
G2.1 Use outreach and recruitment events as a platform to interact with female students and monitor success of these events
G2.2 Facilitate STEM events
G2.3 Analyse and understand female enrolment statistics across the School programme
G2.5 Develop supportive environment for female students and communicate this to prospective students
G5.1 Provide emphasis and information on professional activities and successes by current female School members
G5.2 Promote extra curricular achievements of School staff and students

(iii) **Postgraduate male and female numbers completing taught courses** – full and part-time – comment on the female: male ratio compared with the national picture in the discipline. Describe any initiatives taken to address any imbalance and the effect to date. Comment upon any plans for the future.

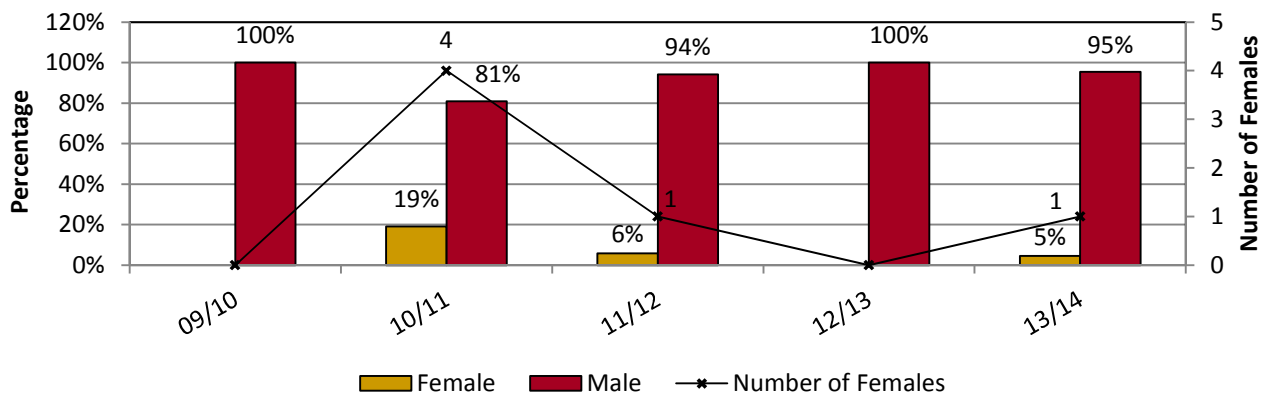


Fig. 10 Student Data: Number of Males and Females on Postgraduate Taught Courses

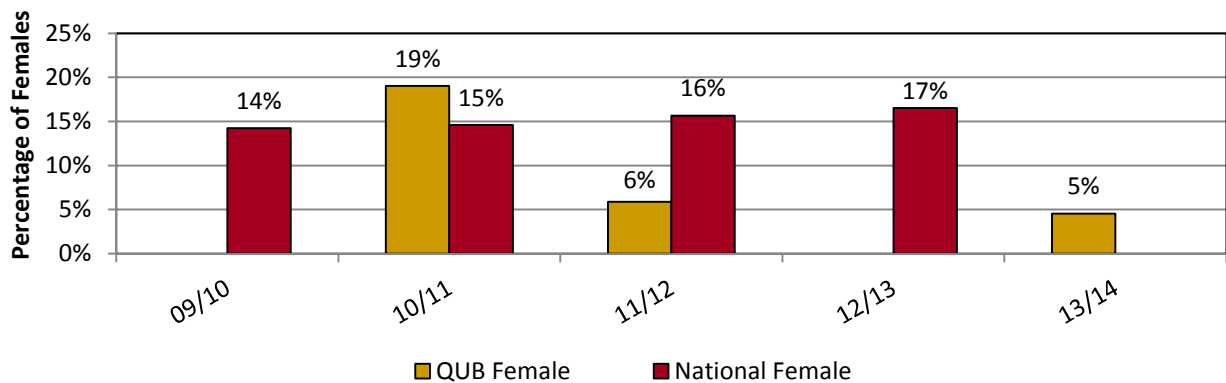


Fig. 11 Student Data: SMAE Postgraduate Taught Female Ratio in Comparison with National Data (National Data for 13/14 not available)

Total numbers undertaking postgraduate courses across the School have been limited with very small numbers of female students (Figures 10 & 11). Having recognised postgraduate provision as one of our weaknesses our MSc programmes were reviewed. Two new programmes in Advanced Mechanical and Advanced Aerospace Engineering were introduced in 2011/12 and 2012/13 respectively in a bid to increase PGT throughput. Having established these programmes, our focus is to increase female participation through tailored recruitment activities and we anticipate being able to see the benefits of these by 2017/18.

[Sub-total 88 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S2.3 Analyse and understand female enrolment statistics across the School programmes
S3.1 Encourage female students to consider a career in academia
Current Action Plan Items (see Action Plan for details)
G2.1 Use outreach and recruitment events as a platform to interact with female students and monitor success of these events
G2.2 Facilitate STEM events
G2.3 Analyse and understand female enrolment statistics across the School programme
G2.4 Increase participation of females in Foundation Programme
G2.5 Develop supportive environment for female students and communicate this to prospective students
G5.1 Provide emphasis and information on professional activities and successes by current female School members
G5.2 Promote extra curricular achievements of School staff and students
G5.3 Invite external, high profile female engineers to key School roles

- (iv) **Postgraduate male and female numbers on research degrees** – full and part-time – comment on the female: male ratio compared with the national picture in the discipline. Describe any initiatives taken to address any imbalance and the effect to date. Comment upon any plans for the future.

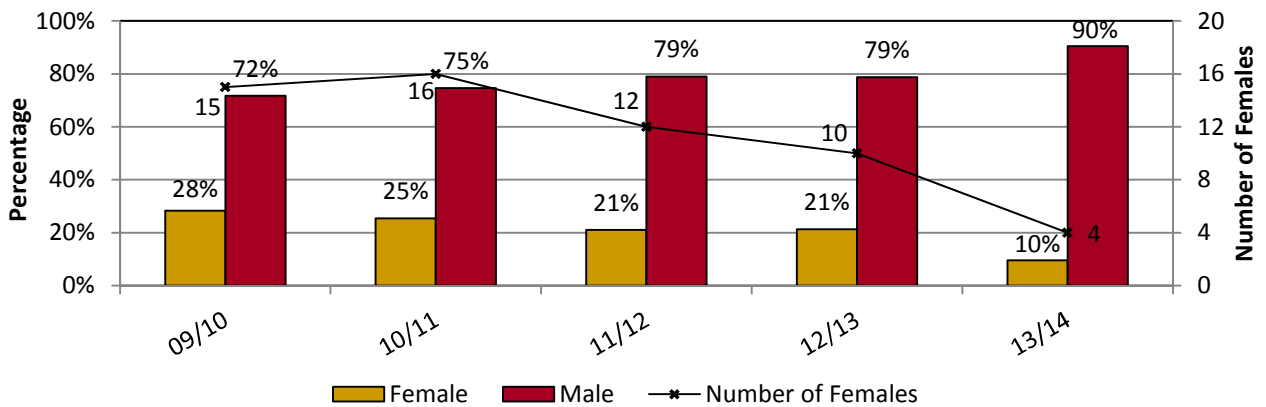


Fig. 12 Student Data: Number of Males and Females on Postgraduate Research Courses

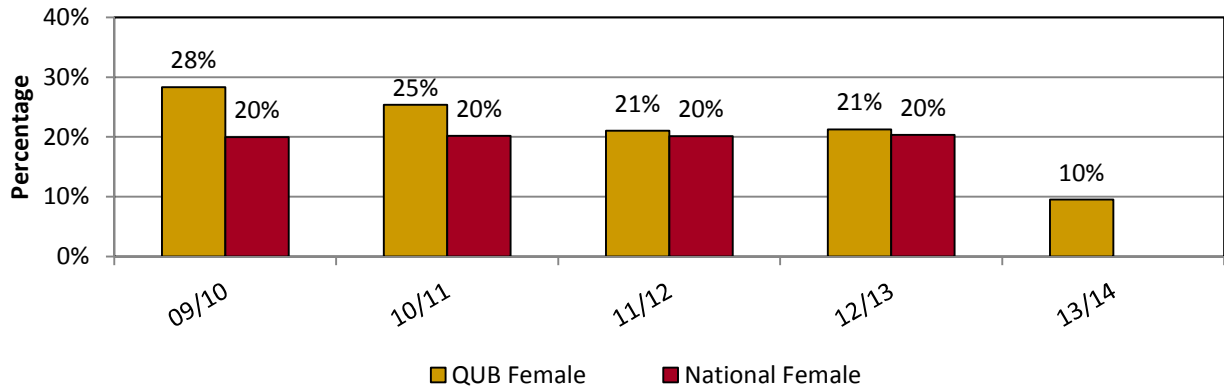


Fig. 13 Student Data: SMAE Postgraduate Research Female Ratio in Comparison with National Data (National Data for 13/14 not available)

The total number of males and females on postgraduate research courses is shown in Figure 12. The national average of female students undertaking full-time research degrees of 20% was exceeded in four out of the five years over the period (Figure 13). The sudden, unexplained, drop to 10% in 2013/14 prompted the SWAN Team to work with the Doctoral Training Team and targeted actions resulted in a significant recovery with five of the nine (56%) students in 2014/2015 being female. Actions contributing to this success included a PhD recruitment dinner, careers talks and personal mentoring of final year students all of which will be continued under the Current Action Plan. Notably, two successful female PhD students have chosen to undertake research programmes within the School despite having secured lucrative positions in industry.

[Sub-total 132 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.1 Provide emphasis and information on professional activities and successes by current female School members
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
S3.1 Encourage female students to consider a career in academia
S3.4 Support student career transitions
Current Action Plan Items (see Action Plan for details)
G2.1 Use outreach and recruitment events as a platform to interact with female students and monitor success of these events
G2.2 Facilitate STEM events
G2.3 Analyse and understand female enrolment statistics across the School programme
G2.4 Increase participation of females in Foundation Programme
G2.5 Develop supportive environment for female students and communicate this to prospective students
G3.1 Encourage suitably qualified females to consider a career in academia
G3.2 Support student career transitions
G5.1 Provide emphasis and information on professional activities and successes by current female School members
G5.2 Promote extra curricular achievements of School staff and students
G5.3 Invite external, high profile female engineers to key School roles

- (v) **Ratio of course applications to offers and acceptances by gender for (ii), (iii) and (iv) above** – comment on the differences between male and female application and success rates and describe any initiatives taken to address any imbalance and the effect to date. Comment upon any plans for the future.

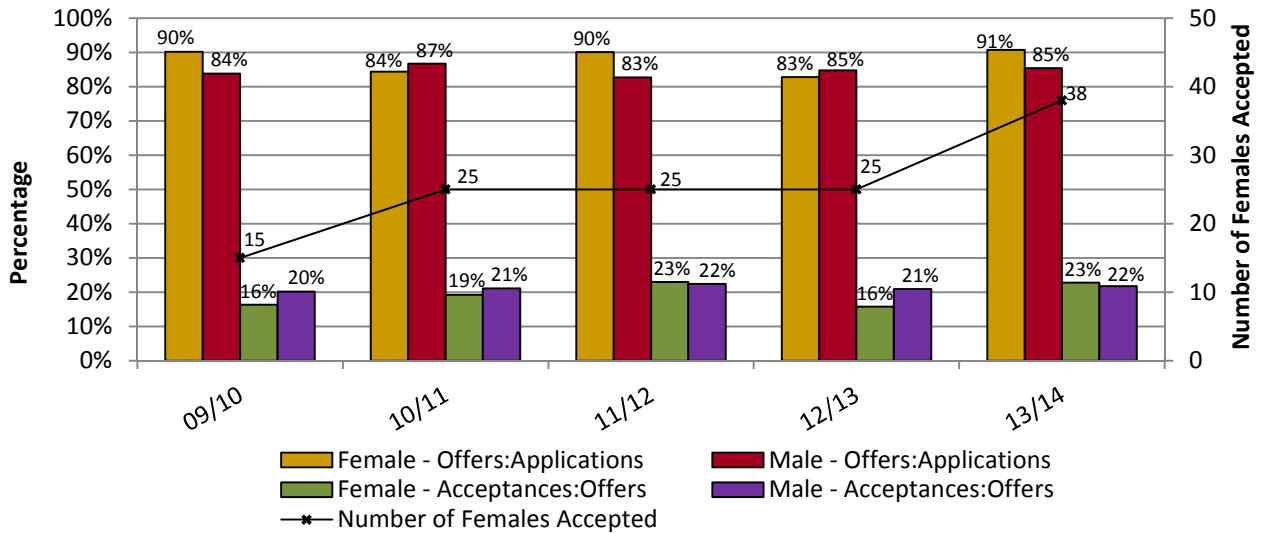


Fig. 14 Ratio of Course Applications to Offers and Acceptances by Gender for Undergraduate Degrees

The School typically makes offers to 90% of female undergraduate applicants compared to 85% of males (Figure 14) reflecting the typically higher standard of female applicants.

Experience shows that lower acceptance of offers by females is related their broader range of subject choices in UCAS. Consequently, monitoring of trends related to female applications is an item in the Current Action Plan.

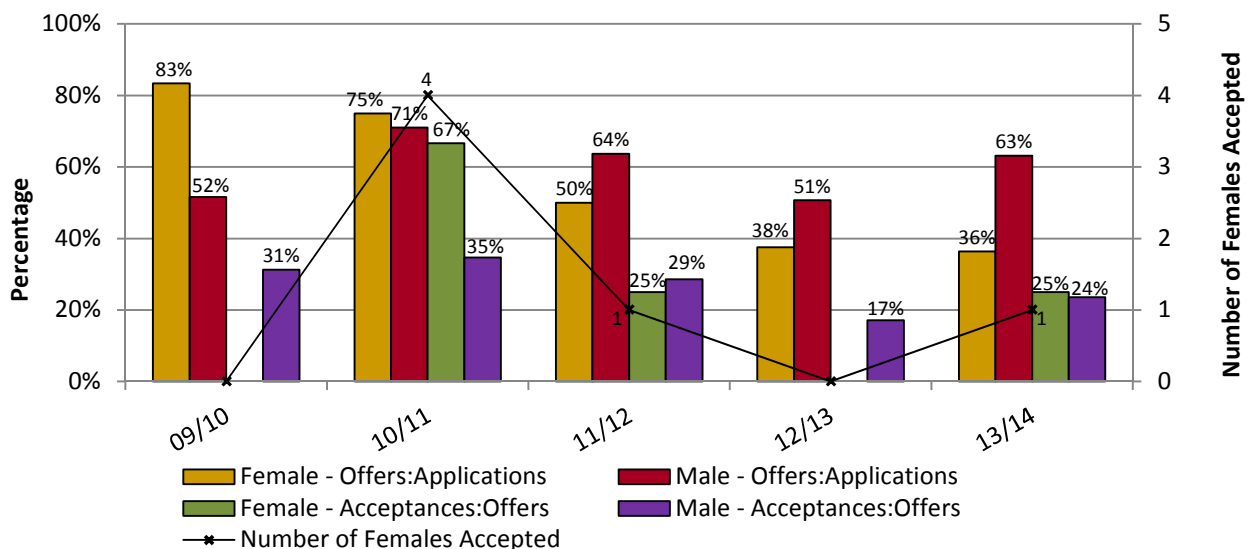


Fig. 15 Ratio of Course Applications to Offers and Acceptances by Gender for PGT Degrees

Consistent with national trends, total PGT numbers have been low (Figure 15).

The 2013/14 intake was the first to include the aforementioned new Masters programmes the full impact of which has yet to be realised.

To broaden appeal, intake qualifications now include degrees in Mathematics and Physics recognising the transferable skills of graduates in these areas which are in high demand. Moreover Mathematics and Physics traditionally have a larger female student cohort and the new programmes provide females with opportunities to up-skill to enhance employability.

Increasing female applications and offers is a key target for the Student Recruitment Team and we will consider other engineering disciplines, including Electrical, Civil and Chemical, for future intakes.

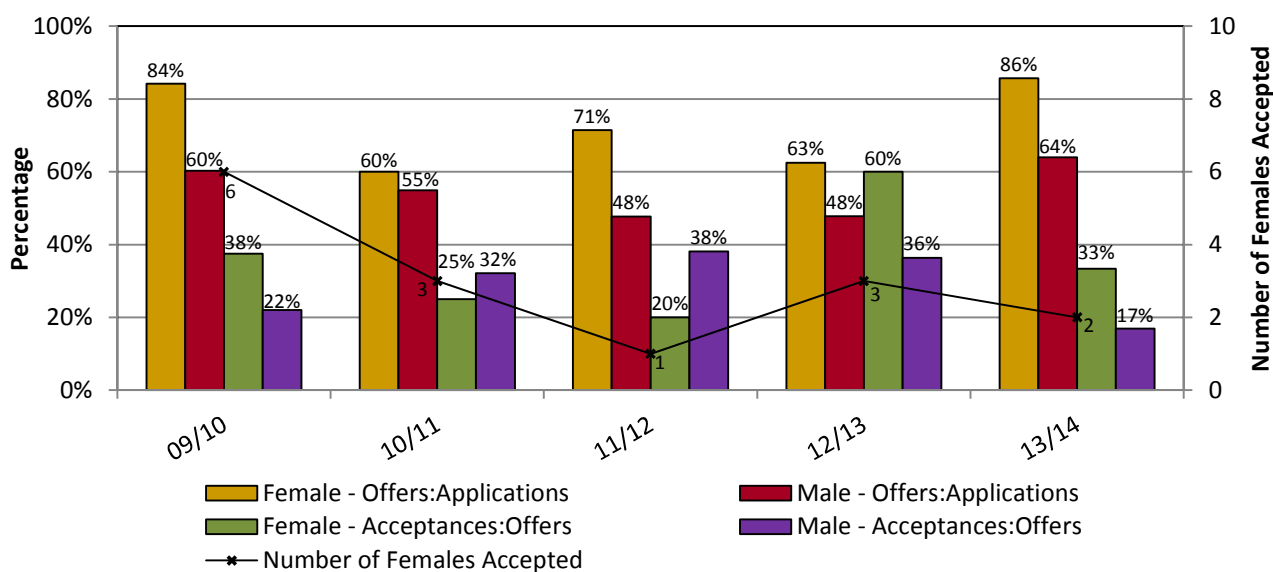


Fig. 16 Ratio of Course Applications to Offers and Acceptances by Gender for PGR Degrees

Applications to PGR degrees have been relatively low (Figure 16) with the economic downturn coinciding with a period of lower research funding levels. Of those that have applied, the success rate among female applicants remained significantly higher than for males. Our challenge here is in attracting applications in the first instance and diversity remains a core element of all our recruitment activities.

[Sub-total 237 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S2.3 Analyse and understand female enrolment statistics across the School programmes
Current Action Plan Items (see Action Plan for details)
G3.2 Support student career transitions
G3.3 Encourage suitably qualified females to consider a career in academia

- (vi) **Degree classification by gender** – comment on any differences in degree attainment between males and females and say what action is being taken to address any imbalance.

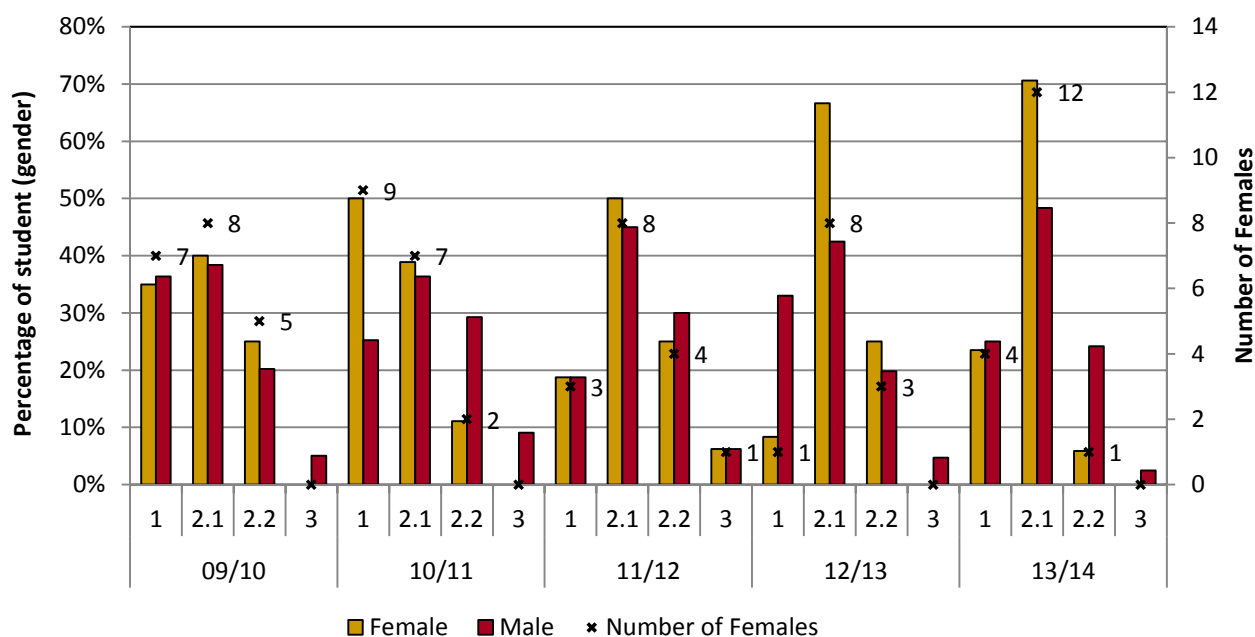


Fig. 17 Degree Classification by Gender

As Figure 17 shows, females perform significantly better than their male counterparts in the higher degree classifications verifying the high quality of the female entrants to undergraduate programmes and sustained performance. Figure 18 gives examples of prize winners.

The system of assessment is strictly anonymous and gender neutral. As a result of SWAN, degree classification by gender is now part of the annual review undertaken and we will continue to monitor data through the Current Action Plan and introduce actions should a trend of imbalance emerge.

All students are assigned a tutor who is their key support person throughout their studies and as a result of SWAN, female students have the option of a female tutor.



Fig. 18 Female Prize Winners Summer Graduation July 2014. From left: Samantha Gallagher (RAeS Prize), Imelda Friel (Ken McWhinney Prize), and Noorfathin Idris (Veryan Stephens Prize)

[Sub-total 116 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
Not applicable – there was no evidence of imbalance and no specific actions were proposed
Current Action Plan Items (see Action Plan for details)
G3.2 Support student career transitions

Staff data

- (vii) **Female: male ratio of academic staff and research staff** – researcher, lecturer, senior lecturer, reader, professor (or equivalent). Comment on any differences in numbers between males and females and say what action is being taken to address any underrepresentation at particular grades/levels.

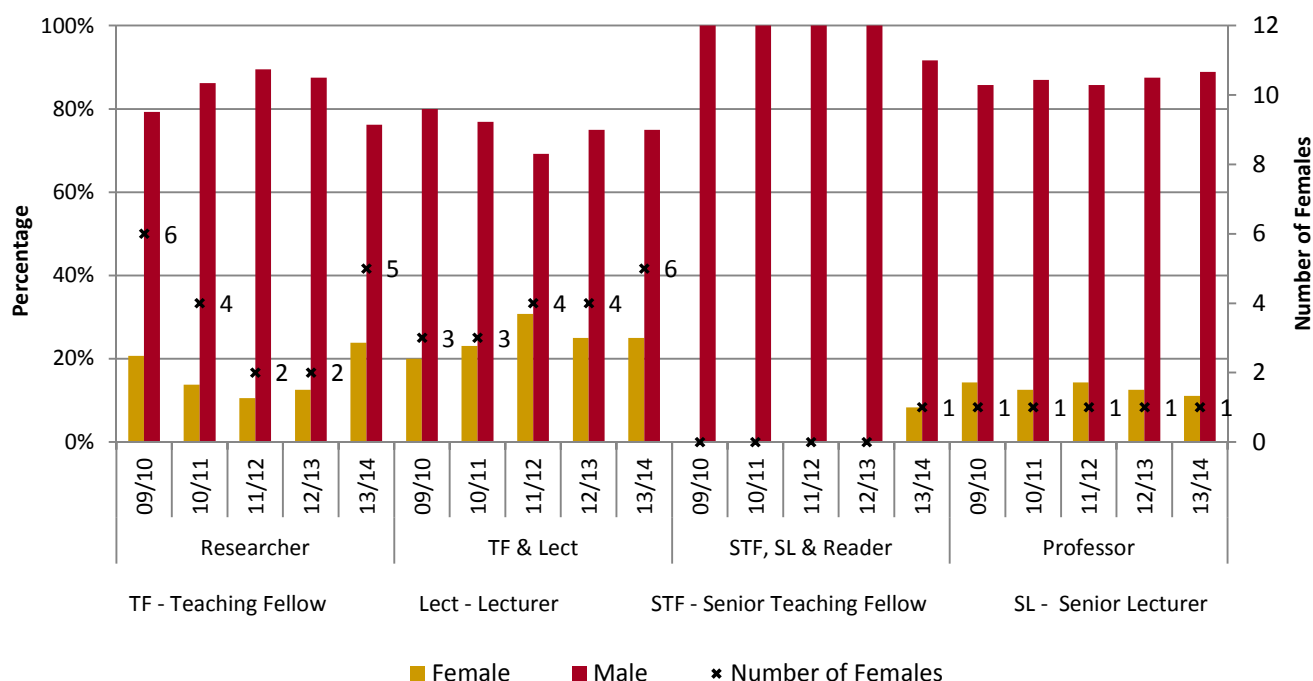


Fig. 19 Female to Male Ratio of Academic and Research Staff

Figure 19 shows the total number of female academic staff increasing from 13% in 2009/10 to 20% in 2013/14 with females in all staff categories reflecting our commitment to SWAN.

This success is attributed to the placement of the SWAN Logo and relevant information on family friendly practices in job advertisements and enhanced female presence on the School website and marketing materials.

Since a high number of female academics are recent appointees, they have not been eligible for promotion during the reporting period therefore the distribution of female staff remains highly weighted at lecturer level and we expect this to change significantly in the near term.

At the end of 2013/14 there were eight (20%) female academics in a total academic staff cohort of forty with an additional female staff member due to start in January 2015.

By comparison, the number of female researchers remained low in line with the fall in value of research grants awarded resulting in fewer posts available. This was partially a consequence of the high number of new staff in the early stages of developing their research portfolio. However, these new colleagues will develop over the next 3-5 years and we expect the number of opportunities to grow and anticipate increased recruitment of research staff.

Many high achieving female graduates successfully obtained excellent permanent jobs in industry having benefitted from the School's increased emphasis on placement opportunities, employability modules and leadership development but, whilst positive for the individuals, the impact has been a reduction in qualified candidates available for recruitment to fixed-term research contracts.

The School is addressing this by encouraging and supporting more grant applications with increased budget for research assistant and postdoctoral positions.

To improve the attractiveness of a research or academic career, we introduced presentations on PGR and Research Careers into the Employability Module in 2013/14. There is an increased effort to showcase research career attractiveness through encouraging early engagement in School Research Clusters' activities and identifying greater numbers of potential PhD students in the School.

[Sub-total 334 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.1 Provide emphasis and information on professional activities and successes by current female School members
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
S1.3 Promote School as a SWAN award recipient
S1.4 Emphasise successful university mentoring scheme for women
S3.1 Encourage female students to consider a career in academia
S3.2 Encourage more female applicants to School posts
S3.3 Provide support to female staff in their career progression
Current Action Plan Items (see Action Plan for details)
G1.1 Encourage high calibre females to apply for academic and research posts
G1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear and easily accessible
G4.1 Provide a support structure for new academic and research staff
G4.2 Provide support to female staff in their career progression
G4.3 Develop and maintain the School culture of inclusivity and diversity
G4.4 Promote healthy Work/Life Balance
G4.5 Promote SWAN Athena presence within School and to a wider audience

- (viii) **Turnover by grade and gender** – comment on any differences between men and women in turnover and say how the department plans to address this. Where the number of staff leaving is small, comment on the reasons why particular individuals left.

Eleven academic members of staff retired and three left two of whom were female. The first left in 2009/10 to take up an academic post in the Republic of Ireland due to family commitments but maintains research links with us and currently holds an honorary lectureship in the School. The second left in 2012/13 to take up an industrial post in Germany. Most research staff are employed on a fixed-term basis and leave at the end of their contract resulting in a high turnover. The School recognises this loss of valuable experience and all staff are encouraged to secure funding to ensure sustainability of posts. The University operates a redeployment policy from which the School has benefited in retaining research staff with transferable skills. Under standard University practices, all staff who leave are encouraged to complete exit surveys; no gender related issues have been cited by those who left the School.

The retirements, coupled with growth in the student numbers within the School, have provided the opportunity for staff renewal and provided fertile soil for the implementation of the SWAN initiative.

[Sub-total 181 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
S1.4 Emphasise successful university mentoring scheme for women
S3.1 Encourage female students to consider a career in academia
S3.2 Encourage more female applicants to School posts
S3.3 Provide support to female staff in their career progression
S4.1 Maintain SWAN Athena presence within School
S4.2 Promote accomplishments of female colleagues
S4.3 Promote healthy Work/Life Balance
Current Action Plan Items (see Action Plan for details)
G4.1 Provide a support structure for new academic and research staff
G4.2 Provide support to female staff in their career progression
G4.3 Develop and maintain the School culture of inclusivity and diversity
G4.4 Promote healthy Work/Life Balance
G4.5 Promote SWAN Athena presence within School and to a wider audience

[Total 1,980 / 2,000 words used]

4. Supporting and advancing women’s careers: maximum 5000 words

Key career transition points

- a) Provide data for the past five years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance, how they have affected action planning, and any improvements since the department’s Silver award.
- (i) **Job application and success rates by gender and grade** – comment on any differences in recruitment between men and women at any level and say what action is being taken to address this.

Currently, 26% of our research staff is female. Data on job applications for research posts is summarised in Figure 20 below, and shows 14% of applicants were female. However the success rate of female applicants was less impressive averaging 3% for females compared to 12% for males. The Current Action Plan addresses this issue via three key elements: increase the number of female PhD students, increase the number of new research grants (hence posts), build on SWAN activity and networking to increase the pool of female applicants.

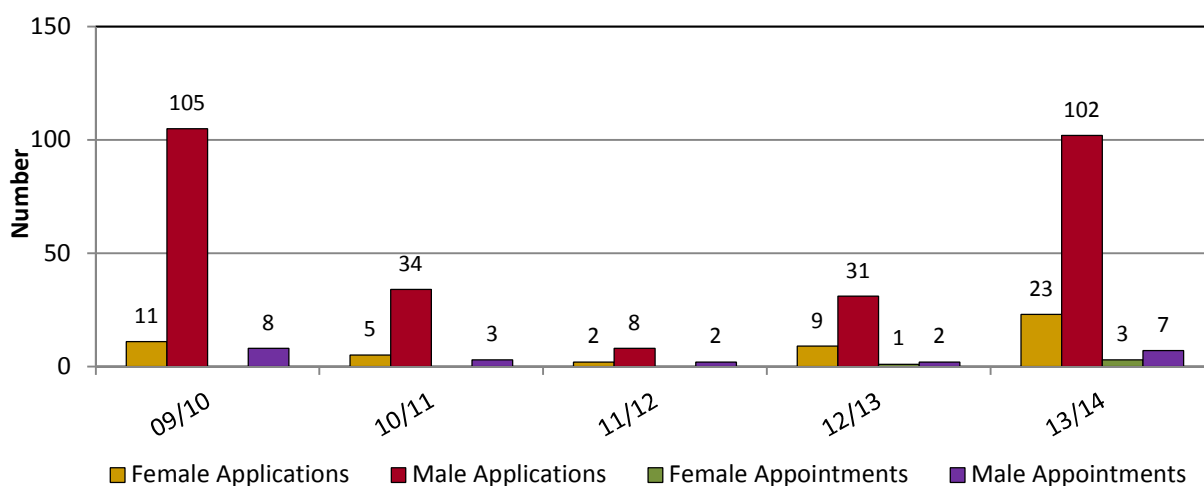


Fig. 20 Job Application and Success Rates by Gender and Grade among Research Staff

With respect to academic posts the School strategy since 2012 has been to advertise for excellent candidates regardless of grade, and has provided greater flexibility to appoint at appropriate levels and dramatically increasing the number of applicants. This has allowed us to identify potential female candidates in higher positions, where they were previously underrepresented, directly enabling the recruitment of our first female Reader.

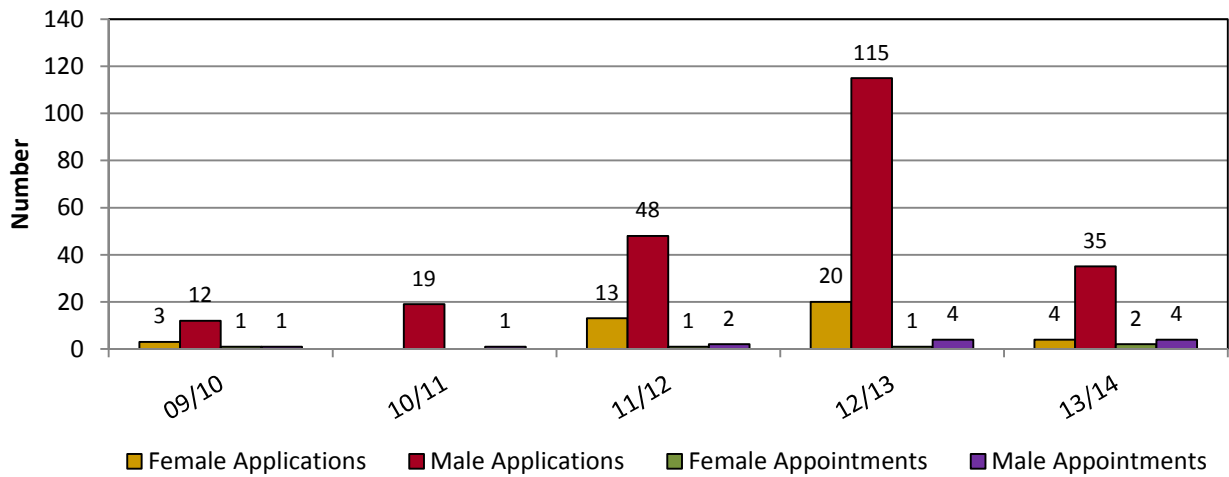


Fig. 21 Job Application and Success Rates by Gender and Grade among Lecturers
(Note 12/13 posts were not grade specific when advertised. Numbers represent total resulting applications.)

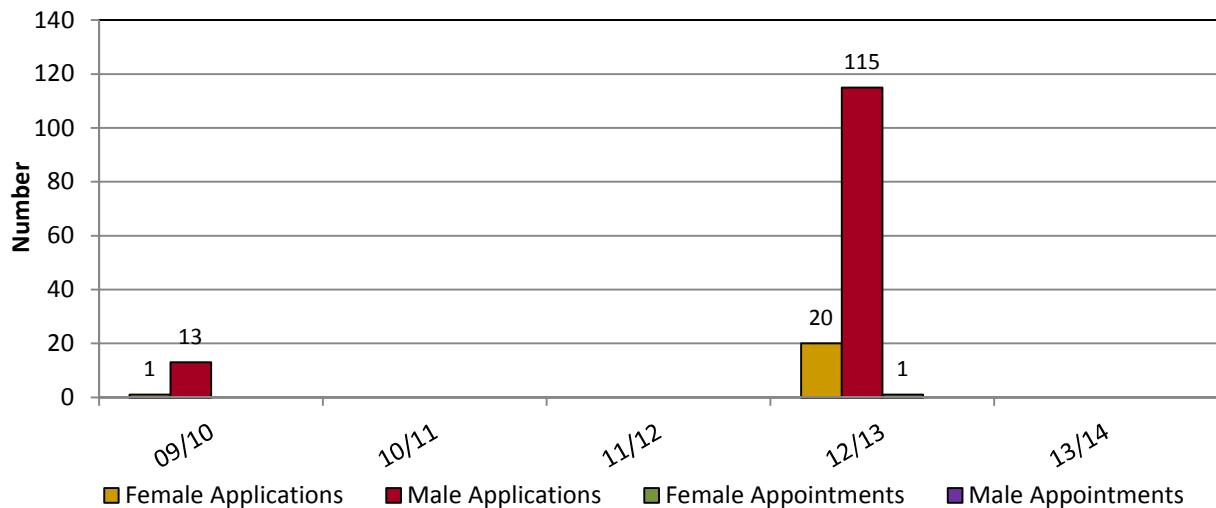


Fig. 22 Job Application and Success Rates by Gender and Grade among Senior Lecturers/Readers
(Note 12/13 posts were not grade specific when advertised. Numbers represent total resulting applications.)

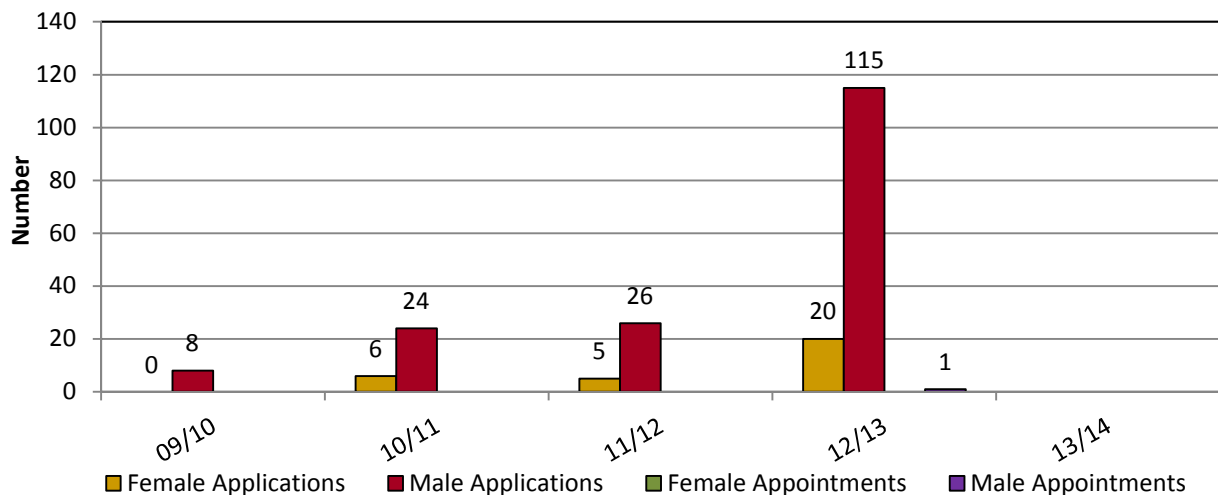


Fig. 23 Job Application and Success Rates by Gender and Grade among Professors
(Note 12/13 posts were not grade specific when advertised. Numbers represent total resulting applications)

Job application and success rates are shown in Figures 20 to 23 for Researchers through to Professors. Consistent with the School's strategy of significantly increasing recruitment to address staff shortfalls due to retirement and increased student numbers, the total number of appointments made in the previous five years is summarised in Table 1.

Table 1: Academic Staff Appointments by Grade 2009 – Present.

Academic Grade:	Female Appointments:	Male Appointments:	Total Appointments:
Research Assistant/Fellow	5	24	29
Lecturer	5	12	17
Senior Lecturer / Reader	1	0	1
Professor	0	1	1

One further female has been appointed (not included above) and is due to start January 2015.

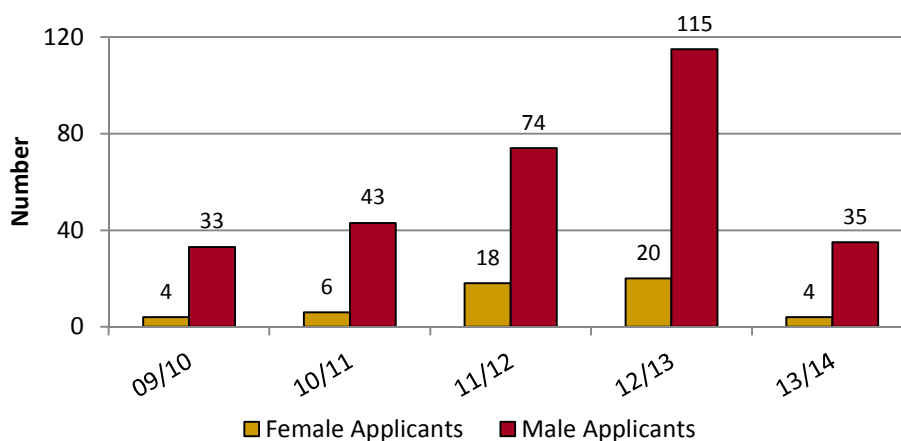


Fig. 24 Total Number of Applications for all grades by Gender during 2009-2014

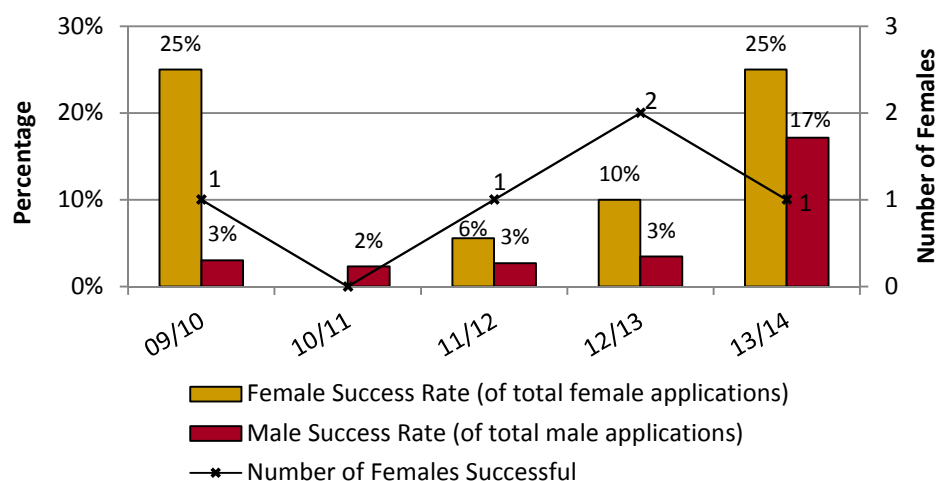


Fig. 25 Success Rate of Academic Applications by Gender and number of female appointees

Figure 24 shows the total number of applications for all academic posts by gender during the past five years. The higher number of applications shown in 11/12 and 12/13 reflects the greater number of vacancies in these years. Although the proportion of female applicants is smaller, Figure 25 illustrates the higher success rate of females in securing posts, indicating that, while we need to

continue to attract more female applicants, once they do apply they are extremely successful in obtaining positions. Our challenge therefore remains in attracting more female applicants.

[Sub-total 309 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.1 Provide emphasis and information on professional activities and successes by current female School members
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
S1.3 Promote School as a SWAN award recipient
S1.4 Emphasise successful university mentoring scheme for women
S3.1 Encourage female students to consider a career in academia
S3.2 Encourage more female applicants to School posts
Current Action Plan Items (see Action Plan for details)
G4.1 Provide a support structure for new academic and research staff
G4.2 Provide support to female staff in their career progression
G4.3 Develop and maintain the School culture of inclusivity and diversity
G4.4 Promote healthy Work/Life Balance
G4.5 Promote SWAN Athena presence within School and to a wider audience

- (ii) **Applications for promotion and success rates by gender and grade** – comment on where these differ, whether these have improved and say what further action may be taken. Where the number of women is small applicants may comment on specific examples of where women have been through the promotion process. Explain how potential candidates are identified.

Table 2 shows the grade and status of the School’s eight female academic members of staff. As it typically takes three years after confirmation in post to be ready for promotion, there have been no applications for promotion by recently appointed female or male staff.

Table 2: Current Status of Female Academics

Academic Grade:	Status
Professor	Progression not part of academic promotion
SL/Reader	Recent appointment
Lecturer	2 years out of probation, preparing for promotion
Lecturer	1 year out of probation, preparing for promotion
Lecturer	On probation
Lecturer	On probation
Lecturer	On probation
Lecturer	On probation

We recognise that we are entering a period where many of these early career females will soon be eligible to apply for promotion and supporting and preparing them for promotion is a priority.

The School is robust in monitoring career progression through the bi-annual staff appraisal process. Potential candidates for promotion are identified by their DR and support offered includes mentoring, finance for equipment and travel, training and help with application preparation. The effectiveness of this is evidenced by the School promotion success rate (Figure 26), across all grades which is higher than the QUB average of 51% in SET Schools.

Applications are reviewed by the School Management Board before progression for consideration at a University level. QUB demonstrates exceptional gender parity for promotions: 50% female success rate compared to 53% male success rate.

In order to address the female underrepresentation at senior grades, all female staff are encouraged to participate in QGI's Annual Promotions Workshops and School mentoring procedures have been established to support and encourage female engagement with the promotions process. Senior staff participate in one-to-one meetings to explain required performance standards and help colleagues prepare for promotion. As a new action the Head of School will meet with female staff annually to offer guidance in career development.

On completion of probation, females undertake increasingly proactive leadership and, with a reasonable cohort of female staff, it is now possible to offer leadership opportunities to staff when they are ready, rather than wait for opportunities to arise. The School has sponsored several female staff to attend leadership courses resulting in positive feedback from the participants.

All Management Boards and Operational Teams have female membership with five of the 14 Operational Teams led by females. The annual workload allocation allows for a balanced and strategic approach to managing School operations which are reviewed annually with a typical 2 – 3 year sojourn on a given team providing abundant opportunities to gain experience.

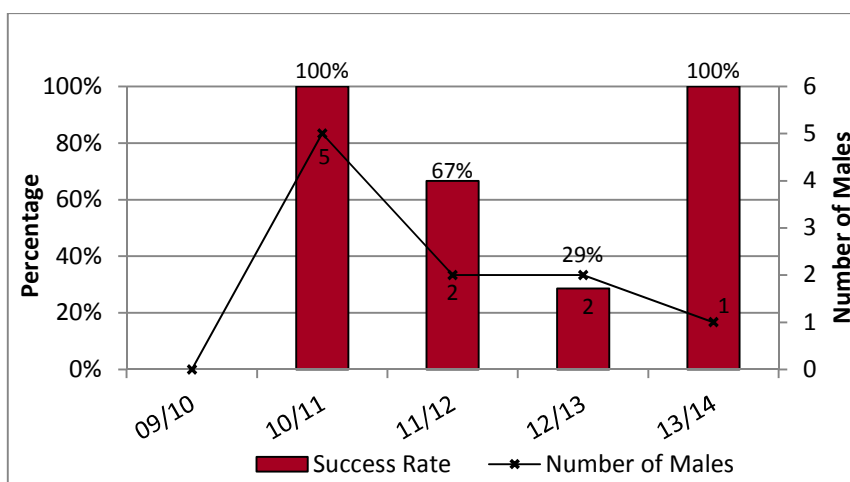


Fig. 26 School Promotion Success Rate (all Male)

Researchers are usually employed on fixed-term contracts and are not included in the University's academic promotions process. Nevertheless, the School encourages Researchers to develop their careers through fellowship applications fostering independence and research directions. The School successfully re-graded a post held by a female PDRA to Research Fellow and made permanent.

[Sub-total 417 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.4 Emphasise successful university mentoring scheme for women
S3.3 Provide support to female staff in their career progression
Current Action Plan Items (see Action Plan for details)
G4.2 Provide support to female staff in their career progression

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** – comment on how the department’s recruitment processes ensure that female candidates are attracted to apply, and how the department ensures its short listing, selection processes and criteria comply with the university’s equal opportunities policies.

As discussed in Section 4(a), it is evident that our School experiences fewer applications from females than from males however, once they do apply, they are more likely to be shortlisted and appointed (Figure 25).

Recruitment is subject to the University’s EO policies and staff on panels undergo mandatory selection training, emphasising fairness and transparency, before participating in the process to ensure awareness and compliance with procedures. In line with QUB policy, shortlisting and interview panels include at least one female. Internal practices ensure duties are shared equally and females aren’t unduly burdened with recruitment activities. Staff additionally undertake mandatory diversity training and we are currently 100% compliant.

The challenge remains to target and encourage women to apply. To address this, we will continue a number of actions including use of the Athena SWAN logo on all recruitment materials and provision of information about SWAN’s positive impact on our School culture. Female-positive images on our website and examples of career paths will be increased and EO information will be prominent and easily accessible. Staff vignettes will included in our marketing brochures (See Figure 27) highlighting gender diversity and referring to importance placed by the School in recognising the value of good work-life balance. Whenever a post is advertised, staff will be asked to identify potential candidates, particularly women, and encourage them to apply. This approach has already been proven to be highly effective with three of our female academic staff having been actively recruited this way.



Fig. 27 Exemplars of Staff Vignettes in School Marketing Brochure.

Resulting from our Previous Action Plan, we have created a New Staff Liaison position to provide a point-of-contact for new staff for information about work/life issues, including School culture, and local accommodation and schools. This initiative attracted attention from QUB HR and the creation of such a position has been recommended to other Schools.

Our overall female academic appointment success rate of 31% (Ref Table 1: 6 appointees in 19 posts) over the five years is directly attributable to the above actions. However, the positive impact of our Silver Action Plan is most notable in Figure 25 showing a rapidly increasing success rate for female applicants rising to 25% in 13/14, compared to a success rate of 17% for male applicants. This is further evidence of the success in attracting high quality female applicants.

[Sub-total 380 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.1 Provide emphasis and information on professional activities and successes by current female School members
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
S1.3 Promote School as a SWAN award recipient
S3.1 Encourage female students to consider a career in academia
S3.2 Encourage more female applicants to School posts
Current Action Plan Items (see Action Plan for details)
G1.1 Encourage high calibre females to apply for academic and research posts
G1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear and easily accessible
G3.1 Encourage female students to consider a career in academia
G3.3 Encourage suitably qualified females to consider a career in academia

- (ii) **Support for staff at key career transition points** – having identified key areas of attrition of female staff in the department, comment on any interventions, programmes and activities that support women at the crucial stages, such as personal development training, opportunities for networking, mentoring programmes and leadership training. Identify which have been found to work best at the different career stages.

Our School has been extremely successful in retaining academic staff and has a low rate of attrition. As most of the female staff appointed have been at early career stage our focus has been on supporting them establish their careers in preparation for progression.

Female staff are encouraged by the School to attend the QGI Promotions Workshop and the School is supportive of a new Queen’s Staff Coaching Service. We presently have one Institute of Leadership and Management endorsed coach, as well as one female academic being coached. The School was successful in persuading the QGI to broaden the Mentoring Scheme to include probationary academics who were previously ineligible to participate.

Female staff were sponsored and availed of a number of further developmental opportunities including participation in a “Next Generation Leadership Programme” and attendance at a conference on “Women’s Economic Engagement and the Europe 2020 Agenda” as a guest of the Irish President’s Office.

Other positive support included sponsoring female staff to attend the IrFUW Annual Conference on “Education: Empowering Women and Girls”. Female staff attended a media skill course in recognition of the need to engage positively with the general public in promoting STEM and engineering in particular and the female Reader was nominated to take part in the UK Aurora Leadership Programme.

A particular area of concern is retaining and enabling research staff, especially female, in their career progression and an Informal Co-mentoring Group for staff and researchers was established to share experiences and explore strategies for career advancement, as well as work-life balance issues.

Several successful events were held including a discussion with a visiting International Teaching Fellow on her career path and choices in the context of maintaining her desired work/life balance. Other notable events included a portion of our annual Away Day dedicated to planning our collective future as a more diverse School and a talk on gender related issues in engineering and science based research delivered by a female Professor. Attendees included a diverse mix of students, academics, researchers and support staff. Of particular note was a discussion on career progression and mentoring support for research staff.

Support for research staff included sponsorship of a female Research Fellow to attend a two-day leadership programme for senior PDRAs and early stage academics.

These excellent opportunities have been availed of by female staff, feedback from whom indicates that these gave invaluable insight across the institution and have helped them build their network outside the School, and the University.

[Sub-total 412 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.4 Emphasise successful university mentoring scheme for women
S3.3 Provide support to female staff in their career progression
Current Action Plan Items (see Action Plan for details)
G4.1 Provide a support structure for new academic and research staff
G4.2 Provide support to female staff in their career progression

5. 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** – comment on the appraisal and career development process, and promotion criteria and whether these take into consideration responsibilities for teaching, research, administration, pastoral work and outreach work; is quality of work emphasised over quantity of work?

Promotion and biannual appraisals provide transparency and consistency for staff development. At the first appraisal meeting, at the beginning of the academic year, staff meet their DR to review the previous years' accomplishments before agreeing new goals and objectives against measurable and defined outcomes, which map clearly into promotion criteria. Career development and work/life balance are integral components of this conversation. Accomplishments are reviewed after six months, and appropriate changes made.

One key observation from SWAN activities has been the need for clear statements on the academic standards for annual performance and cumulatively for promotion. New standards are being developed which will be clearer, reflecting a quality agenda accounting more definitively for collegiality and leadership. Pastoral care and outreach are key aspects of academic profiles. Both form a major element of promotion criteria and are included in the WAM as described in Section 6.

University promotion guidelines are currently being revised with input from the School. Recognising that women tend to wait longer to put themselves forward for promotion compared to men, under the Current Action Plan the Head of School will meet with female staff individually annually to discuss career progress and promotion.

As part of our SWAN Silver application, we identified that leadership opportunities were limited. Since administrative responsibilities, including leadership, play a role in promotion, this was considered a crucial area for improvement leading to a review of the School's structure and creation of several important new leadership and administration opportunities in the new Operations Teams discussed in more detail in Section 6.

Research staff are similarly supported in career development through appraisals. Research is a key function of the University and skilled and effective researchers are important to the School. Consequently, researchers are encouraged to avail of training and development activities offered through the Staff Training & Development Unit. Queen's has implemented the "Concordat to Support the Career Development of Researchers Principles" demonstrating it meets the requirements of the European Commission's Charter and Code on Management of Researchers and successfully applied for the European Commission's HR Excellence in Research award (January 2012).

Many researchers are employed on fixed-term contracts and continuity of employment is traditionally achieved through moving from one contract to the next. The University provides advice and support to research staff whose contracts are ending including notification of vacancies of related research posts across the University (should none be available within the School) and access to information held by the Careers Advisory Service.

[Sub-total 409 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.4 Emphasise successful university mentoring scheme for women
S3.1 Encourage female students to consider a career in academia
Current Action Plan Items (see Action Plan for details)
G4.2 Provide support to female staff in their career progression

- (ii) **Induction and training** – describe the support provided to new staff at all levels, as well as details of any gender equality training. To what extent are good employment practices in the institution, such as opportunities for networking, the flexible working policy, and professional and personal development opportunities promoted to staff from the outset?

All staff undertake an induction process at University level, including information on good employment practices, appropriate QUB policies and development opportunities highlighting SWAN and QUB work-life policies. This information is additionally provided at a School level on our website and in our Staff Handbook.

Our Silver Application revealed that, while new staff were well versed in University culture after their induction, there were significant gaps with respect to integration of recent appointees with the local culture outside Queen’s. This was particularly relevant to our new international staff (17 appointed in the past five years) and in response we undertook to develop a new staff handbook, specifically to address life based issues beyond the University. The initiative came to the attention of QUB HR and resulted in the University website being updated to include more relevant information. The School is additionally working with the University to produce a web-based version of the handbook for wider use. SWAN activities additionally led to the creation of a New Staff Liaison position, currently held by a female member of the SWAN Team, to further assist the integration of our new staff.

Training needs are reviewed through appraisal and staff made aware, through their DR and communications from the School and QUB, of training opportunities. The School subsidises training courses, particularly for early career staff. All new staff have mentors, independent of their probationary committee, and females are given the choice of an additional female on their probation committee.

All new academic staff are allocated start-up funding packages to support them in developing their own research programmes. The value of the start-up package is now £10k which is especially relevant to our School because of our high number of early stage career staff.

SWAN activities have resulted in our recognition of a need for better PGR induction and consequently the School has introduced an additional induction programme within its new DTC training model which includes career development and preparation for academic posts and a budget allocated for training PGR students.

Induction of research staff is undertaken by principal investigators and grant holders following processes which are similar to our PGR intake.

[Sub-total 356 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
Current Action Plan Items (see Action Plan for details)
G4.1 Provide a support structure for new academic and research staff
G4.2 Provide support to female staff in their career progression

- (iii) **Support for female students** – describe the support (formal and informal) provided for female students to enable them to make the transition to a sustainable academic career, particularly from postgraduate to researcher, such as mentoring, seminars and pastoral support and the right to request a female personal tutor. Comment on whether these activities are run by female staff and how this work is formally recognised by the department.

With 20% of our academic staff being female, our undergraduate students (15% female) experience regular contact with female academics which provides them with role models and increases the visibility of academia as a viable career option for our female students.

Having access to appropriate role models is a well-known element for attracting young women to STEM careers, particularly in academia. To further encourage females to undertake careers in STEM, including academia, our Placements Officer (female), promotes gender-specific scholarship opportunities (Figure 28), and ensures that invited lecturers from industry, and the presentation they deliver, are gender balanced.

Staff use research-relevant examples in their teaching, and the curriculum mandates all students conduct an individual research project which provides a counterpoint to the more well-known industry career option.



Fig. 28 Cate McCandless (Schlumberger Product Line Manager) & Denise Price (SWAN Champion) At Launch of Schlumberger Female Scholarship

All students are assigned a tutor who is their key support person throughout their undergraduate studies. As a result of our SWAN initiative, female students are given the option to request a female tutor. Students are also strongly encouraged to attend and participate in the running of local student branches of professional bodies (RAS, AIAA, and IMechE) and the organisers strive to add high profile successful women to the speakers' rota, including academics. Notably, the student-led branches of these professional bodies have been chaired by a disproportionately large number of female students.

As a new recruitment initiative inspired by our SWAN ethos, top-performing final year students are now invited to attend an annual dinner promoting postgraduate research in Mechanical and Aerospace Engineering. The keynote address was provided by a female postgraduate researcher at the inaugural event in December 2013.

We have had recent high success in recruiting female PGR students through closer engagement in recruiting. All incoming female PhD students in 2014/15 academic year were personally contacted by staff and encouraged to apply. As part of their PhD, we provide our students with opportunities to conduct supervised teaching and otherwise expose them to elements of an academic career such as publication of research, professional networking through conference attendance and applications for funding.

Postgraduate researchers are involved in the daily culture of the School, including School meetings such as SSCC, and social activities. Even small efforts, such as successfully encouraging them to use the School's staff room, increase their sense of belonging and ultimately the likelihood of their consideration of an academic career.

All activities related to tutoring, mentoring etc. are carried out within the remit of the School's educational and Operational Teams, many of which are led by women. These activities are embedded and appropriate workload credit goes to all those who participate. Moreover, such collegiality and mutual support is an essential element in promotion criteria.

[Sub-total 441 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
Not applicable – no specific Actions were previously identified.
Current Action Plan Items (see Action Plan for details)
G2.5 Develop supportive environment for female students and communicate this to prospective students
G5.1 Provide emphasis and information on professional activities and successes by current female School members
G5.2 Promote extra curricular achievements of School staff and students

6. Organisation and culture

- a) Provide data for the past five years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance, how they have affected action planning, and any improvements since the department's Silver award.
 - (i) **Male and female representation on committees** – provide a breakdown by committee and explain any differences between male and female representation. Explain how potential members are identified.

Since our Silver award there is an increasing trend in female representation on committees reflecting the School's success in recruiting female academic staff. In terms of the traditional committees there is proportionately high representation of female staff on the School Management Board (Figure 29) and Education Committee (Figure 30) which are viewed as the key decision making forums within the School with members having input to strategic and policy decision making.

In light of the low proportion of female academic staff (typical for UK Engineering Departments) senior non-academic staff (e.g. School Manager) play an active role in a number of committees and female academics from other Schools have been invited to sit on staff recruitment panels to ensure gender balance. There are several professional females (including chartered engineers) amongst the School support staff who contribute significant experience and capability.

Prior to 2012 the School operated under a more traditional organisational structure with a small number of key administrative committees which presented limited opportunities for staff to contribute to the School. Consequently, in January 2012 the School introduced a new organisational structure, as shown in Table 3, comprising Operational Teams whose Leaders sit on and report to the Operations Board chaired by the Head of School. This re-organisation gives all staff an opportunity to contribute towards the running of the School and is an effective means of sharing information.

We ensure that probationary staff have a lighter administrative load to support their efforts in establishing teaching and independent research portfolios. The Operational Team structure provides opportunities for staff to gain the administrative experience needed for promotion.

Team membership is carefully balanced to ensure member interest, gender diversity, and opportunity. An annual review and revision of membership allows flexibility to take account of changing career goals and mitigation against overburdening. Of the current thirteen administrative teams, five are currently led by women, and each team includes at least one female member.

There is intentional higher female representation on the SWAN, Publicity and Student Recruitment Teams reflecting the School's recognition that these Teams benefit from high female representation drawing upon their experiential input.

Table 3: Female and Male Representation on Committees (Pre and Post-Reorganisation in 2012)

Year	Pre-Reorganisation						Post-Reorganisation			
	09/10		10/11		11/12		12/13		13/14	
Committee	Led By	% F	Led By	% F	Led By	% F	Led By	% F	Led By	% F
School Management Board	M	22%	M	22%	M	22%	M	25%	M	25%
Education Committee	M	14%	M	14%	M	14%	M	20%	M	20%
School Board	M	13%	M	16%	M	20%	M	17%	M	24%
Staff Recruitment Panels	M	25%	M	25%	M	33%	M	32%	M	33%
Postgraduate Research Committee	M	20%	M	20%	M	20%	Replaced by Doctoral Training			
Marketing & Student Recruitment	M	25%	M	25%	M	22%	Replaced by Publicity & Student Recruitment			
Industrial Advisory Board	Not applicable							M	18%	
Operations Board	Not applicable						M	36%	M	36%
SWAN Team	F	57%	F	60%	F	56%	F	67%	F	67%
Citations & Dissemination Team	Not applicable						M	25%	M	25%
Clerical Team	F	82%	F	82%	F	82%	F	77%	F	77%
Doctoral Training Team	Not applicable						M	25%	M	25%
Environmental Team	Not applicable						M	33%	M	33%
Finance Team	Not applicable						M	67%	M	67%
Health & Safety Team	M	0%	M	0%	M	0%	M	11%	M	11%
International Team	Not applicable						F	23%	F	23%
IT Team	Not applicable						M	14%	M	14%
Leadership, Employability & Placement Team	Not applicable						M	27%	M	27%
Publicity Team	Not applicable						F	58%	F	58%
Student Recruitment Team	Not applicable						F	47%	F	47%
Workshop & Laboratories Team	Not applicable						M	22%	M	22%

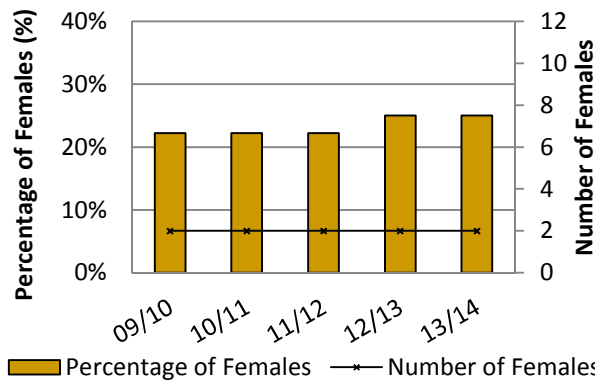


Fig. 29 Female Representation - School Management Board

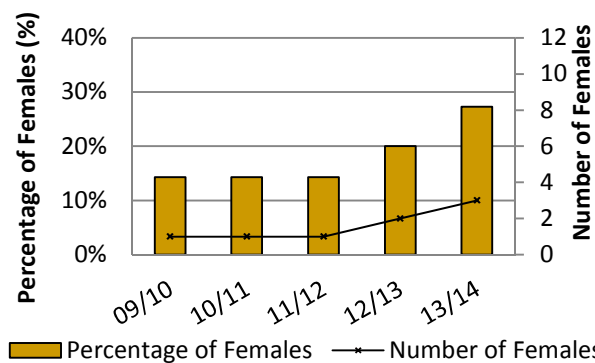


Fig. 30 Female Representation – Education Committee

[Sub-total 350 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.4 Emphasise successful university mentoring scheme for women
S3.3 Provide support to female staff in their career progression
Current Action Plan Items (see Action Plan for details)
G4.1 Provide a support structure for new academic and research staff
G4.2 Provide support to female staff in their career progression
G4.3 Develop and maintain the School culture of inclusivity and diversity
G4.4 Promote healthy Work/Life Balance
G4.5 Promote SWAN Athena presence within School and to a wider audience

- (ii) **Female: male ratio of academic and research staff on fixed-term contracts and open-ended (permanent) contracts** – comment on any differences between male and female staff representation on fixed-term contracts and say what is being done to address them.

All academic staff are employed on a permanent basis and therefore no female members of academic staff are on fixed-term contracts.

The small number of research staff, both male and female, directly corresponds to reduced levels of external research funding resulting in less availability of research posts. Research staff numbers are small making statistical analysis difficult, there is no significant difference between the percentage of females on fixed term contracts relative to those on permanent contracts when compared to males over the reporting period (see Figures 31 and 32).

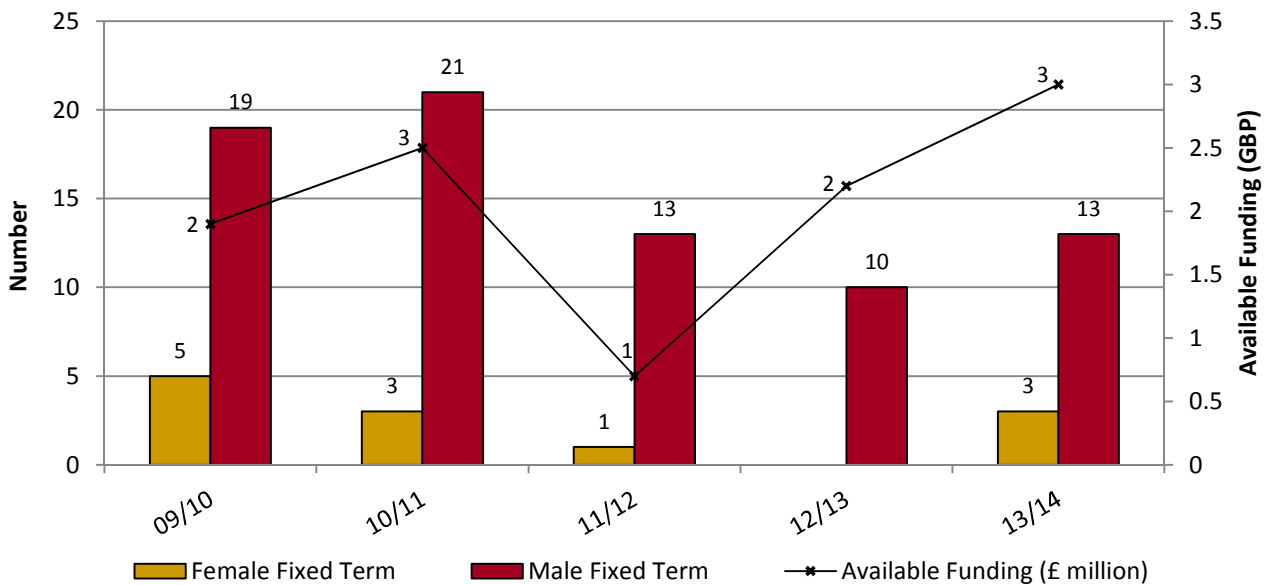


Fig. 31 Research Staff: Number of Female and Male Staff on Fixed Term Contracts

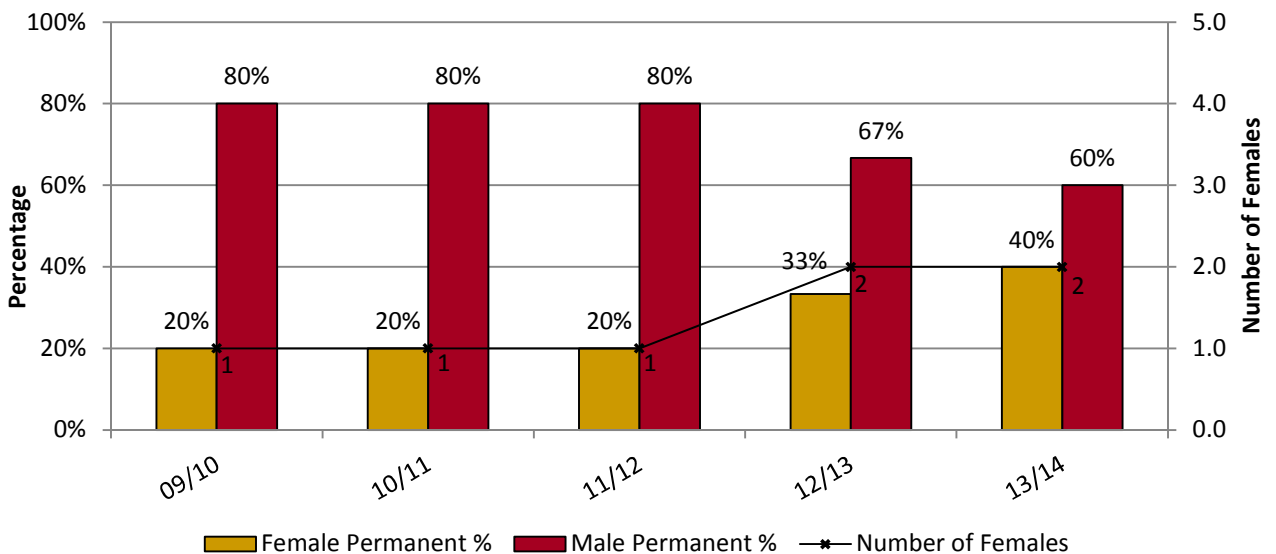


Fig. 32 Research Staff: Female to Male Ratio of Staff on Permanent Contracts

In order to make research careers more inviting by promoting job stability, staff are considered for upcoming posts before external advertisements are placed and full support is offered to assist in their career progression through mentoring and yearly appraisals.

In line with University policies, all PDRA posts are reviewed six months from the end of a fixed term contract period and the School works closely with the HR to ensure that researchers are encouraged to apply for internal opportunities providing female researchers with a greater level of stability than is traditionally afforded through contractual research. Opportunities are brought to the attention of researchers ahead of contract end to create a positive path forward.

[Sub-total 202 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
Not applicable – no specific Actions were previously identified.
Current Action Plan Items (see Action Plan for details)
G4.2 Provide support to female staff in their career progression

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** – comment on evidence of gender balance in the mechanism for selecting representatives. What evidence is there that women are encouraged to sit on a range of influential committees inside and outside the department? How is the issue of ‘committee overload’ addressed where there are small numbers of female staff?

As previously mentioned, female staff are well represented on decision-making committees within the School (see Table 3). ‘Committee overload’ is controlled via the School Workload Allocation Model and is not currently seen as an issue for individual females within the School.

Female staff are encouraged to take leadership roles across QUB and on external bodies and a number have influential University and external roles, examples including conference organisation (four have been programme chairs / lead organisers), national panels such as RAeS accreditation panels.

[Sub-total 83 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
Not applicable – no specific Actions were previously identified.
Current Action Plan Items (see Action Plan for details)
Not applicable – Females now well represented no specific Actions proposed.

(ii) **Workload model**– describe the systems in place to ensure that workload allocations, including pastoral and administrative responsibilities (including the responsibility for work on women and science) are taken into account at appraisal and in promotion criteria. Comment on the rotation of responsibilities e.g. responsibilities with a heavy workload and those that are seen as good for an individual’s career.

An improved Workload Allocation Model was introduced for academic year 2013/14 and is updated annually. The WAM is intended for guidance at appraisal and probation meetings to ensure that duties are allocated in a fair, balanced and transparent manner as evidenced by Figures 33 and 34 below (taken from WAM data averaged across the school) showing that for current year 2014/15

there is a comparable split of education, research and administrative duties for both male and female staff.

Workload is reviewed by the HoS and DRs. High workloads are avoided by allocating tasks needed for the School, typically four days per week, with the remaining time left to the individual to pursue research or other external engagements relevant to the University’s goals and their own career development ambition.

Every Operational Team is included as administration and accounted for in the WAM. All probationary staff are also allocated an additional protected “research day” each week to allow them to build up their profile.

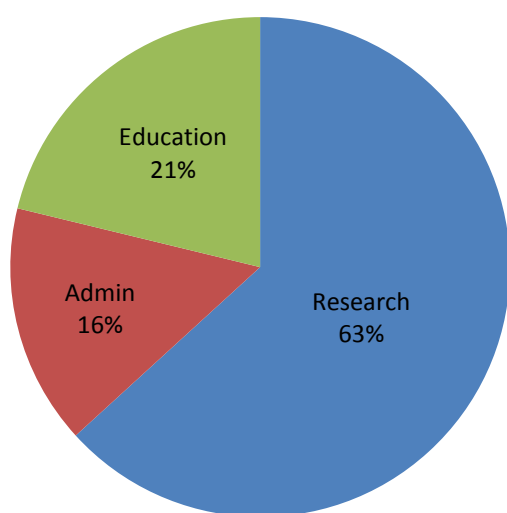


Fig. 33 Female Academic Staff Workload Allocation

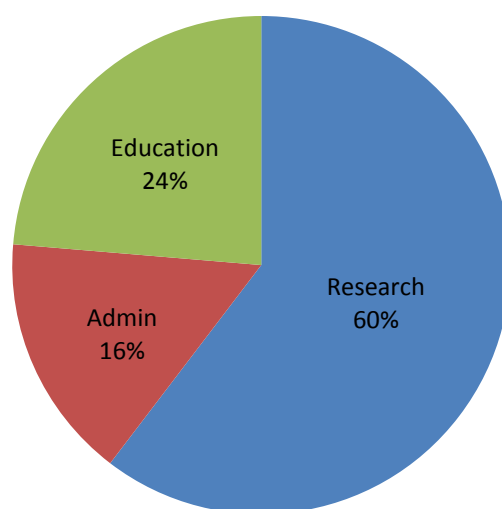


Fig. 34 Male Academic Staff Workload Allocation

[Sub-total 162 words]

- (iii) **Timing of departmental meetings and social gatherings**– provide evidence of consideration for those with family responsibilities, for example what the department considers to be core hours and whether there is a more flexible system in place.

All School meetings, including Research Cluster Meetings, are normally scheduled to commence no earlier than 10 a.m. and finish no later than 4 p.m. Lunchtime meetings are generally avoided.

To provide networking opportunities for all staff, in particular new staff, and to create an inclusive culture for postgraduate research students, the SWAN Team has assumed responsibility for the organisation of social gatherings which include the mid-morning “Staff and PhD student Breakfast” held each semester (Figure 35), and an annual Table Quiz.



Fig. 35 Staff and PhD Students joining together for breakfast in Semester 1 of 2014/15

Due to its innovative approach to family friendly employment initiatives, Queen’s was Highly Commended in the Public Sector Category of the annual Family Friendly Employer Awards 2014. The Award recognises organisations that promote family friendly working practices. Initiatives such as flexible working, Childcare Vouchers and other employee benefits make it easier for parents to balance their home and work life and the School fully embraces these practices.

The University has a number of self-contained apartments available to let to staff and students moving into the area for the first time alone or with their families. A number of our international appointees have made use of this.

[Sub-total 187 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S4.3 Promote healthy Work/Life Balance
Current Action Plan Items (see Action Plan for details)
G4.3 Develop and maintain the School culture of inclusivity and diversity
G4.4 Promote healthy Work/Life Balance

- (iv) **Culture**—demonstrate how the department is female-friendly and inclusive. ‘Culture’ refers to the language, behaviours and other informal interactions that characterise the atmosphere of the department, and includes all staff and students.

The School is welcoming and inclusive with a family friendly ethos as evidenced by the many members of staff whose children visit them in their offices, when safe and appropriate to do so, for example to meet after school to travel home together.

Staff are made aware of, and encouraged to avail of, Family Friendly/Work Life Balance policies, including dependency, maternity and paternity leave.

The School celebrated International Women’s’ Day and National Women in Engineering Day 2014 with poster exhibitions featuring past and present staff and students from the School. Invitations to the events were issued through the University staff magazine, “Queen's Now”, Twitter and the School website (Figure 36 & 37). The events were well attended and receive positive feedback and comments from male, as well as female, staff and students.

In 2014, the School introduced an all staff “Away Day” to collectively discuss, shape and plan our future. The Away Day was preceded by a staff survey conducted anonymously and independently by the QUB Leadership Institute to gain an understanding of ‘where we are now’, in order to inform the content of the Away Day. Feedback was positive and the event has contributed to a more inclusive workplace whereby all staff have a voice and feel that the School is not simply an Academic – Student interface but an integrated, team based environment.



Fig. 36 Poster Exhibition Held in Celebration of International Women in Engineering Day 2014 Showing Visitors and a Selection of Posters including Dr Dani Soban (SWAN Team Member).



Fig. 37 Exhibition to Celebrate National Women in Engineering Day 2014 (Clockwise From Left) Dr Joe Butterfield (SWAN Co-Champion) addressing visitors from Victoria College Belfast, Students Tweeting About the Event, a Selection of Posters Including Denise Price (SWAN Co-Champion).

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S4.1 Maintain SWAN Athena presence within School
S4.3 Promote healthy Work/Life Balance
Current Action Plan Items (see Action Plan for details)
G4.3 Develop and maintain the School culture of inclusivity and diversity
G4.4 Promote healthy Work/Life Balance

- (v) **Outreach activities**– comment on the level of participation by female and male staff in outreach activities with schools and colleges and other centres. Describe who the programmes are aimed at, and how this activity is formally recognised as part of the workload model and in appraisal and promotion processes.

The School has outreach activities in developing the profile of the engineering profession and contributing to local society. Staff undertake activities including school visits and engagement with stakeholders who also promote STEM careers.

Of note is our engagement with the local science park, W5, which included a proposal to the RAE Ingenious Programme for a structured series of events aligned with research being undertaken in the School which ran in 2010.

In conjunction with W5 was another event in October 2013 attended by one hundred 11-13 year pupils (male and female) at which an equal mix of male and female staff mentored the pupils on practical engineering projects on 'Future Aircraft Concepts'. The event was well received by teaching staff who accompanied the pupils and there was positive engagement from the pupils.

Several female members of academic staff are STEM Ambassadors and work closely with W5 which now holds the contract for the Northern Ireland STEMNET.

Two members of staff, one female, have been working with staff and pupils of Kells Primary School since 2011 including hosting a visit to the School in February 2012 in support of their winning Rolls Royce Science competition entry. Staff were assisted on the day of the visit by a group of 4 postgrads, 3 of whom were female.

A male staff member took part in an RTE documentary in July 2014, tracing the stories of remarkable Irish women who shaped the world of science. They included Lilian Bland, the Ulster-born aviatrix; first woman in the world to design, build and fly her own plane in 1910. The QUB contribution provided insights into Lilian's approach to design and manufacture of her aircraft based on undergraduate projects. Within the school she is admired as a role model and we have named in her honour a female only summer research scholarship.

Our celebration of the National Women in Engineering Day included a special session with Victoria College, a local girl's secondary school, during which pupils tweeted with Sinead O'Sullivan, a graduate of our School, who was recently named in the Top 40 Women in Technology 2014 in Ireland.

Sinead was sponsored by the School to attend the International Space University and is now a researcher at Georgia Tech in the USA aiming for a PhD. She is an excellent role model for females in engineering and the School is currently working with Sinead in securing a placement in NASA for a local female A Level student (Figure 38).



Fig. 38 Dr Joe Butterfield (SWAN Co Champion) with Sinead O’Sullivan (centre) and industrialists at launch of NASA Sponsorship Scheme

Outreach and contribution to society are key elements of an academic profile and are recognised in promotions and appraisals and fall within the remit of our SWAN, Student Recruitment and Publicity Teams and are accounted for in workload allocation.

[Sub-total 451 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S2.2 Continue to facilitate female-only STEM events
Current Action Plan Items (see Action Plan for details)
G2.1 Use outreach and recruitment events as a platform to interact with female students and monitor success of these events
G2.2 Facilitate STEM events

7 Flexibility and managing career breaks

- a) Provide data for the past five years (where possible with clearly labelled graphical illustrations) on the following with commentary on their significance, how they have affected action planning, and any improvements since the department's Silver award.
- (i) **Maternity return rate** – comment on whether maternity return rate has improved or deteriorated and any plans for further improvement. If the department is unable to provide a maternity return rate, please explain why.

During the reporting period three postdoctoral research fellows took maternity leave and all three, 100%, returned. Prior to taking their leave, their line managers met with them to relieve any concerns they may have had regarding their ongoing career development and return to work. Dialogue was also maintained throughout the leave period in order to facilitate planning for their return to work in a manageable and considerate manner.

No members of academic staff took maternity leave during the reporting period however we recognise the need for formal procedures and, in seeking to be supportive, have introduced School Return to Work policy, discussed in Section 7.

[Sub-total 105 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
S4.3 Promote healthy Work/Life Balance
Current Action Plan Items (see Action Plan for details)
G4.4 Promote healthy Work/Life Balance

- (ii) **Paternity, adoption and parental leave uptake** – comment on the uptake of paternity leave by grade and parental and adoption leave by gender and grade. Has this improved or deteriorated and what plans are there to improve further.

The University provides three weeks paternity leave at full pay, one more than the statutory two week provision. The School has been, and remains, fully supportive of staff taking paternity leave which is can be structured to suit the needs of staff some of whom choose to distribute their time-off in accordance with family circumstances and support requirements.

During the reporting period seven members of staff took paternity leave, all of which was successfully accommodated without disruption to the delivery of educational and research programmes. The School is similarly supportive of staff requiring adoption or parental leave however no requests were received for either during the period. As in any instance where staff face changing personal circumstances, such requests will be accommodated sympathetically.

Detailed information on the University policy and application procedures are available to staff on the School website and the School promotes family-friendly working, where required, in workload modelling and through the provision of flexible working arrangements.

[Sub-total 159 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
S4.3 Promote healthy Work/Life Balance
Current Action Plan Items (see Action Plan for details)
G4.4 Promote healthy Work/Life Balance

- (iii) **Numbers of applications and success rates for flexible working by gender and grade** – comment on any disparities. Where the number of women in the department is small applicants may wish to comment on specific examples.

There were no applications from research or academic staff for formal flexible working arrangement in the reporting period.

[Sub-total 18 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear and easily accessible
Current Action Plan Items (see Action Plan for details)
G4.4 Promote healthy Work/Life Balance

- 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** – comment on the numbers of staff working flexibly and their grades and gender, whether there is a formal or informal system, the support and training provided for managers in promoting and managing flexible working arrangements, and how the department raises awareness of the options available.

Academic and research staff elect to work flexibly on an informal basis and feel comfortable and supported in doing so maintaining close contact with colleagues and sharing calendars in order that schedules may be adjusted accordingly. The current informal flexible arrangements work exceptionally well for both males and females, with staff being free on a daily basis to make arrangements to meet family needs.

School Management is receptive to requests for formal flexible working and the School's practices of openness, transparency and flexibility will be maintained.

[Sub-total 86 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear & easily accessible
S4.3 Promote healthy Work/Life Balance
Current Action Plan Items (see Action Plan for details)
G4.4 Promote healthy Work/Life Balance

- (ii) **Cover for maternity and adoption leave and support on return**– explain what the department does, beyond the university maternity policy package, to support female staff before they go on maternity leave, arrangements for covering work during absence, and to help them achieve a suitable work-life balance on their return.

Whilst the question of a member of academic staff taking maternity leave has not yet arisen, the School has introduced a formal "Return to Work" policy in recognition of the challenges likely to be faced by those returning to work after a period of maternity or adoption leave.

This includes a phased return to work with reduced teaching (e.g. one full semester with no teaching) and administrative duties to provide an opportunity to regain momentum in their research work. Additionally, the School will support formal flexible working following a period of maternity or

adoption leave in recognition of the needs of staff with caring responsibilities giving them opportunity to maximise their contribution to the School and to their own career development.

For those research staff who were on maternity leave, the School availed of the University's centrally administered Maternity Cover Fund for financial support to engage cover for essential duties ensuring they were free to concentrate on family commitments without over-burdening other staff members. The purpose of the Fund is to allow for an anxiety-free maternity leave rather than postponing work until staff return and ensures a smooth re-integration into the School.

All PhD students within the School have two Supervisors to ensure continuity in supervision should one Supervisor become unavailable perhaps due to maternity, paternity or adoptive leave or unexpected circumstances.

[Sub-total 222 words]

Previous Action Plan - see Action Plan for items delivered under the sub-heading of:
S4.3 Promote healthy Work/Life Balance
Current Action Plan Items (see Action Plan for details)
G4.4 Promote healthy Work/Life Balance

[Total 4,973/5,000 words used]

8 Any other comments: maximum 500 words

Please comment here on any other elements relevant to the application, e.g. other STEMM-specific initiatives of special interest that have not been covered in the previous sections. Include any other relevant data (e.g. results from staff surveys), provide a commentary on it and indicate how the department plans to address any gender disparities identified.

Engagement with SWAN has transformed our School. The resulting actions have positively influenced our working practices and awareness of gender equality issues in academia. Through SWAN we have dramatically increased morale, provided an inclusive and supportive work environment and have significantly increased opportunities, particularly for our female staff, for career progression and healthy work-life balance. In salary terms females in the school now earn 99% that of their male colleagues on average, and 103% at lecturer grade where most appointments have been made, significantly better than the national average of 89%.

A notable aspect of our SWAN Team is the continued commitment throughout the year with an average of 3hrs per member per week spent on SWAN related activities which are taken into account in the WAM.

Our Silver Actions have had major positive impact and will continue, being augmented with the addition of the Current Action Plan which is now based on 5 equally important pillars:

The Five Pillars of SWAN School of Mechanical and Aerospace Engineering Queen's University Belfast	Raise profile of females in the School
	Increase Female student recruitment
	Promote academic careers
	Increase Female staff recruitment
	Support female staff

The success and impact of SWAN has now seen a natural evolution beyond a new initiative focused on mere data gathering to become embedded in our School's operations. With continuing leadership provided by the SWAN team, collective responsibility for delivery of all actions related to the Pillars is now shared across the School. Detailed activities related to the pillars will be picked up by the Operational Teams as illustrated in the following matrix.

Matrix Illustrating Shared Responsibility for SWAN embedded across the School led by the SWAN Team in collaboration with colleagues on other Teams	Promote SWAN principles	Raise profile of females in the School	Increase Female student recruitment	Promote academic careers	Increase Female staff recruitment	Support female staff
SWAN Team	•	•	•	•	•	•
Citations & Dissemination Team	•	•				
Clerical Team						
Doctoral Training Team	•	•	•	•		
Environmental Team						
Finance Team						•
Health & Safety Team						
International Team	•	•	•		•	
IT Team						
Leadership, Employability & Placement Team	•	•		•		
Publicity Team	•	•	•	•	•	
School Management Board Team	•	•	•	•	•	•
Student Recruitment Team	•		•			
Workshop & Laboratories Team						•

Traditionally Engineering has been male-dominated, making our SWAN initiative particularly relevant in this environment. From a Northern Irish, male-dominated School at the end of the 20th Century, our School community now originates from more than thirteen countries providing a vibrant mix of cultures and many opportunities to address 21st Century engineering challenges.

We have already shared our positive experiences with a number of other universities across the UK and look forward to building on these and forging new relationships to further the aims of Athena SWAN and to take a leading role in helping to transform the working practices of engineering schools in academia.

[Total 456/500 words used]

9 Action plan

Provide an action plan as an appendix. An action plan template is available on the Athena SWAN website.

This should be a table or a spreadsheet comprising plans to address the priorities identified by the analysis of relevant data presented in this application, success/outcome measures, the post holder responsible for each action and a timeline for completion. The Plan should cover current initiatives and your aspirations **for the next three years**.

10 Case study: impacting on individuals: maximum 1500 words

Describe how the department has changed and how its staff have benefited on the journey to applying for Gold.

Provide a small number of case studies of individuals working in the department and show how the inclusive culture and working practices of the department have enabled them to pursue a career in STEM.

At least one of these case studies should be a member of the self assessment team, and at least one should be someone else in the department. There should also be at least one case study from a male member of staff. More information on case studies is available in the guidance.

Female Academic - Beatrice Smyth

Beatrice Smyth started in the School as lecturer in 2013. ‘Although I didn’t realise it at the time, the School’s SWAN initiative was key in me applying for a position in SMAE. Having spent most of my career working in industry, I haven’t followed the traditional route to academia. A School staff member got in touch to tell me about the vacancies and encouraged me to apply on the basis of my industry-based background. Since I’ve been in post, the School’s and University’s SWAN policies have both supported my career and helped on a personal level. In early 2014, I was put forward by the Head of School to speak at a public engagement event as a female representative of the Clean Energies Research Cluster. This opportunity has benefited me greatly, leading to research contacts, dialogue with industry and an invitation to take part in the QUB Research Impact Showcase in November 2014. Also under SWAN, the School has sponsored me to attend the Next Generation Leadership Programme in December 2014. On a personal level, the School’s informal flexible working practices have been really helpful. Not long after taking up the post in January 2013, we bought and moved into a new house not far from the University. The house renovation has been an ongoing project and thanks to the School’s flexibility, I have been able to pop out when needed to meet builders.’

Male Academic - Joe Butterfield

“After a period working in industry I returned to the School of Mechanical and Aerospace Engineering at Queen’s in 2001. I was then appointed to the position of lecturer in Digital Manufacturing at Queen’s in 2008 and was promoted to the position of senior lecturer in 2014. I am currently working with industry on a range of research programmes spanning digital manufacturing, virtual engineering and simulation methods for the design and manufacture of composite structures.

I am married with three children (aged 13, 10 and 7) two of which were born since returning to Queen’s. My experience of paternity leave provision, flexible working conditions and allowances for a healthy work / life balance within the School of Mechanical and Aerospace Engineering, have been excellent. This is in stark contrast to my experience in industry where after the birth of my first child, paternity leave was deducted from holiday entitlement and it was understood that child care logistics should not affect timeliness relative to rigid start and finish times. Since returning to Queen’s I have been actively involved in STEM activities through the promotion of Mechanical and Aerospace Engineering as a career option for school children of various ages. As part of ongoing initiatives with SENTINUS aimed at helping students make better informed career choices, I have organised information days and tours for groups of female students, appointing female guides to provide insights based on their own choice of Mechanical or Aerospace Engineering as a career”.

Female Research – Beatriz Mayoral

“After working in R&D in industry for five years I returned to Queen’s in 2012 to complete a PhD and I am currently a post-doctoral researcher in the School. I have had 2 periods of maternity leave in the last four years and I believe that on both occasions, my return to work has been greatly eased by initiatives related to SWAN.

It was difficult for me to inform my PhD supervisor that I was pregnant, I thought as a male academic he would not understand the situation but I was wrong, he was very happy for me and extremely supportive during the whole time. With the help and assistance of my colleagues and my supervisor, I managed to finish all of my experimental work before I had the baby. I tried to write my PhD thesis during my maternity leave (July 2011-January 2012) with limited progress so I finished on my return to work when I could leave my baby in the QUB crèche. My working hours were quite flexible and my supervisor accommodated the meetings and reviews to best suit my schedules.

I learned that I was pregnant with my second child shortly after I started my post-doctoral position on an externally funded project with a new supervisor. Again, it was not easy to inform her about my circumstances because, even though she was a female academic with her own children, I thought it was not the right time in terms of the project timeline and I had yet to demonstrate to her and the external funders, my expertise and capabilities as a researcher. Once I told her, she was very supportive and understanding. She said “Don’t worry it is never a perfect time for getting pregnant during a professional career, but we will work it out”. She informed the project funders who were also very understanding. My supervisor was very nice and helpful throughout the pregnancy, sharing her maternity experiences and encouraging me in my academic career. My second period of maternity leave lasted only 4 months (September 2013-January 2014) due to the fact that we couldn’t find any other researcher with the expertise required to cover me. It was after I returned from my maternity leave that we found out that the funding for those 4 months was a problem. My supervisor tried to get the funding from QUB as I was a staff member, but the finance/salary department couldn’t support the cost as I was part of an externally funded project. In the end, it was the Head of School of Mechanical and Aerospace Engineering who in the spirit of the SWAN initiative and his support policies for his staff members, covered the cost of my maternity leave. Once I returned to work everybody in the School, especially in the PPRC and my supervisor was very helpful and supportive. At the start I worked flexible hours to be able to breastfeed the new baby and worked from home when the children were unwell.

I would love to find an academic position in the School of Mechanical and Aerospace Engineering when I finish my post-doctoral research. Based on my experience the School and its SWAN programme are doing a great job in helping and encouraging woman to be able to juggle family commitments and the demands of an academic career.

I am a registered UK STEM ambassador and will be starting the STEPS (STEM Experts in Primary Schools) in Chemistry to participate in outreach activities at local primary level schools.”

Male Research - Mark Kearns:

Mark is the Moulding Research Manager at the PPRC in the School: “As an employee of Queen’s for over 20 years, it’s really only been in the last couple of years that I’ve come to fully appreciate the family friendly culture, approach and benefits of working for the School and Queen’s. On three occasions I’ve used the generous University paternity leave around the births of my children – time with your new born children is a very precious commodity, particularly in those critical and hectic early weeks and it was wonderful that the School enabled me to be an integral part of that. I’ve also been fortunate to have been able to utilise the informal flexible working practices and genuinely feel

there is willingness by the School to accommodate my parental responsibilities and help me strike the right work / life balance.

Life and work can throw up many varied challenges and demands, having the support of the School has helped me personally, on a number of levels, to ensure that a productive and fruitful work/life balance is achieved - ultimately benefitting all parties.”

Female Postgraduate Student - Roisin McConnell

“My passion for research stems from two main sources – intellectual curiosity and my experiences within the University. During the course of my undergraduate degree I was given the opportunity to work on a research project for the School and industry sponsors Bombardier Aerospace. This opened my eyes to a career in research, I enjoyed the responsibility and freedom to work I was given in order to complete the projects requirements. The achievements of the project meant I was able to present at an International Conference and become a published author all as an undergraduate student, something I would not have been able to accomplish without the support of the School and my supervisor (Prof Mark Price). The working relationship that I was able to establish led to my second research project which began as a summer placement with Queen’s University and developed into my final year research project for my degree. The opportunities I have received from my undergraduate degree have led me to follow a research pathway and I am currently doing a Postgraduate Research project with the School. As part of my postgrad experience I have been able to interact and teach undergraduate students, giving me insight into the field of academia”.

[Total 1,474/1,500 words used]

School of Mechanical & Aerospace Engineering - SWAN Action Plan 2014

Aim To be the leading engineering School in the UK in the promotion of the SWAN ethos

Pillar 1 Increase Female Staff Recruitment

Pillar 2 Increase Female Undergraduate Student Recruitment

Pillar 3 Promote Academic Careers

Pillar 4 Support Female Staff

Pillar 5 Raise Profile of Females in the School

Key Progress on Activities Undertaken as Part of Previous Silver Action Plan 2011

ACHIEVED One-off Action undertaken as part of Previous Silver Action Plan 2011

ACHIEVED & EMBEDDED Action undertaken as part of Previous Silver Action Plan 2011 and now embedded in standard School procedures

ONGOING Action Ongoing/in progress in Current Gold Action Plan 2014

Sx.x Action Item in 2011 Silver Action Plan

Key Additional Activities to be Undertaken as Part of Current Gold Action Plan 2014

1 Activity in progress or to be undertaken in Year 1 of Current Gold Action Plan

2 Activity to be undertaken in Year 2 of Current Gold Action Plan

3 Activity to be undertaken in Year 3 of Current Gold Action Plan

Gx.x Action Item in 2014 Gold Action Plan Application

Responsibility for School Action Plan

Responsibility and accountability for the delivery of the School Action Plan is led by the SWAN Team in collaboration with other staff and Operational Teams in the School; current post holders are as follows:

Operational Team

Citations & Dissemination
 Doctoral Training
 Internationalisation
 Leadership, Employability and Placements
 Publicity
 School Management Board
 Student Recruitment

Operational Team Lead

Professor Fraser Buchanan
 Dr Gary Menary
 Dr Dani Soban
 Dr Geoff Cunningham
 Dr Eli Ghassemieh
 Professor Mark Price
 Dr Juliana Early

Key Administrative Roles

Head of School
 Director of Education
 Directors of Research
 School Manager
 New Recruit Liaison
 Professor Mark Price
 Dr Geoff Cunningham
 Professor Roy Douglas
 Dr Nicholas Dunne
 Dr Adrian Murphy
 Mrs Wendy Boyd
 Dr Dani Soban

Abbreviations

AIAA	American Institute of Aeronautics and Astronautics	NI	Northern Ireland
BEng	Bachelor of Engineering	NIBES	Northern Ireland Biomedical Engineering Society
CDT	Citations & Dissemination Team	NRL	New Recruit Liaison
CERN	European Organization for Nuclear Research	PD	Programme Director
DE	Director of Education	PDP	Personal Development Plan
DEL	Department of Education and Learning	PGR	Postgraduate Research
DR	Director of Research	PGT	Postgraduate Taught
DTC	Doctoral Training Centre	PhD	Doctor of Philosophy
DTT	Doctoral Training Team	PT	Publicity Team
F	Female	QGI	Queen's Gender Initiative
FE	Further Education	QUB	Queen's University Belfast
GB	Great Britain	RAE	Royal Academy of Engineering
GCSE	General Certificate of Secondary Education	RAeS	Royal Aeronautical Society
HoS	Head of School	SAT	SWAN Self-Assessment Team
ILM	Institute for Leadership and Management	SM	School Manager
IMechE	Institution of Mechanical Engineers	SPACE	The School of Planning, Architecture and Civil Engineering
IOM3	The Institute of Materials, Minerals and Mining	SRT	Student Recruitment Team
IrFUW	Irish Federation of University Women	STEM	Science, Technology, Engineering and Mathematics
ITT	Internationalisation Team	UCAS	Universities and Colleges Admissions Service
LEAP	Leadership, Employability and Placements Team	W5	Interactive Discovery Centre
M	Male	WES	Women's Engineering Society
MEng	Master of Engineering		

Pillar 1 Increase Female Staff Recruitment

Current Action Plan

Background	There had been a marked increase in the number of female academic staff over the past five years, and successful measures from the previous action plan will be retained. There has, however, been a decline in the number of female research staff over the period. Although this is part of a wider decline in overall research staff numbers, the female success rate in applying for research positions is lower than for males.
Overall targets	Maintain success in encouraging females to apply for academic posts. Address decline in number of female research staff. Increase proportion of high calibre females applying for research posts/funding.

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G1.1	Encourage more female applicants to School posts, particularly research posts		Success measure: Increased applications from females for research posts	
G1.1.1	Provide training to existing research staff and PhD students on funding routes and applications	SM, DRs, DTT	Organise training event to provide information on funding bodies, preparation of applications, collaborations and industrial partnerships	1 2 3
G1.1.2	Encourage applications from other STEM disciplines to both academic and research positions	DRs	Distribute information on vacancies, particularly research posts, to colleagues in other STEM schools and to the associated internal webpages	1 2 3
G1.1.3	Investigate opportunities for promotion of School vacancies at national and international conferences and events	ITT, All staff	Recommend and pursue suitable outlets for targeted promotion, e.g. information regarding vacancies on final slide of conference presentation	2
G1.2	Ensure Family Friendly/Work Life Balance including Flexible Working Policies are made clear and easily accessible		Success measure: Website reviewed and all new staff informed of webpage	
G1.2.2	Contribute to delivery of University-wide information webpage for new and prospective staff	ITT, NRL	Initial website being reviewed. New Recruit Liaison (NRL) to provide feedback on behalf of School. All new staff to be directed to the webpage.	1

Pillar 1 Increase Female Staff Recruitment: Progress on Activities Undertaken as Part of Previous Action Plan

Background Analyses of data for the three years prior to the Silver submission highlighted difficulties in attracting high calibre females to apply for vacant positions. The following actions were designed to promote the School as an inclusive place of employment which is fully supportive of female academic and research staff.

Measurable impact Female academic staff numbers increased from 13% in 2009/10 to 20% in 2013/14 and there are now females in all staff categories.

Action	Progress and impact - highlights	Status
S1.2 Ensure Family Friendly / Work Life Balance including Flexible Working Policies are made clear and easily accessible		
S1.2.1 Review/revise School website to ensure policies are informative, clear, and easily accessible	Website contains links to family friendly initiatives including Adoptive, Maternity, Parental and Paternity Leave Policies and Application Forms, Career Breaks, Dependent Leave, Flexible Working and Childcare Voucher Scheme.	ACHIEVED & EMBEDDED
S1.2.2 Create Relocation Information Pack with specific emphasis on family relocation issues that shall be distributed from within the School during recruitment exercises	The initiative was picked up as an example of best practice by central University administration, and a specific University webpage has been launched with information for new and prospective staff.	ACHIEVED
S1.2.3 Create New Recruit Liaison position to provide point of contact and relevant information to new staff	A New Recruit Liaison was appointed in June 2013.	ACHIEVED
S1.3 Promote School as a SWAN award recipient		
S1.3.1 Assess placement of SWAN logo and other relevant information on School website and make appropriate adjustments.	SWAN Silver Award Logo features on School site front page. SWAN pages now include a section on the 'Need for SWAN' with links to information on women in STEM. SWAN items regularly added to School News webpage, for example listing in Times Top 50 Employers for Women 2011.	ACHIEVED & EMBEDDED
S1.3.2 Place SWAN logo on all recruitment and other appropriate corporate promotional documents	SWAN Silver Award logo on QUB's job opportunities webpage, School job opportunities link and School homepage.	ACHIEVED & EMBEDDED
S1.4 Emphasise successful University mentoring scheme for women		
S1.4.1 Provide information both on the School website and in all recruitment material on QGI and the University mentoring scheme	School website and recruitment material contains information on QGI and the mentoring scheme.	ACHIEVED & EMBEDDED
S3.0 Encourage female students to consider careers in academia and support existing early stage career females in career progression		
S3.2 Encourage more female applicants to School posts		
S3.2.1 All staff recruitment materials to encourage applications from underrepresented applicants, particularly females	Ongoing review as materials are updated.	ACHIEVED & EMBEDDED
S3.2.2 Encourage all staff to use their networking capabilities to identify potential candidates	Vacancies are highlighted at School Board Meetings and staff requested to encourage applications; this has proved successful for encouraging female applicants.	ACHIEVED & EMBEDDED

Pillar 2 Increase Female Undergraduate Student Recruitment

Current Action Plan

Background Although the percentage of females in undergraduate courses has remained constant and is higher than the national average, female applicants receiving offers have lower acceptance rates than male, the reasons behind which require further investigation. Research has shown that females often lose interest in STEM in the early years of (or even prior to) second-level education. Mechanisms to support females and their families in decision making for higher education will be developed and extended to pre-GCSE students.

Overall targets Maintain/increase proportion of female undergraduates.

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G2.1	Use outreach and recruitment events as a platform to interact with female students and monitor success of these events		Success measure: Interact with wider audience. Improved understanding of impact of outreach and recruitment events, leading to review of existing actions and development of new actions.	
G2.1.1	Review tour programme for schools to allow targeted visits, particularly for female-only groups	DE, SRT	Plan targeted tours to included two core events, flight sim and formula student, with the remaining two events chosen in advance by careers teacher from: biomedical, 3D printer, machine shop, and polymer processing.	1 2 3
G2.1.2	Investigate and hold 'alternative' recruitment events so as to reach a wider audience	DE, SRT, SWAN Team	The SWAN Team has brainstormed ideas, including: invite A-level students from local female only math/physics classes to attend a typical 1st year lecture; host an engineering-based event for mothers and daughters from the local area; hold a bring-your-daughter-to-work day for staff. The SWAN Team will discuss ideas with the DE and SRT and plans to hold one such event per year.	1 2 3
G2.1.3	Improve engagement with careers/STEM teachers from female-only schools	DE, SRT, SWAN Team	Ideas include: circulation of a flyer with general information on engineering to schools; inviting careers/STEM teachers from local female-only schools to the School for a tour and information session. Ideas to be further discussed and events planned.	1 2 3
G2.1.4	Expand monitoring of female attendance at Parent Evenings/Open Days and subsequent program enrolment to include other outreach and recruitment events	SM	Statistics have been gathered from previous events, and tracking strategies for future events developed. Additional events being monitored include: School UCAS Event, GB Open Day, and the STEM Summer School. The School UCAS Event showed conversion rates of 41% (30%F/42%M) in 2010/11, 26% (29%F/26%M) in 2011/12, and 43% (56%F/41%M) in 2012/13. The Caterpillar Engineering STEM Summer School for Year 13 pupils achieved a conversion rate of 25% in 2011 and 31% in 2012/13. There was no event in 2010/11.	1 2 3

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G2.2	Facilitate STEM events		Success measure: Increased awareness of events among staff through direct email contact from School. Better understanding of link between events and enrolment.	
G2.2.1	Continue involvement in STEM events and encourage and support staff to seek out and participate in local STEM activities, including female-only events	DE, SRT, All staff	New activities to be explored. A lecturer has met W5 staff to discuss funding opportunities, including the RAE Ingenious Programme to develop a series of events linked to ongoing School research.	1 2 3
G2.2.2	Circulate information to School staff and students on national STEM events and activities	SM, SWAN Team	The School circulates information on national STEM activities, including female-specific activities such as the Range Rover Evoque WISE Scholarship and Schlumberger 'Women in technology' event.	1 2 3
G2.2.3	Assess success of our participation in GET SET female-only STEM events by initiating process to track participants and their subsequent program enrolment	SM	The records of females who participated in the 2010, 2011, 2012 and 2013 events are being analysed to determine how many subsequently enrolled in one of the School's degree programmes.	1
G2.3	Analyse and understand female enrolment statistics across the School programmes		Success measure: Improved understanding of trends, leading to development of new actions.	
G2.3.1	Monitor data and conduct analysis to understand changes in female enrolment and why females are disproportionately declining offers after receiving them	SWAN Team	Trends are being monitored. The SWAN Team is planning to hold telephone interviews with female A-level students who did not include Mechanical/Aerospace/Product Design as their main or back-up choice. Actions will be developed arising from findings.	1 2 3
G2.4	Increase participation of females in Foundation Programme		Success measure: Improved awareness of Foundation Programme in target audience.	
G2.4.1	Maintain existing advertisement of Foundation Programme option in all recruitment materials and investigate options for reaching a larger audience	DE, SRT	The target audience will be assessed and other outlets investigated to allow wider dissemination of material, particularly to females. Investigate open day with FE colleges.	3
G2.4.2	Identify why more females are not applying to the Foundation Programme	SRT, SWAN Team	Review pending data on second intake of students. Investigate ways to bridge the mathematics gulf. Explore mechanisms to increase the number of places available.	2

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G2.5	Develop supportive environment for female students and communicate this to prospective students		Success measure: Improved awareness of support structures for female students. Increased uptake of mentoring and leadership	
G2.5.1	Introduce and encourage participation in student mentoring and leadership schemes to foster a supportive environment and increased engagement in the School	DE, LEAP	A Student Peer Mentoring Scheme and an Engineering Leadership Programme have been introduced. Participation in the scheme and impact on subsequent progression will be assessed. Female students are given the option to request a female tutor.	1 2 3
G2.5.2	Investigate needs of female students in the School	SWAN Team, All staff	A Stage 3 student project is currently being undertaken to identify factors affecting transition from Stage 1 to Stage 2 in the School, to analyse differences between male and female students and to consider how the transition could be better supported. Future projects will be investigated as the need arises, and actions will be developed based on findings of projects.	1 2 3
G2.5.3	Support participation of female undergraduate students in STEM activities	HoS, SWAN Team	The School provided top-up funding to enable a female undergraduate student to attend the WES Student Conference in 2014. Future events will be supported as far as possible, taking into account student demand and available funding.	1 2 3
G2.5.4	Communicate details of School's supportive environment for females to prospective students	SRT, SWAN Team	Include information in briefing sessions given to staff prior to open days and other recruitment events	1 2 3

Pillar 2 Increase Female Undergraduate Student Recruitment: Progress on Activities Undertaken as Part of Previous Action Plan

Background Data analysis for the Silver submission showed that the School is successful in attracting female students consistently in excess of national averages. Female numbers however remain significantly less than male and the following actions were designed to build upon existing success and to support and inform females and their families in their decision making when applying to higher education, with the aim of growing female student numbers.

Measurable impact There has been a strong female staff and postgraduate presence at outreach events, feedback from participants has been good and analysis of subsequent programme enrolment is ongoing. The male:female ratio for full-time undergraduates across all programmes has remained relatively stable for the past five years.

Action	Progress and impact - highlights	Status
S2.1 Fully utilise recruitment opportunities at Parent Open Days		
S2.1.1 Continue high female staff and female postgraduate involvement at Parent Evenings/Open Days	Strong participation of female staff and students at Open Days. Females on the SRT increased from 22% to 33% since 2011, and a female lead was appointed in 2014. Since Silver submission, the Parents' Evenings have included female postgraduate speakers.	ACHIEVED & EMBEDDED
S2.1.2 Monitor female attendance at Parent Evenings/Open Days and subsequent program enrolment to evaluate success of these types of events	Engineering Parents' Evenings are a Faculty event to encourage pupils from Year 12 upwards to consider all engineering programmes. Evidence of successful conversion to School programmes not yet clear as period between attending event and subsequent enrolment is up to 3 years. Current conversion rates are 14%, 16% and 12% for 2010, 2011 and 2012 programme attendance respectively.	ONGOING
S2.2 Continue to facilitate female-only STEM events		
S2.2.1 Continue involvement in STEM events, including female-only events, to encourage and excite females about careers in the sciences.	Staff are regularly involved in STEM events, with several registered as STEMNET ambassadors. An annual flight based W5 event continues to be supported by the School and attracted around one hundred year 11-13 students (both male and female) in 2013, with a mix of male/female staff and postgraduates mentoring. A female lecturer delivered a talk on the subject of 'Future Aircraft Concepts'. Positive feedback was received from the accompanying teaching staff.	ACHIEVED & EMBEDDED
S2.2.2 Assess success of our participation in GET SET female-only STEM events.	The records of females who participated in the 2010, 2011, 2012 and 2013 events have been collated.	ONGOING
S2.2.3 Actively encourage and support staff, particularly female staff, to seek out and participate in similar local STEM activities	Staff and postgraduates are active in local STEM activities, including visits to and from local schools. Since Silver, staff members have engaged with Kells Primary School, The Royal School in Dungannon, Creavery Primary School, and Kilkeel High School, among others. Staff also support the school's Rolls Royce Science competition entry.	ACHIEVED & EMBEDDED

Action	Progress and impact - highlights	Status
S2.3 Analyse and understand female enrolment statistics across the School programmes	Female enrolment in the aerospace programmes has increased. Trends are being analysed.	ONGOING ONGOING
S2.3.1 Monitor and analyse data to understand increase in female enrolment across all School programmes S2.3.2 Monitor and analyse data to understand why females are disproportionately declining offers after receiving them	Experience shows that lower acceptance levels by females is related to a broader range of subject choices on their UCAS application forms. Trends are being monitored and analysed to identify recommendations or strategies.	
S2.4 Increase participation of females in Foundation Programme	Foundation Programme is advertised through School publicity material and School website, and is mentioned at visits to schools and at Parents Evenings.	ACHIEVED & EMBEDDED
S2.4.1 Ensure advertisement of Foundation Programme option in all recruitment materials S2.4.2 Identify why more females are not applying to the Foundation Programme	The female application rate for 2012 entry to the foundation programmes was 10% in Mechanical Engineering and 19% in Product Design (there was a similar rate for BEng applications to both courses). In 2012 a higher proportion of female Product Design applications were rejected (71%F and 56%M); for Mechanical Engineering applications, rejection was 33%F and 39%M. Analysis of data is ongoing.	

Pillar 3 Promote Academic Careers

Current Action Plan

Background Progression to postgraduate programmes has been identified as a leak point for female students in the pathway to academic careers; postgraduate options will be promoted to undergraduate students and existing measures to support students' decision making will be monitored and developed. The potential of females from non-traditional academic career paths has been recognised, and such suitably qualified females will be encouraged to apply for School vacancies.

Overall targets Increased proportion of high quality female applicants to postgraduate programmes. Increased applications from females for academic posts.

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G3.1	Encourage female students to consider a career in academia		Success measure: Increase number of female students entering academia.	
G3.1.1	Monitor destination statistics, including conducting a leaving survey, for final year to assess progression of students, particularly females, in industry/academia	SM	Statistics currently monitored are from a University-wide survey. The existing system has been reviewed and it is planned to develop a School-specific system.	2
G3.1.2	Publicise and strengthen existing PGR mentoring program within the School to support career decisions and progression, particularly with respect to females	DTT	A new DTC structure has been implemented for PGR degrees which includes a strong theme of training. Additionally central training for PGR will be devolved back to schools. The DTT will strengthen training elements as a consequence of both. There will be expectations on advanced technical courses, entrepreneurship, communications and leadership. Initial training programmes commenced in October 2014.	1 2 3
G3.1.3	Continue to support timely communication of training opportunities, professional seminars, and career opportunities via email to the postgraduates and research staff	DTT	Existing communication methods will be maintained and new methods, such as a bulletin board, are being introduced. Under the new DTC structure, there will be a training manager/leader, who will encourage participation in training events.	1
G3.1.4	Expand and advertise existing lunchtime seminar series, which invites students and graduate researchers to luncheon speaker events, in which staff and other experts in the field give a brief talk about a relevant topic	DTT, DRs	More similar type activities are being planned. The School's two new DTCs include a seminar series from industrial representatives as part of the training portfolio (commenced in October 2014).	1 2 3

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G3.2	Support student career transitions		Success measures: Increase female applications and offers on PGT programmes	
G3.2.1	Develop undergraduate students' employability skills	LEAP	A Stage 2 Employability Module was introduced in 2012/13. The module focuses on preparing students for placement and graduate recruitment. It includes sessions on PGT courses and research careers. All students are encouraged to attend.	1 2 3
G3.2.2	Monitor and analyse student academic performance and respond to findings	SM, DE, SWAN Team	Staff personally approach high-achieving undergraduate students to discuss postgraduate options. Monitoring of School exam statistics has revealed a trend of significantly better female performance in higher degree classifications than for males over the past five years. Data will continue to be monitored and action items will be developed if an imbalance emerges.	1 2 3
G3.2.3	Promote postgraduate research as a career option to undergraduate students	DTT, LEAP, All staff	Tailored recruitment activities and personal contact with students have been successful and will continue. To identify greater number of potential PhD candidates, early engagement in the School Research Clusters' activities is encouraged.	1 2 3
G3.2.4	Attract female students from other professional backgrounds to postgraduate study and research in the School	DT, LEAP, PDs, SRT	Entrance requirements have been broadened to include maths/physics graduates. The change in PGT applications and offers to be monitored to assess the impact. Investigate broadening further to accept other engineering disciplines.	1 2 3
G3.2.5	Develop improved School induction process for postgraduate students	DTT	A formalised induction process is being introduced as part of the new DTCs. Postgraduate students outside the DTCs will also be invited to attend the induction sessions.	2
G3.3	Encourage suitably qualified females to consider a career in academia		Success measure: Increased applications from females	
G3.1.1	Encourage suitably qualified females from non-traditional academic career backgrounds to consider an academic or research career	All staff	Staff are encouraged to disseminate information on School vacancies to their contacts, including suitably qualified females from non-traditional academic career backgrounds, such as industry. This has proved a successful strategy.	1 2 3

Pillar 3 Promote Academic Careers: Progress on Activities Undertaken as Part of Previous Action Plan

Background	Analyses of data for the three years prior to the Silver application showed that the School was experiencing a decline in numbers of females applying to research posts and progressing from PhD to post doctoral positions. The following actions were designed to encourage female students to consider careers in academia.
Measurable impact	Although the percentage of female students undertaking full time research degrees declined over the period, the national average of around 20% was still exceeded in four out of the five years over the period.

Action	Progress and impact - highlights	Status
S3.1 Encourage female students to consider a career in academia		
S3.1.1 Monitor destination statistics, including conducting a leaving survey, for final year to assess progression of students, particularly females, in industry/academia	Data sought from Academic Student Affairs from DEL reports.	ONGOING
S3.1.2 Work with SWAN SAT to determine good practices for encouraging participation in academia	Since 2012, information on academic careers has been included in all Stage 4 Professional Studies modules within careers and employability section. Staff promote academic careers as well as industrial careers to Stage 4 students.	ACHIEVED
S3.1.3 Publicise and strengthen existing staff/PGRA mentoring program within the School.	A briefing to School Research Staff regarding staff development opportunities was held in September 2012.	ONGOING
S3.1.4 Support timely communication of training opportunities, professional seminars, and career opportunities via email to the postgraduates and research staff	The School, has an excellent record of communication of events to students and staff via email. A “Development opportunities” briefing session for School research staff was held September 2012.	ACHIEVED
S3.1.5 Develop and support Career Planning Seminars for undergraduate students, particularly females, to inform them about careers in academia, as well as answer any questions.	Academic career options are included in talks given by School Placements Officer. A dinner was held in December 2013 for high achieving undergraduates to raise awareness of PhD positions and related career opportunities. Speakers included a former PhD student from the School, and a Rolls Royce representative. An event for current final year students is planned for December 2014.	ACHIEVED & EMBEDDED
S3.1.6 Provide research experience at the undergraduate level to expose students to research and possible careers in academia	Since its inception in 2012 the Lillian Bland Bursary allows a top-rated female undergraduate aerospace student to undertake research for eight weeks. Also in 2012 the Schlumberger Scholarship was introduced (a female scholarship for A-Level students intending to study mechanical engineering). The program offers up to £10,000, as well as internships at the Schlumberger facility in Newtownabbey.	ACHIEVED & EMBEDDED
S3.1.7 Expand and advertise lunchtime seminar series, which invites students and researchers to luncheon events, in which staff/experts give a brief talk on research relevant topic.	Advanced Materials Cluster has introduced a series of lunchtime talks. A representative from CERN spoke at a wine and cheese event, which included poster display of PhD research.	ACHIEVED

Action

S3.1.8 Encourage participation of students in appropriate professional societies by advertising meetings and discussing the societies.

S3.1.9 Identify potential in-house candidates, particularly females, for postgraduate research by examining outgoing class lists and engaging in personal recruitment

S3.4 Support student career transitions

S3.4.1 Continue involvement with Engineering Career Symposium, providing networking and job opportunities for students

Progress and impact - highlights

AIAA, RAeS and IMechE societies hold NI regional committee meetings and are attended by undergraduate and postgraduate students as well as staff and industry. Two PhD students are on the student AIAA branch organising committee. Talks and events run by the RAeS are advertised to all students. All students are encouraged to become student members of a relevant professional body through the PDP process. Female students are informed of the RAeS Women in Aviation Section. IOM3 young lecturer competition promoted to PhD students. NIBES spring meeting open to PhD students and postdoctoral researchers, held at QUB in April 2014.

High achieving students about to graduate are invited to apply for postgraduate positions. Five out of nine DEL PhD studentships were awarded to female graduates in 2014. Two of these had already secured offers of employment in industry but under the auspices of SWAN were attracted to research careers.

Students encouraged to attend Engineering Careers Symposium, Work Experience Fair and other events. All career related events (both internal and external) are advertised on Student Sharepoint. The annual Engineering and Physical Sciences Careers Symposium, run by QUB, is an opportunity for students to meet a range of graduate employers and is intended for students of all years. There are usually circa 18 employers attending.

Status

ACHIEVED &
EMBEDDED

ACHIEVED &
EMBEDDED

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EMBEDDED

Pillar 4 Support Female Academic and Research Staff

Current Action Plan

Background The majority of female academic staff in the School started in QUB within the last three years and are still on probation and are at lecturer level. Female staff need support through the probationary process and on to promotion. There has been a decline in the number of female research staff, and support measures are being introduced. Anecdotal evidence has suggested areas where School practices regarding inclusivity and diversity could be expanded, particularly the support structure for new international staff and postdoctoral researchers. While all staff undergo diversity training, the absence of such a scheme at student level has been recognised. Although social events are well attended, there is often limited interaction between researchers and academic staff.

Overall targets Female academic staff to be supported through probation and promotions processes. Maintain School promotion success rate. Support structure for new staff and postdoctoral researchers to be put in place. All students to undertake diversity and/or team-working session. School's positive SWAN experience to be shared.

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G4.1	Provide a support structure for new academic and research staff		Success measure: Support structure for new staff to be improved	
G4.1.1	Provide support structure for new staff, particularly international staff	ITT, NRL	All new staff will be introduced to the New Recruit Liaison, who will provide a link to the University International Staff Network, which is currently being set up.	1 2 3
G4.2	Provide support to female staff in their career progression		Success measure: Female staff eligible for promotion apply in good time and are well prepared. Increased number of grant applications from research staff. Formal mechanisms for providing research staff with teaching experience to be introduced.	
G4.2.1	Continue to support existing mentor program for staff on probation, which includes regular mentoring as well as the long-standing successful internal probation committee	HoS, DRs	Support for the programme will continue. A revision to the scheme to allow probationers to invite a personal mentor to sit on the probation committee has been approved. The School will help probationers to identify a suitable personal mentor.	1
G4.2.2	Expand existing QGI mentoring scheme for female staff so that it is available to staff on probation	HoS	A formal request by HOS to include probationers in the scheme was approved in 2013, and a number of female probationers have since availed of the scheme. The scheme will continue to be advertised annually.	1 2 3
G4.2.3	Support staff through promotions process and procedures, for example with mentoring, mock interviews and feedback	HoS, DRs	Female staff are invited to participate in QGI Annual Promotions Workshop, which has been attended by the SWAN Champion. The HoS is planning to ask senior female colleague to address all staff. The HoS is producing promotions/career progression guidelines which will include mentoring. The HoS will meet female staff once per year.	1 2 3
G4.2.4	Provide opportunities for females to gain experience and skills in administration roles, a key requirement of the promotion process	HoS	Females are included in admin roles/leadership, interview and shortlisting panels. Organisational Teams within the School have been reviewed to ensure opportunity for females to gain administrative experience and that no female is unduly burdened.	1

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G4.2.5	Encourage staff to take undertake development opportunities to include entrepreneurship / IPR / people and financial management / other transferable skills	HoS, DRs	All staff are encouraged to attend QUB-run training courses on leadership and management. The School has sponsored three female academics to attend 'Next Generation Leadership Programme'. A female academic was nominated by the School to take part in the UK Aurora Leadership Programme. A female staff member attended 'Women's Economic Engagement and the Europe 2020 Agenda' as guest of Irish President's Office. A media skills course was undertaken by a female staff member. The School sponsored as many female academic and research staff as wished to attend the IrFUW Annual Conference - Education: Empowering Women and Girls.	1 2 3
G4.2.6	Investigate improved support structure for postdoctoral researchers	SWAN Team	The needs of postdococtoral researchers, particularly females, will be assessed through focus groups. Actions will be developed to address gaps in the current structure. The introduction of a postdoctoral forum is currently being investigated.	1
G4.2.7	Encourage research staff to apply for funding	DRs, All staff	Information and support to be provided to research staff on funding applications. Investigate holding grant writing clinics.	1 2 3
G4.2.8	Develop process for providing research staff with formal teaching experience	HoS	Investigate formal mechanisms to provide research staff who aim to start an academic career with formal teaching experience.	1
G4.2.9	School Mentoring/Coaching Service offering one-to-one professional coaching to staff in and beyond the School	SM	SM is an ILM endorsed coach with the QUB Staff Coaching Service and is currently coaching a female Research Fellow in SPACE. The service is open to all staff. The female: male ratio of the first batch of coachees is 77% female, 23% male.	1 2 3
G4.3	Develop and maintain the School culture of inclusivity and diversity		Success measure: All students to undertake diversity and/or team-working session	
G4.3.1	Introduce diversity training for students	ITT	It is planned to provide diversity training for first year students in Welcome Week. A team-working workshop for Stage 3 students undertaking group projects is being investigated. Similar training for postgraduate students will also be investigated.	1 2 3

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G4.4	Promote healthy Work/Life Balance		Success measure: Return to work policies introduced. Programme of social events to be expanded	
G4.4.1	Introduce formal return-to-work policy, including a period of 6 months with reduced teaching load after return from maternity leave	DRs, All staff	The School has introduced a formal return-to-work policy for academic staff, which will be reviewed regularly. Three postdoctoral researchers took maternity leave during the reporting period. Dialogue was maintained before and during leave to facilitate return to work.	2
G4.4.2	Facilitate informal interaction between postgraduate and postdoctoral researchers and academic staff	SWAN Team	The School coffee room is open to both staff and postgraduate researchers. Regular social events are held. Staff will be encouraged to bring family where appropriate. The SWAN Team will seek feedback from staff on the introduction of a formal social committee building on SWAN activities to date.	1 2 3
G4.5	Promote SWAN Athena presence within School and to a wider audience		Success measure: Hold one-day conference to promote SWAN in engineering education. Disseminate SWAN achievements to industry.	
G4.5.1	Dissemination of School's experience with SWAN to other UK engineering schools	SWAN Team	It is proposed to host a one-day conference to share the School's very positive experiences of Athena SWAN. This will explore and share recommendations for best practice in gender equality and tackling unequal representation of women in STEM.	2
G4.5.4	Dissemination of School's experience with SWAN to wider audience, including industry	SWAN Team	Presentations on the School's experience with SWAN will be delivered at conferences once a year starting with an invited keynote address at the International Manufacturing Conference to be held at QUB in September 2015.	1 2 3

Pillar 4 Support Female Academic and Research Staff: Progress on Activities Undertaken as Part of Previous Action Plan

Background	Analyses of data for the previous three years showed that the School was experiencing an underrepresentation of females at more senior academic positions. The following actions were designed to support and encourage existing early stage career females in their progression making them eligible to apply for promotion and respond to externally advertised more senior positions. Staff in the School enjoy a culture of inclusivity and increasing diversity and actions were designed to reinforce and build upon the School culture to increase numbers of staff availing of Family Friendly/Work Life Balance policies to the benefit of all staff.
Measurable impact	The School has facilitated informal co-mentoring, and the official mentoring programme has been reviewed. A series of well-attended events has led to increased awareness of the goals of the SWAN initiative.

Action	Progress and impact - highlights	Status
S3.3 Provide support to female staff in their career progression		
S3.3.1 Create informal co-mentoring group amongst the staff and postgraduate researchers for career advancement, with particular emphasis on work/life balance.	In 2012, two talks by female professionals were delivered and attended by students, and research, academic and support staff. The first, was a female professor on the topic of "Gender related issues in engineering and science based research". The second, was given by a visiting academic from America who shared her personal experiences of achieving a good work-life balance in a research context. Both events included discussions centred around career progression and mentoring support for researchers, and content of training courses for PhD students. The School Away Day in January 2014 also provided opportunity of informal co-mentoring.	ONGOING
S3.3.2 Continue to support existing mentor program for staff on probation, which includes regular mentoring as well as the long-standing successful internal probation committee	Continual support to the mentoring programme and associated probation committee is provided. QUB have made some changes to the probation process, and HoS has reviewed the mentoring programme to ensure it remains appropriate for female staff in the School.	ACHIEVED
S3.3.3 Exit surveys for those staff members, particularly females, who leave, to identify any areas of improvement	The School has implemented a policy of encouraging leavers to complete the University exit survey. This is a standard part of the leaving process. Relevant issues arising are reported to the SWAN committee for discussion and possible development of actions.	ACHIEVED & EMBEDDED
S4.1 Maintain SWAN Athena presence within School		
S4.1.1 Conduct monthly meetings of SWAN group to assess/maintain forward momentum	Meetings are held on a monthly basis throughout the academic year, with additional meetings when required. The meeting schedule is agreed in advance.	ACHIEVED & EMBEDDED
S4.1.2 Dissemination of progress of SWAN group to School	SWAN is on the School Board Meeting agenda, and updates are presented by the SWAN Team. There is additional circulation of information as need arises. SWAN activities are reported at Operations Board Meetings. All School staff were asked for feedback on the draft gold submission.	ACHIEVED & EMBEDDED
S4.1.3 Instigate Best Practices, including completion of Royal Academy of Chemists Checklist as an exemplar	SAT members have completed the checklist; SAT reviewed the findings and identified additional items for the Action Plan.	ACHIEVED
S4.1.4 Initiate framework that baselines data and supports improvements with respect to SWAN goals within the School	Organisational structure is in place to support the gathering and monitoring of relevant data, as well as initiate actions.	ACHIEVED

Action	Progress and impact - highlights	Status
S4.3 Promote Healthy Work/Life Balance		
S4.3.1 Continue to schedule Departmental meetings with start times after 10am and end times before 4pm	All Department meetings are scheduled between the hours of 10am and 4pm when possible.	ACHIEVED & EMBEDDED
S4.3.2 Ensure all staff are continuously aware of Dependency Leave and other Family Friendly/Work Life Balance policies, including maternity/paternity leave, by disseminating information via email bi-annually	Policies are accessible on the School website. Emails informing staff of the policies are circulated, and individual staff are also made aware as part of the Appraisal process.	ACHIEVED & EMBEDDED
S4.3.3 Continue to host social events by the School, encouraging a supportive, friendly environment. Most events are held during family-friendly hours of 10am and 4pm. If an evening or weekend event is scheduled, staff are encouraged to bring family.	The School has hosted a range of well-attended events, including an annual staff and PhD student table quiz (families also invited), an annual Christmas lunch, a mid-morning staff and PhD student breakfast each semester, and end-of-year lunches for staff and PhD students. All staff were invited to events to celebrate the 2012 QUB Mechanical Engineering centenary.	ACHIEVED & EMBEDDED

Pillar 5 Raise Profile of Females in the School

Current Action Plan

Background Events to celebrate women in STEM have been well attended and feedback from attendees has been good. Future events are planned. It is recognised that variety is important and ideas for new events are being developed.

Overall targets At least one event to be held by School per year to recognise contribution of women to STEM.

Nr	Objective	Responsibility	Actions planned/progress to date	Timescale, years
G5.1	Provide emphasis and information on professional activities and successes by current female School members		Success measure: Raised awareness of female role models. At least one women-in-STEM event per year to be hosted by the School.	
G5.1.1	Host School and/or public events to recognise the contribution of women to STEM, and to engineering in particular	SWAN Team, PT	Two successful exhibitions were held in 2014 to mark National Women in Engineering Day and International Women's Day. Feedback from attendees from the University and the general public was positive. Future events are planned and ideas for new events are being developed.	1 2 3
G5.1.2	Maintain and develop School website and social networking sites, and expand range of coverage in key areas	SWAN Team, PT	Particular attention will be paid to ensuring information on prize-winners is updated regularly. The School YouTube site does not contain any recent information on activities and successes by female School members. Suitable content will be added to the site.	1 2 3
G5.1.3	Raise awareness of postgrad/postdoctoral researchers in School, particularly females	DTT, CDT	A researcher day is planned to showcase the ongoing work and achievements of postgraduate and postdoctoral researchers.	1 2 3
G5.2	Promote extra curricular achievements of School staff and students		Success measure: Increased awareness of contribution of females to society	
G5.2.2	Communicate extra-curricular successes and achievements of School staff and students, particularly females	SWAN Team, PT	The School news site archive contains an articles on extra-curricular achievements, including on an undergraduate student who was part of Ireland's winning rugby team in the 2013 Women's Six Nations competition. The School website and social media sites will be kept up to date by the Publicity Team.	1 2 3
G5.3	Invite external, high profile female engineers to key School roles		Success measure: High-profile female engineers appointed to key School roles	
G5.3.1	Invite external, high profile female engineers to key School roles	HoS, DE, DRs	First female external examiner appointed to MSc programme in Advanced Aerospace Engineering in 2014. Senior female industrialist appointed as an external member of SWAN self assessment team. Senior female industrialists now sit on the School's Industrial Advisory	1 2 3

Pillar 5 Raise Profile of Females in the School: Progress on Activities Undertaken as Part of Previous Action Plan

Background Analyses of data for the previous three years highlighted issues in respect of attracting high calibre females to apply for vacant positions. The following actions were designed to raise awareness of the achievements of current female members of the School, staff students and alumni, and to promote the School as an inclusive place of employment which is fully supportive of female academic and research staff.

Measurable impact Well-attended events and an improved website have led to increased awareness of the achievements of female staff members.

Action	Progress and impact - highlights	Status
S1.1 Provide emphasis and information on professional activities and successes by current female School members		
S1.1.1 Review and revise School website and social networking sites to ensure female staff and their professional accomplishments are appropriately emphasised	Procedures established as part of the Silver Action Plan have been implemented. The School website has a page entitled 'Inspirational Women', which contains profiles of previous and current students, and female engineering staff in the School. The news page is updated regularly, and successful females are highlighted. Examples include the recipient of the Ireland Canada University Foundation Dobbin Scholarship; a 2013 recipient of the Engineering Leadership Advanced Award from the RAE; and a graduate named one of the Top Women in Technology in Ireland for 2014. The School Facebook and Twitter pages are both active. The Twitter page was used effectively during a visit by girls from a local school; an aerospace graduate of the School, who was attending the International Space University's Summer Programme at the time, answered questions live.	ACHIEVED
S1.1.2 Update and emphasise representative female student profiles on the School website and social networking sites, including undergraduate and postgraduate students	Relevant information is forwarded to the PT as it becomes available, and a bi-annual general review is carried out. The School's website and social media pages are updated regularly.	ACHIEVED & EMBEDDED
S1.1.3 Highlight female alumni success on website and social networking sites, in order to demonstrate possible career paths and networking opportunities to undergraduate and postgraduates	The School prospectus and other recruitment materials have been reviewed to ensure representative diversity and balance. The QUB Research & Enterprise Yearbook 2013 contains a profile of a senior female staff member in the School.	ACHIEVED
S1.1.4 Establish procedures for bi-annual review of website and social networking sites to emphasise female staff, students and alumni activities and successes		ACHIEVED
S1.1.5 Ensure representative diversity and balance, particularly with respect to female representation, is apparent in our School prospectus and other recruitment materials		ACHIEVED
S4.2 Promote accomplishments of female colleagues		
S4.2.1 Communicate professional successes and achievements of staff members, particularly females	Announcements of successful funding applications and promotions are made School Board Meetings.	ACHIEVED & EMBEDDED
S4.2.2 Ensure professional successes and achievements of staff members, including females, are highlighted appropriately on School website, University website, and Queen's Now electronic magazine.	The School website and social media sites are kept up to date by the Publicity Team. The School celebrated International Women's Day 2014 and National Women in Engineering Day 2014 with poster exhibitions. Details of the events were publicised through Queen's Now, QUB Twitter and the School website.	ACHIEVED
S4.2.3 Invite high profile female engineers to School for seminars	In October 2012 the female President of IMechE visited the School as part of the Centenary Celebrations and gave her Presidential Address to staff and students from the School. Invitation to attend was extended to other SWAN Schools and members of QGI. A female Professor from the University of Rome visited the School in October 2012 to deliver a research based talk.	ACHIEVED