



SAGE

SCIENCE IN AUSTRALIA
GENDER EQUITY

**Athena SWAN
Institution Application**

SAGE Cygnet Awards



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Application Form

Table of Contents

ACRONYMS	3
KEY BARRIER	6
EVIDENCE OF BARRIER	7
GEI 1. Gender composition of academic staff at all levels in CESE.....	7
GEI 2. Recruitment into new positions in CESE	7
GEI 3. Gender composition of student enrolments in CESE.....	8
ACTIONS AND OUTPUTS.....	9
Female targeted recruitment for new positions in CESE	9
Indigenous-targeted recruitment for non-identified roles in CESE	10
Use of a gender-neutral language tool in the creation of job advertisements and position descriptions	10
Update academic recruitment materials to attract women and Indigenous applicants to disciplines with underrepresentation of diversity	11
Update student recruitment marketing materials to promote gender diversity in historically male-dominated degrees and disciplines	11
Support female students through Women in STEM mentoring programs.....	12
Implement outreach activities to attract female students to a career in STEM.....	13
OUTCOMES	15
Targeted academic recruitment (GEI 2)	15
Female academic representation (GEI 1)	15
Interview and recruitment rates (GEI 1 and 2).....	17
Engagement with girls in schools (GEI 3)	17
Female student representation (GEI 3)	17
Indigenous student representation (GEI 3).....	18
IMPACT	19
Targeted academic recruitment – qualitative insights	19
Academic recruitment materials	19
Interview and recruitment experiences	20
Engagement with girls in schools – qualitative insights	21
FURTHER ACTION	23
REFERENCES.....	25

ACRONYMS

Acronym	Meaning
AD	Assistant Dean
ARC	Australian Research Council
AS	Academic Senate
ASBAP	Athena Swan Bronze Action Plan
ASWG	Athena Swan Working Group
CESE	College of Engineering, Science and Environment
CHMW	College of Health, Medicine and Wellbeing
CHSF	College of Human and Social Futures
CIT	Computing and Information Technology
CSIRO	Commonwealth Science and Industrial Research Organisation
EDI	Equity, Diversity, and Inclusion
GEDI	Gender Equality, Diversity, and Inclusion
GEI(s)	Gender Equality Indicator(s)
HERDC	Higher Education Research Data Collection
HoS	Head(s) of School
HR	Human Resources
INCA(s)	Indigenous New Career Academic(s)
KPI(s)	Key Performance Indicator(s)
NSW	New South Wales
PRC(s)	Priority Research Centre(s)
PVC	Pro Vice-Chancellor
SAGE	Science in Australia Gender Equity
SABE	School of Architecture and Built Environment
SIPS	School of Information and Physical Sciences
SELS	School of Environmental and Life Sciences
SENG	School of Engineering
SPP	Strategy, Planning and Performance
STEMM	Science, technology, Engineering, Mathematics and Medicine
UoN	University of Newcastle
WiSC	Women in Science Chair

SAGE Cygnet Award Application Form



SAGE

SCIENCE IN AUSTRALIA
GENDER EQUITY

SAGE Cygnet Award Application

Name of institution	University of Newcastle
Date of application	7 October 2022
Award Level	Cygnet
Date joined Athena SWAN	Cohort One – January 2016
Contact for application	Professor Jennifer Milam, Pro-Vice Chancellor Academic Excellence
Email	Jennifer.Milam@newcastle.edu.au
Telephone	+61 4 5090 1003

UNIVERSITY OF NEWCASTLE: SAGE CYGNET 1		
Word count 2593 words (excluding tables and figures)		
	Current Cygnet	Barrier
Mandatory Institution-wide barrier		
Mandatory Sub-group barrier	X	STEM Pipeline Barrier: Difficulty attracting and recruiting female students and academic staff into the College of Engineering, Science and Environment
[Please select] Institution-wide/Sub-group barrier		
[Please select] Institution-wide/Sub-group barrier		
[Please select] Institution-wide/Sub-group barrier		

KEY BARRIER

The University of Newcastle acknowledges global research into the STEM Gap and related actions that can change policies and practices to increase opportunities in STEM for girls and women, and to make STEM fields more welcoming to underrepresented and diverse groups (*STEM Gap*, 2022).

The University's Athena Swan Working Group (ASWG) identified **targeted recruitment** as a strategy to address the key institutional barrier of the **attraction, retention, and progression of women and under-represented groups into the College of Engineering, Science, and Environment (CESE)**. Specifically, the strategy aimed to develop a pipeline of women into historically male-dominated disciplines contained within the College. It also provided the opportunity to take an **intersectional approach** and combine efforts directed at the targeted recruitment of women with an Indigenous recruitment strategy, thus ensuring that the supporting actions and initiatives responded to, and aligned with the values that underpin the [University's Looking Ahead Strategic Plan 2020-2025](#).

The **STEM Pipeline Barrier** was identified through the University's Athena Swan Bronze application process as a systemic, structural, and cultural barrier for disciplines contained within CESE. Moreover, this pipeline barrier was found to impact on the attraction of women and other underrepresented groups into STEM careers.

Our objective was to reduce the impact of this barrier and build a pipeline into STEM through the following actions and interventions:

- Female-targeted recruitment for new positions in CESE
- Indigenous-targeted recruitment for non-identified roles in CESE
- Use of a gender-neutral language tool in the creation of job advertisements and position descriptions
- Update academic recruitment materials to promote gender diversity in historically male-dominated degrees and disciplines
- Update student recruitment and marketing materials to attract women and Indigenous applicants to disciplines with underrepresentation of diversity
- Support female students through STEM mentoring programs
- Implement outreach activities to attract female students into a STEM career

EVIDENCE OF BARRIER

A range of actions formed part of the consequential Athena Swan Bronze Action Plan (ASBAP) in 2018 to reduce the STEM Pipeline Barrier (Tables 1-3).

In 2021 an additional opportunity to reduce the STEM Pipeline Barrier was seized as part of an institutional restructure, entitled **Enabling Change**. Focused on generational renewal, Enabling Change presented a unique opportunity to pilot several initiatives related to our ASBAP. Three gender equality indicators (GEIs) were used to inform and track targeted recruitment in STEM during this major change initiative.

The ASWG undertook quantitative and qualitative evaluations to understand the impact of the targeted recruitment strategy on the STEM Pipeline Barrier in relation to the three GEIs within CESE and tracked progress between 2018 and 2022.

Data sources included records of workforce, recruitment, enrolment, retention, leaderships meetings and presentations, all-staff forums, and interviews of key informants.

GEI 1. Gender composition of academic staff at all levels in CESE

Representation of women in STEM roles in CESE was 24% (104/427 total headcount) on 31 March 2018. In particular, the School of Engineering (SENG) and the School of Information and Physical Sciences (SIPS) were found to have the lowest proportion of female staff, with 15% combined.

Table 1. ASBAP actions related to GEI 1

ASBAP Action	Description	ASBAP Target Date	Success Measure
1.1	Appointment of three Women in Science Chairs (WISC) (internally) at Level E for a term of four years.	August 2018	Three Women in Science Chairs appointed by August 2018.
1.2	Creation of Assistant Dean, Equity and Diversity for each STEMM Faculty.	August 2018	Appointees in place by August 2018.
1.6	Increased focus on gender balance in HOS representation across STEMM Faculties upon recruitment of HoS roles	2020	10% increase in female HoS by 2020
1.9	Update internal communication channels profiling positive/successful female role models in STEMM.	Immediate and Ongoing	Visibility of role models built into Communication Plan and web and other material updated regularly.
2.5	Introduce 'Academic Women in STEMM' KPIs for STEMM Faculties with low representation of women	2018	10% increase in female representation in CESE

GEI 2. Recruitment into new positions in CESE

A low proportion of women applying for continuing and fixed-term positions in CESE reflects the difficulty of recruiting into new positions in historically male-dominated areas. The lack of formal policies and procedures to address low ratios of female recruitment were identified as part of the problem, including the perceived gender-bias in recruitment materials and composition of panels.

Table 2. ASBAP related to GEI 2

ASBAP Action	Description	ASBAP Target Date	Success Measure
2.6	Pilot 'female-only' targeted recruitment for STEMM areas with lowest numbers (e.g. Maths and Engineering) to be utilised for advertised roles to meet KPI. <i>Utilise current exemption afforded by UoN by Anti-Discrimination Board.</i>	Sept 2019	Five female academic staff appointed under formal targeted recruitment in male dominated disciplines.
2.9	Utilise the Inclusive Language tool to ensure job advertisements are attractive to prospective female candidates.	Ongoing	10% increase number of women applying for STEMM roles.
9.2	Faculties to identify suitable roles for targeted recruitment of Indigenous staff into non-identified roles (outside of Wollotuka)	July 2019	6 additional Indigenous academic staff appointed through targeted recruitment by December 2019
9.3	Establishment of three Indigenous New Career Academics (INCAs) in STEMM Faculties	Jan 2020	STEMM Faculties commit to placement of one second year INCA in their Faculty. First year funded by Wollotuka.

GEI 3. Gender composition of student enrolments in CESE

CESE enrolls a low proportion of female students, which impacts on the pipeline into STEM careers. In 2018, female students represented 31% of total enrolments compared to 69% male students. Non-binary students represented less than 1% of the cohort (Table 3).

Table 3. ASBAP related to GEI 3

ASBAP Action	Description	ASBAP Target Date	Success Measure
4.1	Funding approved for 2018 initiatives as part of 2017 launch of HunterWiSE (Women in STEMM and Entrepreneurship) to increase the number of high school girls considering a career in Science. HunterWiSE also established to provide women from local industry with a network to apply for industry- based grants.	Ongoing	10% increase in number of students enrolling in STEMM by 2021 ¹ Six collaboration links established with local industry and 15% increase with Industry Grant applications.
4.4	Update student marketing material in all STEMM faculties.	Dec 2018	Student promotion material updated in all STEMM Faculties with balance of female and male images

¹ Note this success measure includes Medicine, as part of STEMM. As this Cygnet is a sub-group barrier focused on women in STEM (without Medicine), a 4% increase in CESE indicates progress made in line with the goal.

ACTIONS AND OUTPUTS

Female targeted recruitment for new positions in CESE

As part of Enabling Change, the University took the opportunity to redress the underrepresentation of women and Indigenous staff in key areas (**ASBAP Actions 1.6, 1.9, 2.5, 2.6, 9.2**). Drawing on data supporting the University's ASBAP, 25 positions were identified as 'Indigenous Targeted', 'Female Targeted', and 'Female Only'.

This **formal targeting strategy** was made possible by the University's exemption from the Anti-Discrimination Board of NSW and was used to fill the inaugural Women-in-Science Chair position in November 2018. An additional Women-in-STEM Chair was incorporated into the female-targeted recruitment.² (**ASBAP Action 1.1**)

Pro Vice-Chancellors and Heads of School (HoS) identified which roles were the most appropriate to target. To gain and maintain the highest level of support for this initiative, targeted recruitment was discussed and tracked at:

- 4 Enabling Change Steering Group Sessions (included Athena Swan Lead);
- 2 CESE Executive Meetings (included CESE AD-EDI, **ASBAP Action 1.2**);
- 2 University Executive Committee Meetings;
- 2 Senior Management Group Sessions; and
- 2 All Staff Forums.

Table 4 details the 17 out of 25 roles that were targeted to female academics in the School of Engineering (SENG), the School of Environmental and Life Sciences (SELS), and the School of Information and Physical Sciences (SIPS). (**ASBAP Action 2.6**)

Table 4. Targeted roles in SENGL, SELS and SIPS

School	STEM Discipline	Academic Level	FTE
ENG	Biomedical Engineering*	Level E	1
ENG	Geotechnical Engineering	Level D	1
ENG	Aerospace Systems	Level D	1
ENG	Renewable Energy Engineering	Level B	1
ENG	Biomechanical Engineering	Level B	1
ENG	Medical Engineering	Level B	1
ENG	AeroSpace Systems	Level B	2
ENG	Mechanical Engineering, Fluid Mechanics	Level B	1
ENG	Mechanical Engineering	Level A	2
SIPS	Computing and Information Technology (CIT)	Level B	1
SIPS	Data Science (CIT)	Level B	1
SIPS	Data Science (Stats +CIT)	Level B	1
SIPS	Statistics	Level B	1
SELS	Molecular Plant Biology	Level B	1
SELS	Large Animal Biology	Level C	1

*Identified as a Women in STEM Chair in recruitment materials with additional funding for mentoring initiatives.

² A female candidate was successful in this recruitment process. She did not accept the offer, due to a counteroffer from her current university.

Indigenous-targeted recruitment for non-identified roles in CESE

In the School of Architecture and Built Environment (SABE), an African American female HoS improved female representation from 25% to 42% between 2017 and 2022.

The Enabling Change restructure presented an additional opportunity to adopt an **intersectional approach** to the targeting strategy and increase both female and Indigenous representation in the School. 5 out of 7 roles (Table 5) were targeted to Indigenous academics (**ASBAP Action 9.2**).

The HoS actively intervened to make sure there was at least 50% women on the panel and one Indigenous member for all targeted roles. 2 of these positions were re-scoped for Indigenous academic recruits (1 mature age and 1 female) to be supported to complete PhDs as part of the offer (**ASBAP Action 9.3**). A third position was re-scoped from Level C to Level D to recruit a more senior academic as an Indigenous female role model in STEM (**ASBAP Action 1.9**).

Table 5. Targeted roles in SABE

School	STEM Discipline	Academic Level	FTE
SABE	Architecture Landscape	Lecturer – Level A/B	2
SABE	Construction/Disaster Management	Level B	2
SABE	Architecture Landscape	Level C	1

Use of a gender-neutral language tool in the creation of job advertisements and position descriptions

An inclusive language software tool, Gender Decoder (Figure 1), was piloted and adopted by Talent Acquisition in 2018 (**ASBAP Action 2.9**) to attract more female candidates to underrepresented areas such as CESE through inclusive language and attractive employment options. The tool reviews current language in advertising and position descriptions, highlighting more masculine words and recommending more feminine alternatives that are more likely to attract female candidates.

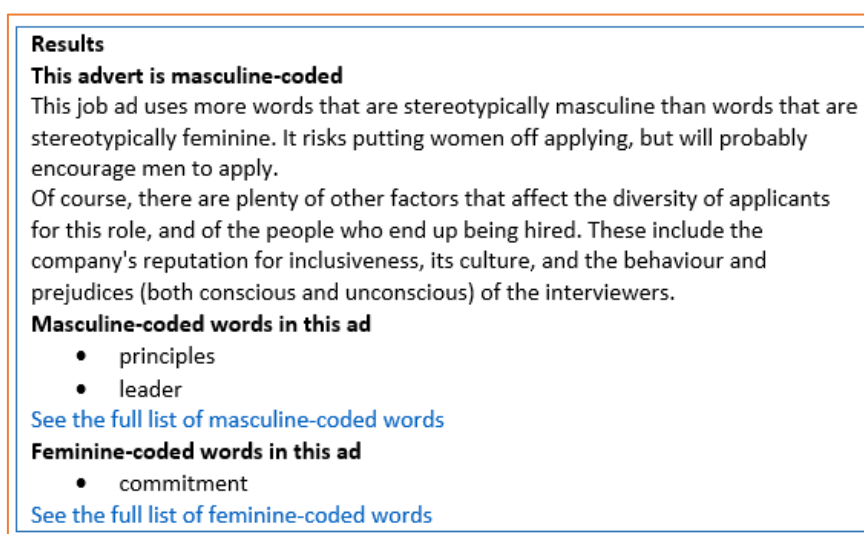


Figure 1. Inclusive software results on advertising wording

Update academic recruitment materials to attract women and Indigenous applicants to disciplines with underrepresentation of diversity

In addition to the use of Gender Decoder, the **Enabling Change Recruitment Campaign** (including advertisement and position description wording) for the targeted roles was reviewed by members of the ASWG to ensure they would appeal to female candidates through tailored and inclusive language and images. Employment conditions, such as availability of part-time and flexible work options, were also considered by members of the ASWG and included where appropriate. The Athena Swan Lead reviewed position descriptions and advertising materials for all targeted roles and worked with HR to improve the content. **(ASBAP Actions 2.3 and 2.6)**

Chosen advertisement images aimed to attract women and Indigenous applicants (Figure 2), with consideration given to the choice of GEDI themes recommended by the Athena Swan Lead for the recruitment campaign. Authenticity was achieved through the inclusion of images of existing staff (rather than stock images). For example, the University used an image of a current female 'Superstar of STEM' in the School of Engineering, as well as an image of a senior Indigenous staff member well known in the community. **(ASBAP Action 1.9)**

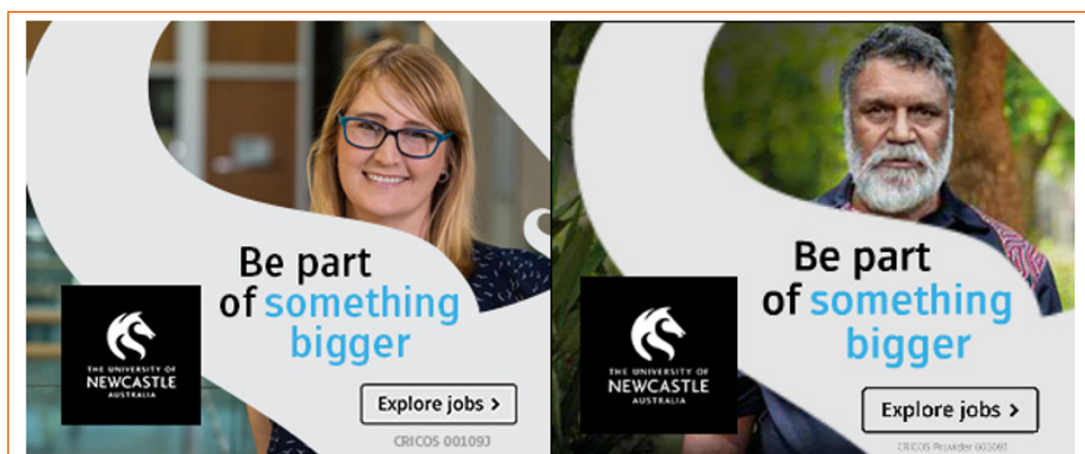


Figure 2. Targeting strategy success story

Update student recruitment marketing materials to promote gender diversity in historically male-dominated degrees and disciplines

Marketing material that promotes gender stereotypes was identified as barrier to the attraction of young women considering a career in STEM. As a result, student marketing materials were reviewed and updated in 2017, 2018, 2021 and 2022 to improve the balance of female and male images (Figure 3). Moreover, photos were thoughtfully staged to ensure females included in the imagery were front-of-stage and/or working equally with a male on a project rather than part of the background. **(ASBAP Action 4.4)**

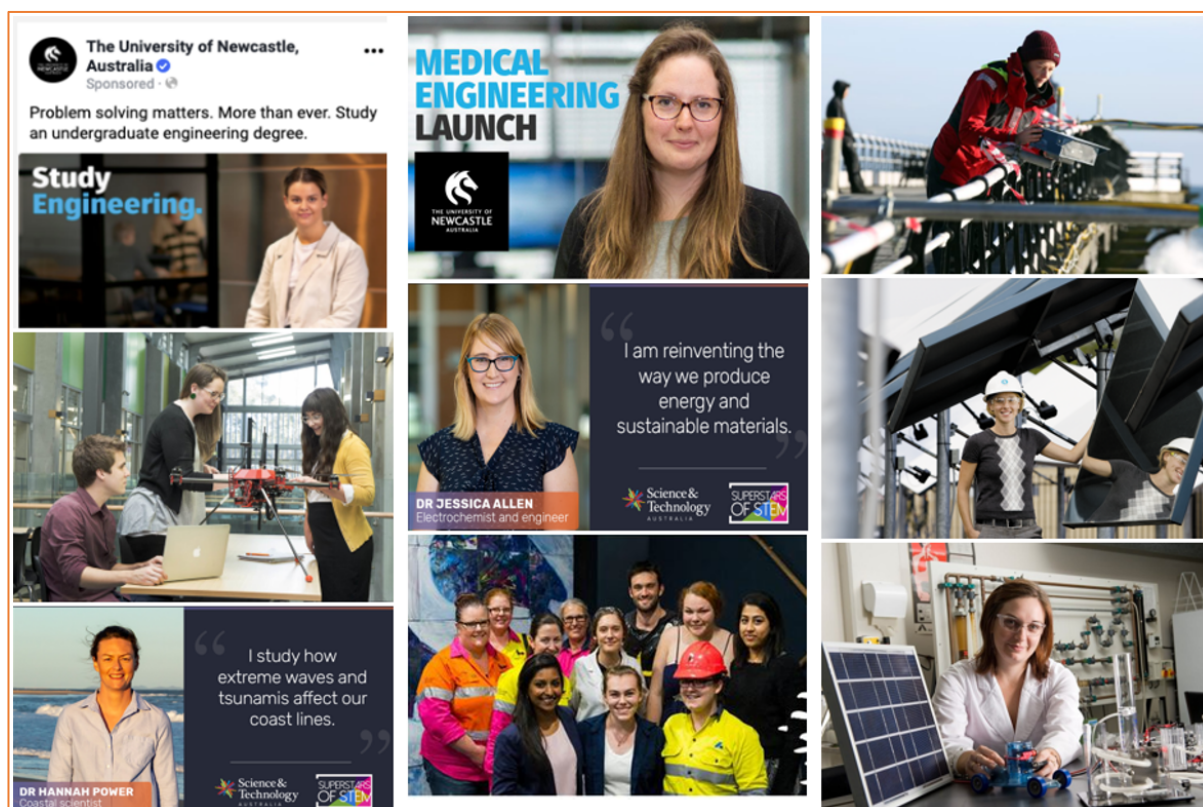


Figure 3. CESE Student Marketing Materials

Support female students through Women in STEM mentoring programs

Due to the small proportion of female students in STEM, it is vital to nurture and retain these students through the establishment and support of mentoring programs. In July 2022 **Women in STEM Mentoring Program** was launched (Figure 4). The program provides an opportunity for undergraduate students, who identify as women, to explore their future through connection with industry professionals and alumni through a mentoring relationship. (**ASBAP Actions 1.9**)



Figure 4. Women in STEM Mentoring Program

Supporting the LGBTIQ+ community in STEM:

In 2022, CESE and EDI organised the '**Queers in Science**' event featuring 35 staff and students sharing their queer lived experience while working or studying in the field of science (Figure 5). Along with University presenters, a representative of 'Queers in Science' explained the network and welcomed queer scientists into the organisation. This event was an opportunity to discuss STEM as a field where lived experiences, connections, and identity rarely surface. Following the success of this event, a Queers in Science network at the University was identified as a further action (Table 16, Reference 10) to be progressed as an affirming space for queer scientists.



Figure 5. Queers in Science during Pride Week

Implement outreach activities to attract female students to a career in STEM

To encourage the next generation of women in STEM, outreach work with female school students was identified as a key action in the ASBAP. The **HunterWiSE** network³, was established as a pilot with one school in 2017 by female academics in CESE (including 2 members of the ASWG).

The pilot was expanded to 4 schools in 2018 and 9 schools in 2019 as one of the initiatives of the ASBAP (Table 6). This initiative is for women and girls in STEM to connect, collaborate and share experiences. It also aims to positively impact perceptions of STEM careers amongst school-aged girls and to increase the overall participation in STEM by women. Young girls engage in weekly workshops with mentors, University and industry visits, and presentations of STEM based projects (Figure 6).

³ <https://www.newcastle.edu.au/research/centre/hunterwise>

OUTCOMES

Targeted academic recruitment (GEI 2)

11 of the 16 female-targeted positions in CESE were filled: 45% (n=5) women and 55% (n=6) men (**ASBAP Action 2.6**). The 5 remaining, unfilled positions provide an opportunity to try again. Of the 5 Indigenous-targeted roles in SABE, 3 Indigenous women and 2 Indigenous men were appointed (**ASBAP Actions 9.2, 9.3**). The University acknowledges that the targeted-recruitment strategy was not entirely successful; however, the ASWP has evaluated implementation to improve future targeted recruitments. Figure 10 details the challenges identified by key informants, and Table 16 (References 1-4) lists recommendations for improvements.

Due to the large volume of recruitment taking place as part of Enabling Change (298 roles filled via a formal recruitment process), there were some implementation challenges that impacted further success of the female-targeted roles in SENG and SIPS. These challenges were reported during the review of targeted recruitment (results detailed below in **IMPACT** section) and included:

- insufficient female representation (lone voice) on panels (Table 7);
- insufficient support and/or absence of Human Resource representative at critical time of deliberations (recruitment was outsourced to an external company); and
- lack of understanding of the targeting process by panellists beyond advertising such as considering female applications first before reviewing male applications.

Table 7. Proportion of females on targeted recruitment interview panels

Number of panels	Gender representation (females: males)	Proportion Female
6	1:3	25%
5	2:2	50%
1	3:1	75%
1	2:4	33%
1	2:3	40%
1	1:2	33%
1	Panel not confirmed	

Some of the positions were in areas that remain the hardest to fill. Factors reported to the Enabling Change Steering Committee by Talent Recruitment included:

- increased competition in the sector for limited pool of women in STEM applicants, especially at more senior levels;
- female academics less likely to consider new roles and relocation during COVID 19 lockdowns and border closures; and
- international applicants deterred by limitations of travel and visa application processes during the recruitment drive by pandemic lockdowns.

Female academic representation (GEI 1)

Following actions implemented post-Bronze, female academic representation increased overall by 10% in CESE over the years 2018-2022. Specifically, the number of female academic staff increased from 104 (24%) female academic staff in 2018 to 157 (34%) in 2022 (Figure 7). Increases in SIPS and SENG (combined) was 17% in 2017 to 21% in 2022 (**ASBAP Action 2.5**).

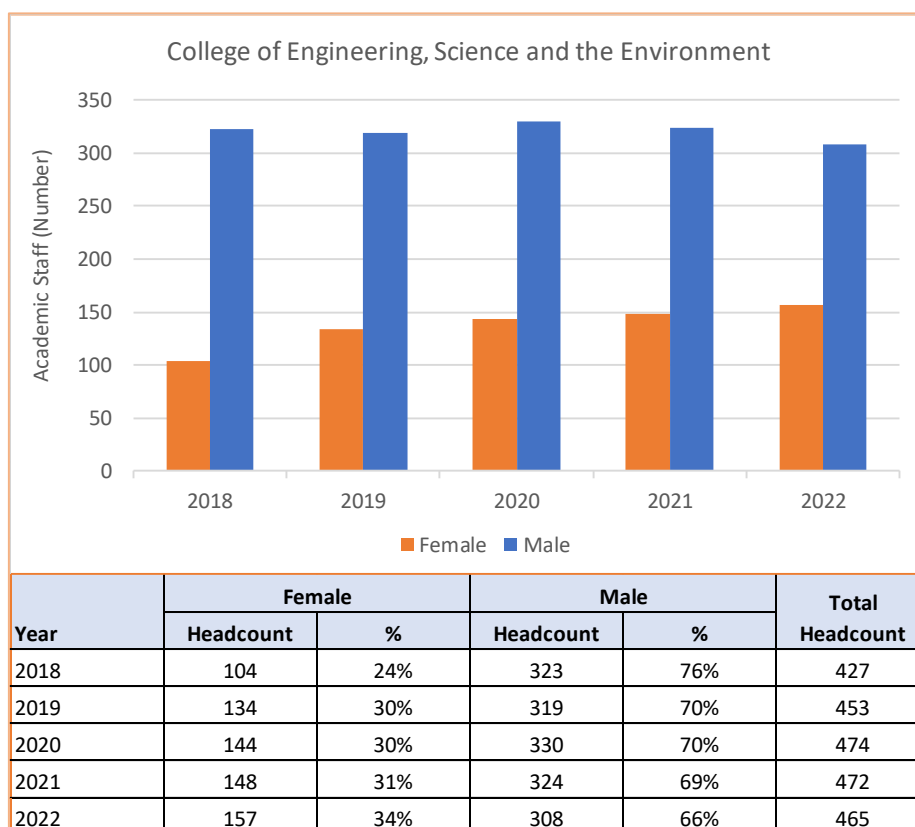


Figure 7. Number of staff by gender in the CESE

In respect to senior leadership roles in CESE (**ASBAP Action 1.2 and 1.6**), female HoS representation increased from 33% in 2018 to 80% in 2022 (Figure 8), including appointment of:

- female HoS for SENG in 2021 as part of Enabling Change
- female HoS appointment to SELS in 2020
- Assistant Dean Equity, Diversity, and Inclusion (AD EDI) in 2019.

The AD-EDI actively monitors female academic representation in CESE as part of her role.

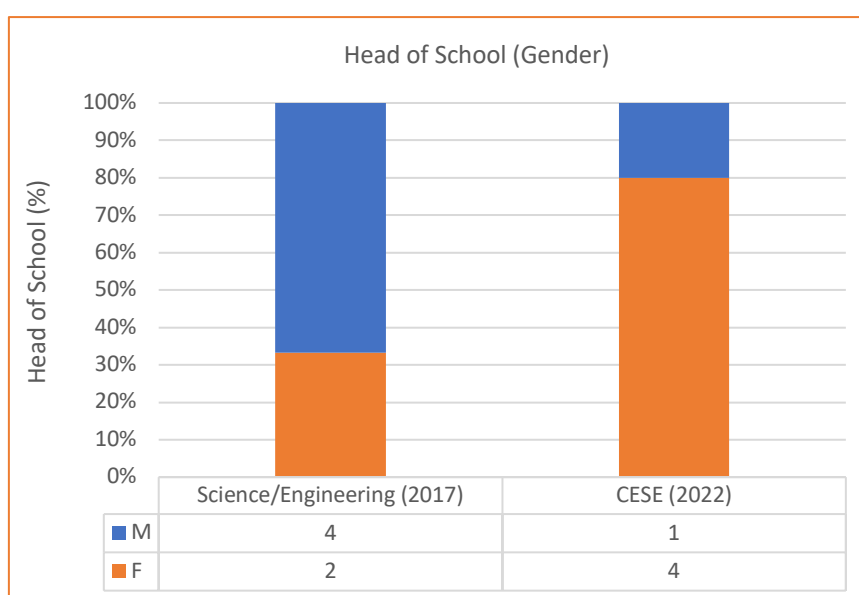


Figure 8. Head of School representation in CESE

Under new female leadership in these previously male-dominated areas, greater diversity has been achieved. For example, from 2015 to 2021, the SABE HoS increased representation of females from 24-43% and Indigenous staff from 0-13%.

Interview and recruitment rates (GEI 1 and 2)

At the time of Bronze application in 2017, the proportion of women shortlisted for interview and recruited for jobs in CESE was 28% and 18% respectively. In 2021, these proportions increased to 36% for shortlisting for interviews and 46% for recruitment into roles. In SIPS and SENG (combined) at time of Bronze, 2% of females were shortlisted for interview and 13% were recruited. In 2021, 24% of females were shortlisted for interview and 27% were recruited (**ASBAP Action 2.9**).

Engagement with girls in schools (GEI 3)

Following HunterWiSE engagements, semi-structured interviews with focus groups (Table 8) were conducted and the results were a significant improvement in attitude towards wanting to be a scientist or engineer ($t(122) = -3.42, p=.001$).⁶ An overall improvement in attitude towards STEM careers was also observed, indicated by responses to a statement about whether it has opened the girl's eyes to new and exciting jobs ($t(140) = -3.01, p=.003$).⁷

Before the program, many girls:

- Reported lack of clarity about what a STEM career might look like.
- Had perceptions of science and technology being largely 'male' fields
- Felt discouraged from pursuing STEM subjects.

Table 8. Quotes from focus group interviews

The following participant quotes express the change in perception towards STEM subjects:
<i>"As soon as I started it and learnt about engineering, that's when I realised what I wanted to do"</i>
<i>"I didn't know what I wanted to do but as soon as I did HunterWiSE, I was like "That's what I want to do"</i>
<i>"I loved the feeling that you did something that people mostly stereotyped as (for boys)"</i>
<i>"I felt like a scientist when I walked into the University, I thought "I can do anything"</i>

Female student representation (GEI 3)

Over the four-year period since Bronze application (2017-2021), enrolment of female students in CESE increased by 5% (31-36%; n=2786-3813). Similarly, in SENG & SIPS, enrolments by females increased by 2% (from n=555-695). Albeit small, these statistics represent change in the right direction and the University recognises that significantly improving the number of female students in these historically male-dominated disciplines is ongoing and will require time to mature. Outreach

⁶ Elena Prieto, Kristina Sincok, Karen Blackmore, Regina Berretta, Erica Wanless, Sarah Johnson, Anna Giacomini, and Juanita Todd, "Experiences of STEM Outreach: What shapes girls' identities?". Presented at Gender & STEM Network Conference, University of Sydney (July 2021).

⁷ Elena Prieto, Regina Berretta, Karen Blackmore, Juanita Todd, Erica Wanless, Sarah Johnson, Anna Giacomini, Kristina Sincok, and Lauren Gibson, "Investigating the Impact of an Outreach Intervention on Girls' STEM Identity Formation". *International Journal of Gender, Science and Technology* (undergoing peer review; submitted February 2022).

programs such as HunterWiSE has a critical role to play, by assisting to address the STEM Pipeline Barrier (**ASBAP Actions 4.1, 4.4**).

Indigenous student representation (GEI 3)

In 2017, CESE enrolled 168 (2%) Indigenous students compared with 275 (3%) in 2021. Female Indigenous student enrolment in CESE also increased during this timeframe, from 55 (33%) to 124 (45%) (Figure 9).

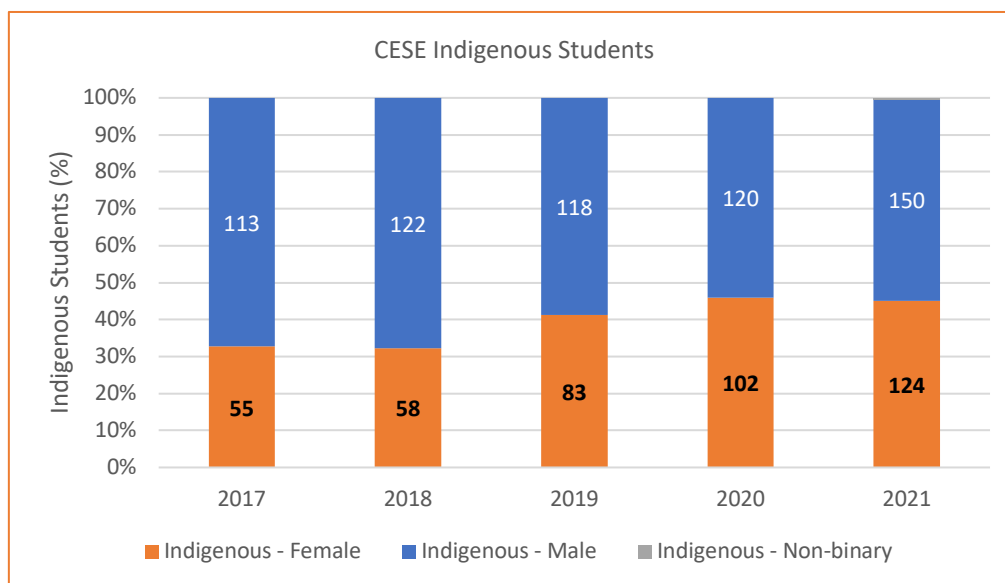


Figure 9. Indigenous student enrolments in CESE

IMPACT

Targeted academic recruitment – qualitative insights

The 2021 targeted recruitment strategy has been a learning experience for the University. **Qualitative interviews conducted in September 2022** with Applicants (n=5), Panellists (n=13), and Chairs (n=3) of the targeted recruitment highlighted several implementation challenges.

These valuable insights (see Tables 9-14) will be addressed through further actions (see Table 16) detailed at the end of this report. Figure 10 provides an overview of the implementation of targeted recruitment for strategies relevant to panels (displayed in blue) including facilitators leading to successful implementation (displayed in green) and barriers leading to poor implementation (displayed in orange).

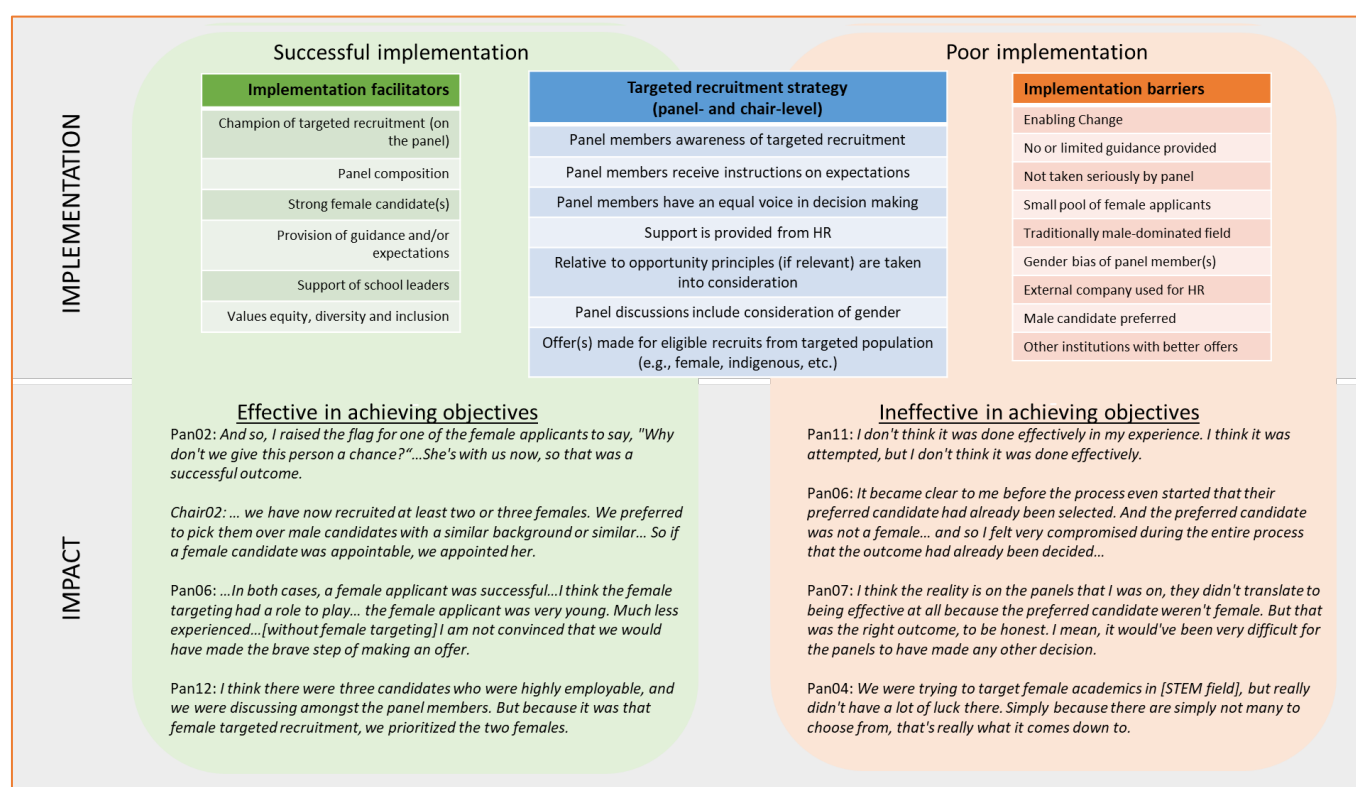


Figure 10. An overview of the implementation of targeted recruitment from the perspective of interviewed Panellists and Chairs

Academic recruitment materials

One Chair specifically emphasized the benefits of using the **inclusive language software** to support female-targeted recruitment materials (Table 9).

Table 9. Evidence from qualitative interviews with Chairs

Chair	Experience
Chair01	<i>And also there's a web tool that can help with it, which I didn't know before. Hey, just type it in, you go, okay. It comes back with all the appropriate words to use. It's a combination of getting direct female feedback from female academics within the school and also the web tool..</i>

Interview and recruitment experiences

A common theme among interviewees was the challenge in changing the culture around the traditionally male dominated fields of STEM (Table 10).

Table 10. Evidence from qualitative interviews with panellists

Pannellist	Experience
Pan11	<i>I think particularly in certain STEM areas which are very male-dominated, and even in male-dominated areas where it can be very difficult for females to want to reach out, or not reach out, but to stick their neck out and go for certain roles for fear of whatever it might be, I don't know.</i>

Five **panellists** expressed disappointment with the process and/or outcomes. For example, one panellist conveyed their discontent (Table 11) when a qualified female candidate was not appropriately considered for a role due to the department having pre-decided a preferred male candidate.

Table 11. Evidence from qualitative interviews with panellists

Pannellist	Experience
Pan 06	<i>It became clear to me before the process even started that their preferred candidate had already been selected. And the preferred candidate was not a female, and the position was advertised as a female-targeted position, and so I felt very compromised during the entire process that the outcome had already been decided before the position was even advertised</i>

Several interviewees expressed concern with the **disproportionate number of females on panels** compared to males. This is supported by quantitative data from Table 7 showing 9/15 panels with a greater number of males. One Chair described their efforts to ensure panels had equal gender representation (Table 12); however, they were not always successful.

Table 12. Evidence from qualitative interviews with Chairs

Chair	Experience
Chair01	<i>I tried my hardest and sometimes it didn't work to have a panel, which is 50/50 male, female... tend to be three males, one female, but other areas, we were able to get 50/50. Now that's good because you have the females providing the voice on the panel and the male members and all members of the panel were basically informed, this is female focused...But yeah, like I said, all the Panel members were on board and they took it very seriously... And the males were kept, I guess, in check by, we had females on the panel.</i>

The majority of interviewed **Chairs and panellists** (11/16) emphasized the need to increase the number of applications from targeted recruits (i.e., Indigenous and/or female applicants).

Interviewees recommended to start efforts earlier in the life course (Table 13), as one strategy to address this.

Table 13. Evidence from qualitative interviews with panellists

Pannellist	Experience
Pan09	<i>... in general I actually think it was done pretty well, it's just that there weren't enough women who were applying... I know that the Chair was very keen to try and make sure that there were women who were applying and who were shortlisted. But the reality was: there were fifty applicants, there might have only been four women... It's that there weren't enough women to make a judgment call. None of them were shortlisted because they weren't good enough</i>

Pan04	<i>I think it's very important to get out there into the schools and let the school students know that engineering's just not a male dominated area.... I think that's the key, to get students engaged earlier. And that will then bring more, I guess, graduates into the field, more postgraduates, and then obviously more academics at the end of the day. -</i>
-------	---

Under an **intersectional-lens**, the interviews revealed findings indicating a positive influence from the University's identified roles (Table 14).

Table 14. Evidence from qualitative interviews with applicants

Applicant	Experience
App05	<i>I've always worked in identified positions mostly, the majority of my career. When the position says it's identified, then I feel there's a strong want for an identified person. You recognise that's probably culturally safe. Well, more culturally safe than an unidentified position</i>

Engagement with girls in schools – qualitative insights

Outreach programs run by the University have improved girls' attitudes and desire to pursue a career as a scientist or engineer. Qualitative inquiry (Table 15) of HunterWISE program participants, founders, industry partners, and mentors has demonstrated the positive impact of the program.⁸

Table 15. Evidence from qualitative interviews with HunterWISE stakeholders

HunterWISE stakeholder	Experience
Participant	For 13-year-old Nashi Reese, it was a no-brainer. Given her enjoyment of maths, the high school student and her Year 8 classmates jumped at the opportunity in June to meet people working across Science, Technology, Engineering and Mathematics (STEM) disciplines at the University of Newcastle. <i>"I never knew how many areas were included in STEM," she says. "It's a fascinating area and meeting the people doing research helped me understand it more."</i> The program is already having an impact on Nashi's Reese who reckons a career in STEM is <i>"definitely a possibility. I've learnt there's a lot more to STEM than I realised."</i>
Founder	<i>"We didn't want them to miss out on extremely valuable, interesting careers,"</i> recalls Professor Anna Giacomini, a civil engineer, who has been one of the driving forces of HunterWISE. <i>"We had to do something. We all felt strongly that women and girls could thrive in STEM roles, but they needed support and to learn more about the options available to them. None of us thought it would become so big."</i>
Mentor	Providing mentors is also central to the program's success and civil engineer Barbara Jardim was encouraged to step up and use her experiences to support the next generation of young women considering a career in STEM. Now a senior analyst in infrastructure and capital projects with Deloitte, Barbara completed her PhD at the University of Newcastle in July 2021. <i>"At the very beginning of my PhD candidature, I received an invitation to watch a discussion panel about opportunities for women researchers in STEM," she says. "I was really impressed with the discussion panel, and I learnt about HunterWISE. I was excited to become a mentor in the outreach program."</i>

⁸ <https://www.newcastle.edu.au/hippocampus/story/2022/girls-in-stem>

Mentor	For Barbara, the opportunity to mentor Year 8 students while they worked on their STEM projects refocused her commitment to supporting the next generation. <i>“By increasing the female representation in STEM we can empower and encourage other young women to choose STEM careers,”</i> she says. <i>“It generates a positive change cycle. HunterWISE also reinforced for me the importance of having a female role model. I am privileged to have grown up in a very loving family that supported my choice of becoming an engineer. I know that not every girl has the same opportunity in life and HunterWISE can become that support and encourage these girls in case they don’t have that support from their home.”</i>
Industry partners	<i>“Being a mum with a daughter who at times didn’t feel confident with STEM subjects at school, I think HunterWISE would have been terrific for her,”</i> says Glencore’s Coal Assets Communications and Community Relations Officer, Tracey Sneddon. <i>“That extra encouragement and support is very important for girls. Having an opportunity to see other women already working in STEM is a really big help in terms of realising that it can be done – and it can be enjoyable, too.”</i>

FURTHER ACTION

Table 16. Targeted recruitment of staff and students – further actions derived from Cygnet findings

Ref.	Rationale/Evidence	Actions	Timeframe	Responsibility	Budget implications	Desired Outcome/Targets
1	SABE example demonstrated that having a minimum of 50% women on panels leads to increased number of female appointments for targeted roles. Qualitative data insights also confirmed the need for greater gender balance.	Commit to 50%+ female panel representation for all future female targeted roles.	Q4 2022 – ongoing	Talent Acquisition HR EDI	N/A	Improved feedback of female panellists (GEI 2) Greater number of female appointments (GEI 1)
2	Greater awareness around impact of unconscious bias on decision making and process for targeted recruitment required – evident from qualitative interviews.	Unconscious Bias and Targeted Recruitment Training for Chairs and Panellists for future female targeted roles.	Q1 to Q2 2023	Talent Acquisition HR EDI	N/A	All chairs and panellists in male-dominated areas in CESE trained in Unconscious Bias and Targeted Recruitment Training (GEI 2)
3	Limitation of recruitment system and process to separate male applications from female applications so females are considered first.	System and/or Process improvement for targeted recruitment to ensure male applications are considered <i>after</i> female applications.	Q1 2023	Talent Acquisition HR	N/A	Panellists only receive female applications initially for consideration (GEI 2)
4	Greater numbers of women required for consideration by shortlisting.	Track shortlisting KPIs for SENG & SIPS.	Q1 2023 – ongoing	Head of School Talent Acquisition HR	N/A	25% increase in the numbers of women shortlisted (GEI 2)
5	Further increases in female representation required in SENG & SIPS.	Set KPIs SENG & SIPS female representation.	Q1 2023 – ongoing	Head of School/PVC	N/A	10% increase in female representation (GEI 2)
6	Current representation level of female academic representation in SIPS/SENG is maintained.	Develop retention plans for existing female academics (Level E) in SIPS and SENG.	Q2 2023	Head of School/PVC HR Business Partners	N/A	Retention plans in place for all female professors in SIPS & SENG (GEI 1)

7	Data required to understand the experience of female and female Indigenous students in male-dominated schools.	Develop survey and/or run focus groups to better understand challenges and opportunities of existing students.	Q2 to Q4 2023	SPP/HOS/AD-EDI	N/A	New strategies developed to improve the experience and retention of students (GEI 3)
8	Greater number of female students are required to build the pipeline for STEM.	Campaign to engage and attract more female students to apply for STEM Degrees through dedicated webpage.	Q1 2023	Central Marketing and Communication team	N/A	Webpage established and run as part of undergraduate campaign for the 2023 student intake (GEI 3)
9	Improve tracking of retention rates of female students in underrepresented areas.	Review retention rates for female students and develop exit survey for female students that have left.	Q1 2023 and ongoing	SPP/HOS/AD-EDI	N/A	Greater clarity around retention rates for students (GEI 3)
10	Networking and connection opportunities important to LGBTQIA+ staff working in Science.	Investigate establishment of Queers in Science network at University of Newcastle	Q2 2023	ALLY/EDI AD EDI CESE	N/A	Support of LGBTQIA+ staff and students in Science visible at institutional level (GEI 3)
11	More data insights required into links between high school engagement programs with University degree choices of female students.	Scoping of potential long-term study to evaluate links between high school engagement and University degree choices.	Q4 2023	SPP/Athena Swan Working Party/HunterWISE	\$10,000	Longitudinal study established for local outreach programs (GEI 3)
12	Low number of female students enrol in STEM degrees	Leverage HunterWISE outreach program through new scholarship initiatives and additional schools	Q1 – Q4 2023 + annually	HunterWISE team; Future Students M&C	\$75,000	Targeted scholarships for Regional Women in STEM and HunterWISE schools (bundled with mentoring through Women in STEM Mentoring Program)

13	Retention of Indigenous students in STEM is less than non-Indigenous students in STEM	Initiate the establishment of Indigenous Students in STEM network at the University	Q1 – Q2 2023	Indigenous Student Advancement Team, The Wollotuka Institute	N/A	Increased retention rates of Indigenous students in STEM
----	---	---	--------------	--	-----	--

REFERENCES

The STEM Gap: Women and Girls in Science, Technology, Engineering and Mathematics –. (2022, March 3). AAUW: Empowering Women Since 1881. Retrieved September 14, 2022, from <https://www.aauw.org/resources/research/the-stem-gap/>