

Right Way, Wrong Way, Better Way – Modelling cultural sensitivity to engineering graduates

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ABSTRACT

The profession of engineering intersects with Aboriginal Australians in a multitude of ways. Engineering works in remote areas are more often than not ‘whitefella’ (non-Aboriginal) solutions which can mean the difference between improving the quality of life (where consultation is done well) or imposing irrelevant, costly and unsustainable solutions (where consultation may have been done poorly).

As engineering mentors and educators, it is our duty us to develop graduates who can develop solutions with full and informed community consultation and ‘work with communities instead of unto’. This obligation is globally linked to the United Nations Declaration on the Rights of Indigenous Peoples, and mirrored by the Australian professional accrediting body, Engineers Australia and the Reconciliation Action Plans of Engineering firms including the Author’s (former) employer WSP.

The aim of this paper is to present an Engineers perspective of the implementation of Education methods the Author was involved in, including Student project work, educational videos and STEM Student presentations, whilst examining qualitative changes in student perceptions of working with Aboriginal Australians.

ACKNOWLEDGEMENT OF COUNTRY

The authors of this paper would like to acknowledge it was prepared on Kurna land. We pay respects to the Kurna traditional owners past and present – their Elders, their culture and their spirituality which remains as important today as it was 60,000 years ago.

INTRODUCTION

Engineers in Australia and, indeed the world, will invariably work in contexts where there is a nexus between traditional and non-traditional ownership. The process of colonisation has been endemic over the centuries with one group ‘conquering’ another. From a moral standpoint, this leads to contestability over who has rights to land.

In Australia, there have been strong movements toward Reconciliation between Aboriginal and non-Aboriginal peoples; legislated land rights for Aboriginal peoples in some cases and ethical recognition of the importance of ‘doing with and not to’ (Duff et al, 2011). However, there remains a good deal of work to do in Closing the Gap across seven targets including school attendance; literacy and numeracy; employment; life expectancy and child mortality (Institute of Family Studies, 2019).

The Author has in recent years focused on culturally sensitive projects with a focus on expanding his knowledge and understanding of colonisation and its effects on Aboriginal Culture. This has involved strong involvement with Aboriginal community members in remote parts of South Australia, along with Aboriginal (and engineering) educators in a collection of projects at the University of South Australia. In addition, the Author

has a unique opportunity to mentor others both at his workplace and at other forums on Culturally Sensitive Design, and the opportunities Engineers have to help shape Australian Society for the better with inclusion of Aboriginal values across the developing landscape.

Work in this space is underpinned by the ethic that engineers should be striving to further their own development and knowledge base, with the intent to further benefit our society. This is recognized and reinforced by Engineers Australia as an important aspect of the role of the profession. For example, Article 4.2 in *Engineers Australia Code Of Ethics* emphasizes the incorporation of ‘social, cultural, health, safety and economic considerations into the engineering task’ (Engineers Australia 2018).

This encompasses design solutions within projects to managing delivery of infrastructure, just to name a few. The appreciation of cultural sensitivities that are linked to all developments need to be appreciated and taken into account by all stakeholders, including Engineers. Planning and execution of developments should be undertaken in a culturally responsive manner with a spirit of shared decision making (Department of Prime Minister and Cabinet, n.d.).

The Author has worked across several projects with embedded cultural design elements. In addition, he has worked with Industry partnerships and the University of South Australia to educate students on the importance of inclusion and culturally sensitive design.

Three case studies are included in this paper, where the Author expands on his influence, learnings and the fostering of diversity, primarily focused on Aboriginal inclusion.

Case Studies presented are:

- Yalata Student Project case study
- Blue Wren Portal case study
- 2019 STEM Aboriginal Congress case study

RELEVANCE

Engineers Australia Code of Ethics

Engineers Australia is known as the trusted voice of engineers across Australia, and take a strong stance as leaders in shaping a sustainable world, whilst also committed to advancing the professional development of it’s members.

The relevance of this paper touches on several Engineers Australia’s Code of Ethics guidelines, including but not limited to the following sections:

1.3 Respect the dignity of all persons (apply knowledge and skills without bias in respect of race, religion, gender, age, sexual orientation, marital or family status, national origin, or mental or physical handicaps).

3.2 Support and encourage diversity (promote diversity in engineering leadership).

4.1 Engage responsibly with the community and other stakeholders (promote the involvement of all stakeholders and the community in decisions and processes that may impact upon them and the environment).

4.2 Practice engineering to foster the health, safety and wellbeing of the community and the environment (incorporate social, cultural, health, safety, environmental and economic considerations into the engineering task).

WSP Reconciliation Action Plan

WSP is a globally recognized professional services firm with the belief that for societies to thrive, we must all hold ourselves accountable for tomorrow. That leads WSP to create innovative solutions to the challenges the future will bring, while inspiring to stay curious, act locally, and think internationally.

WSP takes corporate responsibility seriously, and within their ‘accountability for tomorrow’ mantra, policies include:

- Sustainability
- Health and Safety
- Ethics and Integrity
- Diversity and Inclusion
- Communities, which include but are not limited to:
 - Initiatives including scholarships, charitable projects and STEM educational support. Within the initiative schemes sits WSP’s Reconciliation Action Plan (RAP) which targets improvements within the business.
 - *Indigenous Specialist Services* as a business unit, that provides indigenous knowledge and spatial values across design of infrastructure and build environment projects.

The relevance of this paper is intrinsically linked with WSP’s RAP, with work undertaken by the Author directly linking to the following RAP targets.

Relationships – Engage with aligned clients (Identify opportunities for building relationships with clients to mutually support RAP initiatives with Aboriginal and Torres Strait Islander peoples, organisations and businesses) – in this instance the Authors work with University of South Australia Cultural Group.

Respect – Cultural awareness training and development for employees Embed cultural awareness and ongoing learning as a core behaviour across the organisation. This will promote understanding and lay the foundation for the effectiveness of other strategies outlined in the RAP.

Duff et al (2017) point to the central importance of the ethos of working with communities and not doing to. The authors point to ethical imperatives laid out across several ethical ‘cannons’ including the *United Nations Declaration on the Rights of Indigenous peoples*; the *Engineers Australia Code of Ethics*, which segue to the various Reconciliation Action Plans of both Universities and Engineering firms.

YALATA STUDENT PROJECT CASE STUDY

Background

The Author has worked across several projects for the township of Yalata, including the condition assessment of drainage infrastructure within the Yalata township, with assistance from Civil Engineering Students enrolled in the Service Learning course, Community Service Learning Project, at the University of South Australia in 2015. Following this, the Author was involved in the design of civil works for the Army Aboriginal Community Assistance Program (AACAP) in 2017.

Yalata is an Aboriginal Community formed when the local population was forcibly relocated from the Maralinga area in the North/West of South Australia, prior to atomic bomb testing in the Maralinga area in the 1950s and 1960s.

Yalata is currently a ‘fourth generation’ township, and comprises basic infrastructure for the Yalata Community. Community accessible venues and services include: school, church, police station, general store, pool, art gallery hub, playground, and nearby dry earth oval.

Yalata Community Incorporated (YCI) manages the operation and running of the township and community services including maintenance of roads, street lighting, sewerage treatment plant operations, rubbish collection, and open cut landfill/waste facility. The existing public pool is not available for use (at time of last site visit in 2015).

Treated bore water is provided through the water mains network for the township, with a sewerage network collecting and directing effluent to the nearby northern sewer treatment plant.

The road network links Yalata to the national highway approximately 5km south of the township. A sealed airstrip is located to the northwest of the town. The existing electricity network provides power to all residences and public infrastructure.

The existing stormwater drainage network across the township has been poorly maintained. The drainage network comprises primarily surface swale drainage along the road verges in the form of informal swales. A minor pit and pipe drainage network is located through the centre of the town, with a gravity outlet to the north where the pipe reaches daylight. The pits along this network are blocked with soil and debris. A number of minor culvert crossings have been installed to provide cross drainage with flows generally directed to the north or northeast, matching the direction of fall across the land generally in this region. Historically, during heavy rains, overland flows from the greater upstream catchment swept through the township, damaging road infrastructure. A two metre high earth levy bank was subsequently constructed along the southern upstream boundary of the town to hold back any peak surface flows during such storm events.



Figure 1. Observed blocked stormwater pipe at headwall outlet (September 2015)

The AACAP initiatives, instigated by former Prime Minister John Howard in 1996, continue with recent civil work improvements undertaken across the township. Civil works under this contract in 2018 included the construction of staff housing (for non-aboriginal people working in the community), airport runway upgrades, road upgrades, waste facility access and operation upgrades, a new early learning centre and a community centre. The AACAP delivery staging is further expanded in the *ANAO Report 2010*.

During the site inspection works undertaken by the Author in 2015, a meeting was arranged with the Aboriginal Elders of Yalata, along with the CEO of YCI, at the YCI offices.

At this meeting, the shortcomings of the infrastructure in the township were discussed, and from this meeting, higher priority projects were identified. The Aboriginal Elders identified the need for a Community Centre for the Yalata Community, where the locals could congregate and use the space for quiet time, meetings, and other community based activities. The Community Centre was seen as a higher priority for the Yalata Community than road upgrades, or repairs to the airfield.

The most recent funding allocation for the AACAP was confirmed in 2017 and project scoping was undertaken by the Federal Government.

An open tender was released for Consultants to prepare a submission to undertake the design works for the engineering scope of works, the works identified included: Airfield repairs, road upgrades, new staff housing, waste facility access and operation upgrades, an early learning centre and a community centre.

WSP were successful in bidding for the design of the project, working with Hodgkison Architects to complete all design and documentation for the project. The Australian Army were the primary construction contractor, who would then undertake a majority of construction works. Subcontractors would be engaged by the Army for specialist services outside the Army's areas of expertise.

During the design development stages of the project, early cost estimates for the total scoped works were estimated to be higher than the funding allocation available. To keep the project within the allocated budget, a reduction in construction works was required.

The decision regarding funding allocation split across the project undertaken by the Federal Government and the Australian Army. The revised project scope prioritized General Civil Works over Structural works, with the Community Centre being pushed to the bottom of the scoped work items. Civil works included road and airport runway upgrades, and structural works included new staff housing and an early learning centre for preschool children. Fortunately, early stages of the Community Centre were still able to be constructed (as designers WSP and Hodgkison Architects prepared a staged construction approach to the Community Centre, where subsequent stages could be completed over time once more funding became available).



Figure 2. Community Centre – staged construction nearing completion (November 2018)

It was disappointing to the Author to learn the project scope changes with no apparent consultation with the YCI or the Aboriginal Elders.

The push for general civil works to be at the forefront of the construction program over other scoped works provided remote field experience for the Australian Army personnel. This direction and decision was taken at the expense of the YCI and Aboriginal Elders' preferred works (in this instance the Community Centre), with the result appearing to be a 'tokenistic' effort by the Federal Government, allowing the political kudos once 'funding allocation' had been announced, when in actual fact, this funding was not directed into areas deemed higher priority for the end users, the Yalata Community.

The lack of consultation and not 'working with' but 'doing to' the Aboriginal people at Yalata further affirms the Authors belief of misdirection in funding allocation. Simply put this is another example of others deeming to know what is 'right' or needed for an Aboriginal Community rather than listening to the voices of the community. In the past this has resulted in infrastructure sometimes not being maintained, because it is not what a community has wanted, and as a result the community may struggle to see the value of the infrastructure.

Introduction

In 2018, a request from a University Lecturer (Ellis, Mark) to the Author was made, requesting any potential projects that could be used as a theoretical student design project for fourth year Civil Engineering Student's at the University of South Australia's Mawson Lake Campus.

The Author proposed the Yalata Community Centre be used as a Student Project. The Author presented this previously designed WSP Project to *Ellis* and advised this project would present a number of engineering challenges for the students, with the anticipation of extensive learnings from the project.

This project presented unique challenges for the students to address, including but not limited to:

1. Culturally sensitive location
2. Remoteness of project site
3. Wide range of engineering discipline inputs required
4. Limited access to site
5. Limited access to existing data
6. No face to face meetings with Yalata locals***

**** this was raised with Ellis, however time constraints and limited funding resulted in no input from any local Aboriginal's from Yalata. This is to be explored for future student projects.*

The Author acted as the Project Client on behalf of the Yalata Community Incorporation (YCI).

A project brief was prepared, and the Author reviewed and edited the project brief template provided by the University of SA, ensuring the following sections were added:

1. Reference to Cultural Sensitivity across the tender brief
2. Highlighting Cultural Aspects are to be addressed in the feasibility study stage
3. Consultant (Student Group) shall consult with the Client (WSP/Bown) to determine the **Cultural Appropriateness** for the proposed options noting “The consultant shall consult with WSP and YCI to determine the cultural appropriateness for the proposed options; it is the consultant’s responsibility to determine the possible impacts of the proposed options during construction and post construction phases.”
4. Evaluate the design options presented against a range of factors, including **Cultural Sensitivity** (leading the list of factors with Cultural Sensitivity also – to highlight the importance of such a factor in a design project)

The Author co-presented the project brief to the Students with *Ellis* and *Zeuner* (assistant Lecturer), and answered questions related to the Brief at several meetings face to face, along with email correspondence.

The engineering students were then tasked with project deliverables that formed part of the subject curriculum and counted towards a majority of the subjects’ grades.

The Author provided a grade and comments for the following tasks during the Students project:

1. Feasibility Study Written Submission
2. Feasibility Study Oral Presentation
3. Final Design Written Submission
4. Final Design Oral Presentation

Submission Review

Feasibility Study

The Author, as the acting Client, reviewed the student project submissions for content, with particular interest around cultural sensitivity content as part of the review process.

The Engineering Students Feasibility Study submission included references to their ability to undertake culturally sensitive design, engagement and working with the Yalata community with a view to increase the ownership and utilization of the infrastructure. Links to the land and proposed adoption of landscaping, meeting places, campfire areas and revegetation of land with native species were also included.

Specifically:

1. A **Statement of Acknowledgement** was included at the beginning of the Students' submission (page 2).
2. Appreciation of the significance of site heritage was outlined in the Feasibility Study. Procedures for the protection of Culturally significant areas was also addressed in the student's submission.

Final Design Oral Presentation

The student group presented an overview of the project to their fellow students, lecturers, other staff and guests at the end of the semester. During the twenty minute presentation the project scope was expanded upon and questions were raised by the audience.

Despite the submission works completed previously by the student group, there were two glaring omissions in this oral presentation, the first was no Acknowledgement of Country, and the second was no mention of the cultural sensitivity of the project. The only item covered in the presentation was the inclusion of a 'yarning circle'¹.

Whilst the students showed the inclusion of culturally sensitive design in their written submission, the lack of this being included in the final oral presentation to the public disappointed the Author. At the end of the presentation, the Author congratulated their efforts on the presentation, and then raised the culturally sensitive nature of this project, not just to the presenting students but to the whole audience. And rather than asking a question the Author felt the need to raise this Acknowledgement to Country. The Author then also clarified to the audience that the people of Yalata were a fourth-generation people who had been forcibly removed from their native homelands prior to the Government's atomic bomb testing at Maralinga.

The other two group projects presented at the same forum also made no mention of culturally sensitive design either, with all three projects being located on South Australian lands.

Submission Summary

The Student group brought a range of backgrounds and experiences from their combination of both International and Australian backgrounds. The submissions reviewed included an appreciation of culture and sensitive design processes, which pleased the Author given their limited engineering and design experience.

The incorporating of culturally sensitive design requirements into the project brief furthers opportunities for the students to learn and build understanding and appreciation of Aboriginal Culture within Engineering Design.

Whilst the student group did include cultural design elements into the written documentation, the lack of this important and highly relevant material in the oral presentation highlighted that further education is required to increase awareness of culturally sensitive design across engineering projects.

¹ In the Yarning circle process all participants are provided with an opportunity to have their say in a safe space without judgment. Each participant speaks, one at a time, is heard and not interrupted. This is a process that involves and develops deep listening, sharing of knowledge and development of higher order thinking skills and establishing rules of respect. Department Education Training and Employment, Queensland Government. ND

The inclusion of culturally sensitive design needs to become second nature in an Engineers thinking when working on any project, and the Author recommends further education on culturally sensitive design during study will boost the likelihood of this occurring.

The Author recognized that if he was in the same situation two years ago, he would not have had the courage nor confidence to stand up for his expanded beliefs, including defending the rights of acknowledgement of the Aboriginal People. This confidence has come from immersion and working with Aboriginal people on a range of projects.

BLUE WREN PORTAL CASE STUDY

Introduction

The author has made a significant contribution to engineering education among first year students at the University of South Australia by contributing to the *STEM, Cultural Understanding and Aboriginal Content* portal. The aim of the portal is to provide case studies; testimonials and problem-based learning vignettes to develop the learning of first year engineers and other STEM students (See Figure 2. **University of South Australia (2017) STEM culture portal**) The working group comprises seven women – three Aboriginal and four non-Aboriginal women. Consulting to the group were Aboriginal Elders; engineering students past and present and the Author.

The intent for the Portal and the content prepared within, is to promote increased cultural awareness across engineering students during their undergraduate years at university, with a hope of preserving the Aboriginal culture and heritage of Australia, echoing the conclusions in *Goldfinch, T., 2016*.

This is important, as it builds an engineer's understanding of cultural awareness, and appreciation of culture across the design process. The benefit is that the knowledge garnered can be utilised within day to day engineering activities. A culturally aware engineer seeks and includes a diverse range of input early on in a projects development. Incorporating such input results in a well-rounded design that includes all stakeholders from the beginning. If this input is delayed, it may result in increased construction costs through redesign of solutions. The final solution is more likely to be embraced by the community if all stakeholders have been listened too and been given the opportunity to 'own' development of the solution.

The Blue Wren Portal also aligns with all University's objectives to include content that will increase awareness, knowledge and the ability to work with the Community, including the Aboriginal people (*Duff, A., et al 2019*).

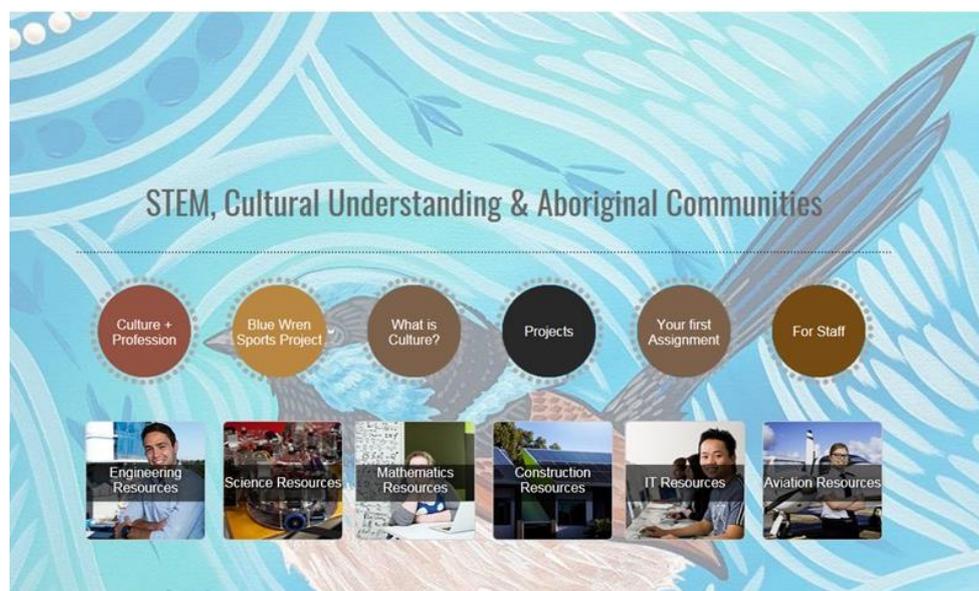


Figure 3. University of South Australia (2017) STEM culture portal

The author participated in the portal in two areas. These were contributing to the writing of the *Blue Wren Aboriginal Sports Association Makeover* problem-based learning vignettes and providing piece-to-camera testimonials around engineering and professional attributes. The vignette format was utilised to increase student connection to the story as a visual format helps relay the underlying messages and teachings.

In the first instance, the author lent engineering professional expertise to the script, so that the story would marry culture with professional context, thereby ensuring professional relevance for the student.

The author also played the lead role of ‘James’ – a senior engineer who is employed by the Association to ‘fix’ the facilities:

Synopsis

When Uncle George comes to visit the Blue Wren Sporting Association, he finds it difficult to get down the ramp or access any part of the facility. He instructs the Chairperson, Eddie, to sort out the problem. Eddie invites senior engineer, James, to work with the Association to fix the facilities. However, James (who thinks he has all the answers) soon finds out he has a LOT of learning to do. Despite James’s best efforts, he manages to get into some cultural difficulties. Luckily for James, the folks at the Blue Wren Association put him back on the right path.

Writing the Script

The Author contributed engineering content included within the Blue Wren Portal. The Engineering-related content included terms and phrases used by engineers, structure and content of meetings. In addition to this, was the inclusion of engineering terms not generally used by others – the intent being to highlight that the use of engineering jargon may not be understood by the general public, and to provide a clear communication to others requires simpler terms to be used (i.e. ‘lighting levels’ in lieu of ‘lux’ when discussion a new carpark lighting design project).

Playing the role of ‘James’

The Author struggled with the acting role during the early filming phases across the two-day filming for the videos. The concept of acting was very much outside his comfort zone, and nerves were apparent. The Author used his engineering knowledge and even adlibbed several script lines in regards to engineering solutions in later filming segments to the benefit of the film.

Initial apprehension from the Author, in particular around the insensitive nature of the character he was playing, lead to feelings of being uncomfortable around other people, including the Aboriginal actors on the set. However, positive reinforcement from fellow actors that this feeling is ok, noting the positive messages we were going to be sending out in the film, as the character develops, had to be taken into account.

The Author increased his own cultural awareness during the filming, as a result of the continual close working environment filming with the fellow actors (both Aboriginal and non-Aboriginal) and discussions held outside filming periods. The immersion into this environment built rapport between all actors, with teamwork building as the filming sessions continued. Actors helped each other with lines and rehearsing prior to set filming.

The experience of working closely on the filming of the portal further reinforced the connection and appreciation of Aboriginal Culture and Heritage across everything we do, and the experience was a positive one for the Author. This aligns with the conclusions in Goldfinch (2014) and extends further the link from Student engagement to also include practicing engineers’ engagement with the Aboriginal Community.

Piece to Camera Testimonials

Here the author reflected on his own personal and professional values alongside of Aboriginal Elders, engineering teaching staff and students at the University of South Australia.

When asked ‘*What are some personal qualities that a Graduate will need to be effective in their career*’, the Author cited excellent communication skills; a willingness to learn and good listening skills – ‘if you’re not listening, you are probably not learning as much as you could or should’. When responding to ‘*What are some*

things to consider when working with Aboriginal communities', the Author cited communication as being 'very important' and allowing enough time to visit; speak to all the key members and any 'other people of influence who want to have some involvement in the project'.

This involvement has led to the author contributing to a number of local, national and international publications and presentations (Duff et al 2018; Duff et al 2019) which underscore the role engineers must play in consulting widely; giving voice to Aboriginal communities and ensuring meaningful and honest collaboration.

Summary

Most importantly, though, there has been a clear and demonstrable development in student's professional skills when working with Aboriginal Australians. This one small example (Duff et al 2018) shows a direct correlation between the Blue Wren vignettes and student learning outcomes:

Engineers should always put people first and that is through listening. Listening indicates concentration, respect and moreover humility...Professional jargon should be eliminated or made clear to the community. In the Blue Wren Aboriginal Sports Association Series 'James' uses professional terminologies to interact with the Indigenous community, which of course did not make sense... (Student A, Sustainable Engineering Practice)

One of the presentation highlights was at the *2019 STEM Aboriginal student Congress*.

2019 STEM ABORIGINAL CONGRESS CASE STUDY

Introduction

The 2019 STEM Aboriginal Congress is a Department of Education learning initiative, with the aim to increase the number of Aboriginal young people choosing to study core STEM subjects in Years 11 and 12. The Students attending are currently in Years 5 to 10 and have shown interested in STEM in their schooling to date.

This program is an excellent teaching tool and provides interactive opportunities for students to be involved and immersed in STEM related activities, including the designing of engineering solutions and understanding of engineer's roles in society. The purpose of the Congress is aligned with the Closing the Gap, in particularly the initiative priority of Education, where Aboriginal Students are provided education pathways to help them reach their full potential, in this case in the STEM field (*Closing the Gap*).

The Author was asked to co-present at two tutorials titled 'STEM in Action'.

The Author presented example civil engineering projects in a segment titled 'A typical day in the life of an engineer'. The topics within the presentation included:

- the process for a road intersection upgrade, which included widening of the roads, and resulted in possible tree removal,
- working with Aboriginal Elders (from Yalata), to determine township upgrades and order of importance of civil and structural engineering upgrades,
- access road design whilst protection sensitive vegetation on a new wind farm to be constructed in Victoria.

The segment content included example projects currently being tendered and subsequently designed, and the Author presented photographs of project sites, where culturally sensitive design has been undertaken, outlining where Engineers can influence design and incorporate culture into Civil Engineering projects across a range of project types and locations.

Content Presented

The first project presented by the Author was an ‘suburban intersection upgrade’ tender submission, where the State Government released a tender to quote on the redesign of an intersection identified to be upgraded. The reasoning in this instance for the upgrade is to improve safety at the intersection, based on several road accidents at this intersection. The Author spoke to the students about likely tree removal and land acquisition at an existing road intersection in the southern suburbs of Adelaide. Public consultation, land clearance permissions, and significant tree protection/removal were discussed openly with the Students.

The second project presented was the review of drainage issues at the Yalata township. The Author discussed the previously undertaken meetings with the Aboriginal Elders of the town, where the Elders discussed their concerns and hopes for the project. The Author expanded on the project scope, outlining the site inspection undertaken, the writing of a drainage report, and how this report was used to assist the Yalata Community in obtaining Government Grant assistance for funding of a number of projects at Yalata.

The third project presented was for a new wind farm under construction in regional Victoria. Key items presented included the native title checks undertaken across the project site, and the importance of the engineering design of roads to avoid the culturally significant areas identified across the site. The design of civil works also avoided other protected areas and native vegetation. The approval process to realign these access roads followed due process, which included consultation with Aboriginal Elders from this area to seek permission for revised road alignments which aligns with the project approval process (Duff, A., et al 2019).

In the above three example projects, the Author used the segment to continually highlight the influence engineers can have on a project, where engineers can make a real difference in a project outcome and also have the opportunity to work with others and problem solve. Links to community in regards to public consultation and also meetings with various stakeholders, including Aboriginal Elders (in the case of the Yalata project) were also highlighted as positive factors when working in such projects for an Engineer.

Following the presentation, Students were asked if they had any comments or questions for the Author.

Student Feedback

The feedback from the Students (and their Teachers in attendance) was very positive.

A Teacher asked the author to expand on ‘what happens if a tender submission is not successful’. After reflection at the closing of our session, the Author expanded on this question noting the following:

- In the example of losing a tender proposal, Engineers look at where improvements in their submission can be made.
- Is there something in the tender that was not communicated effectively?
- Use feedback from the Client as a lesson learnt and ensure these are covered fully in any subsequent similar tender submissions.
- Communication is paramount.
- Use the opportunity of a lost tender to improve, move forward, onward, upward.

Questions raised by the Students were around the broad engineering themes of tree removal, and the replanting of removed trees. The Author was able to answer these questions by confirming planning requirements require trees that are removed will be replanted (with additional trees depending on the significance of the removal) within the same Council Region, inline with existing development planning conditions in place across developments in South Australia, as per the *Native Vegetation Act 1991*.

Despite the culturally sensitive focus of the Authors’ presentation, another excellent question from a student was regarding if roundabouts work better than a signalised intersection. The Author responded that it largely depends on the level of traffic and the spread of traffic from different directions. Generally signalised intersections are suitable for larger traffic flows, whereas roundabouts are most likely more suitable for smaller traffic flows.

As an aside, further discussion offline with the co-presenter highlighted the need for support for Aboriginal students throughout the education and then career progression, i.e. from primary and secondary schools right through tertiary education and then continual support at the place of employment, echoing *O'Shea P., 2011*. Without a support network and mentors in place, an inevitable higher dropout rate results.

LESSONS LEARNED

Frequent exposure to cultural content and open discussions with Aboriginal Australians have certainly increased the awareness of cultural sensitivity for the Author.

The Author through exposure across culturally sensitive projects, and teamwork with Aboriginal colleagues has increased his awareness of the importance of culture and respect in everything he undertakes across professional project work and personal life.

The Author has recently volunteered to join WSP's reconciliation action plan panel board in South Australia, and is striving for the inclusion of early discussions with traditional land owners across new projects at planning phases, where greater positive outcomes for culturally sensitive design can be obtained.

Rate of attrition in both education and then in the workplace for Aboriginal people needs to be further addressed. Continual support is needed across both the education and workplace streams, encouraging ongoing contributions from Aboriginal students and professionals. This aligns with WSP's reconciliation action plan, as outlined in the *relevance* section of this paper.

Visionary / visible Aboriginal Leaders , the visual reinforcement of Aboriginal people in positions of authority and status. This reinforces the positive 'if they can, I can' mantra for students and other young Aboriginal people. This draws similarities to the positive outcomes of the women's movement from the 1970's onward which encouraged female students and other young women to work and study in areas where women had previously been discouraged.

WHAT'S NEXT?

Since commencing this paper, the Author has volunteered to sit on the Reconciliation Action Plan (RAP) group in the Adelaide Office, furthering his involvement across the existing WSP Diversity Group.

Following a detailed review of WSP's RAP, the Author has posed the question to the WSP Leadership Group, regarding can we expand further our RAP content. The RAP only discusses staff, but can we explore WSP's ability to help shape project briefs at a planning/early design stage to include local Aboriginal people across project planning, land use permissions and the like. Global companies such as WSP have the ability to shape projects from an early stage given the planning and design services that are provided in the companies services offered.

The Author continues to work with the Culture Team at University of South Australia, which has included contributions to papers around Culture and presentations of Blue Wren portal resources to other university lecturers and school students.

More recently, the Author has changed employment, joining AECOM as the Civil Lead and continues to influence projects with the vision to incorporate diversity and introduce RAP to project scoping.

SUMMARY

The learnings and growth in the Author's development and understanding of the Aboriginal people has grown significantly since commencing work on projects within Aboriginal Communities and working alongside the University of South Australia's Cultural group.

Engineers have an excellent opportunity to mentor others regarding culturally sensitive design in the workplace, and this can extend from technical support staff right through to management streams.

Working with Aboriginal people across presentations and projects builds a well rounded final product, where greater knowledge is shared and included in final solutions.

Don't be afraid to ask. Aboriginal people were not consulted during a majority of engineering development

works across Australia up to the mid to late 1900's, but with the knowledge and cultural awareness we as a society now possess this consultation can be easily incorporated to ensure engineering developments include Australia's first people at the core of the solution.

Quote:

“As a result of the Yalata project and (the Author's) involvement, we have modified the course content slightly to include a specific seminar on cultural awareness. This is presented after a seminar on community engagement and is a nice addition to the course. I plan on doing both seminars together for the coming years” (Ellis, Mark – University of South Australia, 2019).

ACKNOWLEDGEMENT

We acknowledge the Kurna people as the Traditional custodians of the land on which this work took place. We respect their traditions, culture and spirituality. This land always was Kurna land, and will continue to be.

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BIOGRAPHY

The Author, Brad Bown is a Principal Civil Engineer at AECOM, with 20 years' experience primarily based in a consulting environment, associating with the government authorities, mining industry, local councils, private industry clients, and the construction industry. He has worked overseas and regionally throughout Australia, and experienced varied working cultures, projects and design solutions.

He has experience in all facets of consulting engineering, whilst previously sitting on WSP's South Australia's Reconciliation Action Plan panel as co-chair. Brad now leads the Civil Team in the AECOM Adelaide office, and his mantra includes the fostering of diversity and continuing works to align with AECOM's RAP.