Committee Secretary

Senate Education, Employment and workplace Relations Committee

PO BOX 6100

Parliament House

CANBERRA

ACT 2600

AUSTRALIA

Dear Secretary,

Re: The shortage of engineering and related employment skills

I wish to provide my response to the above issue from a practicing Engineers' point of view.

My submission is based on my professional experience that I have gained by working in the Queensland Public Sector and it refers to **Point C & Point I** in the Terms of Reference.

Please feel free to contact me if you need further information or clarification about the submission. I can be contact during business hours.

I understand that Australian Professional Engineers and Scientists Association (APESMA) will also be making a submission and I will be providing my input to them.

I am hopeful that you will receive a good feedback from the public and we can work together to build a strong and efficient engineering workforce in Australia for the future generations to come. Thanks.

Yours faithfully,

(Jay Wickramatunga)

(1) POINT C - Options to address the skill shortage for Engineers and related trades and the effectiveness of the relevant policies, both past and present

I originally came from Sri Lanka where engineering is still recognised as a noble profession in Sri Lanka. The brightest set from year 12 goes to Uni in Sri Lanka to undertake Engineering and it is seconded only by medicine. Therefore the country has been able to provide quality Engineers not only to Sri Lanka but also to the rest of the world.

Being a developed nation, we must be above other nations in territory education and professional development and lets look at 2 options currently being used by Australian Authorities to address the demand for engineering professionals. The first option is production of Engineers locally at Universities and second option is hiring engineers from overseas markets through migration and job visas.

Lets look at the first option and see what we can do to improve the local supply.

1.1 The production of local Engineers

Are we producing enough local Engineers in this country?

If Universities say that they are unable to meet the Industry demand, then we need to address this issue.

I am happy to suggest the following strategies to address this issue for your kind consideration:

1.1.1 Improvement of Mathematics knowledge of school and Uni kids

No Engineer can perform without a solid foundation of mathematical knowledge and this skill has to be developed right from year 1. With my own 2 kids in Queensland I have noticed that they learn tough mathematics in year 11 and year 12 (Example: Maths C) and their mathematics curriculum in their primary (Year 1 to year 7) and secondary (Year 8, 9 and 10) were not comprehensive. Therefore only few undertake Maths C in year 11 or year 12 and even most of them who do Maths C end up going to do medicine and not engineering.

Therefore I suggest that our mathematics curriculum be modified right from Year 1 to year 12 in consultation with the Universities and it should be consistent across all the states.

I trust Canberra can influence the states to have common mathematics school curriculum and this will allow us to produce good mathematicians across the country and the "fear of mathematics" will disappear from our kids.

I also suggest that the Universities can start a bridging mathematics program for beginners (engineering undergrads) and it would help some students who are struggling with mathematics to make a good start without any fear of mathematics.

1.1.2 Scholarships and other financial incentives

I believe scholarships and other modes of financial assistance would assist us to produce more Engineers in this country. If Federal and State Governments can provide more engineering scholarships to students, it will definitely assist the universities to attract more kids for engineering.

The other strategy the authorities could look at would be the HECS payment options. As to boost the engineering intake to universities, some HECS concessions can be made available for the students who undertake Engineering in the next 5 years.

Also study loans can be made available for the engineering students at a low interest rate and repayments can be made flexible during the loan period.

The traineeships and cadetships are other 2 strategies which are currently popular among Uni students. The federal Authorities can request big private companies to be part of this traineeship and cadet programs and companies can be motivated through some financial or tax incentives.

1.1.3 More Support to Universities

It is also equally important that we provide enough support to Universities. Their engineering faculties and schools may require additional resources and if federal government could help them, then it would assist them to produce more Local Engineers to meet the current and future demand.

1.1.4 Providing a wider publicity among the community

We usually go to a doctor to get medicine. We go to a lawyer at least once in our life when we buy a property. We go to an accountant to get our tax return done.

Are we going to an Engineer to get his or her service on a daily basis? Most of us would say 'NO'. Why? Because you don't need an Engineer for your day to day needs, but he or she quietly does planning, designing, building and operating each infrastructure of this country and they are being used by all of us. I believe Engineers deserve a better recognition and appreciation by the society. If we want to give due recognition, I think it can be done at local, state and national level.

At local level, we can target school communities and kids can be educated about the engineering profession. The Engineers Australia and Universities can play a bigger role in this campaign and they can get the industry participation to educate the school community about engineering profession. The campaign can be tailored to educate the kids about the passion of the profession, its financial and non financial benefits such as work life balance and work opportunities oversees . The federal government can provide financial support to the states and Territories and Education Department of each state/Territory should be able to run these promotional programs in consultation with stakeholders.

At state level, state authorities can recognise outstanding Engineering Professionals and they can be awarded with medals, and so on. The state branch of Engineers Australia should be able to host the function annually in partnership with each state and territory governments.

The best state nominees can then be nominated for national awards and Engineers Australia in Canberra should be able to host the national function in partnership with the federal government.

1.2 The Dependency on Migrant Engineers

Australia is one of the best countries in the world where the concept of multiculturism has been well established and I am fortunate to be one of the migrant engineers who have well settled in this country. The challenge for us is to get the best out of migrants while they are settling down in their new home. As a migrant, I can say that 'migration to Australia' is the most challenging decision I ever took in my life and I was fortunate at that time (in 1994) that I had enough opportunities to gain new skills, knowledge and competencies while looking for jobs. While being unemployed and looking for jobs, I was offered a lot of Computer training, job skill workshops, professional guidance and all these assisted me to find a suitable engineering job. I can remember that I was offered a 'Case Manager' by the then Commonwealth Employment Service (CES) and we worked together to find suitable training and job opportunities for me. On top of my carer development, these workshops and training assisted me to learn Australian way of life including ethics, norms and values of this great nation.

The question we now need to ask ourselves is do we have a system similar to CES now. If it is No. I strongly suggest that we should have a mechanism in place to make sure that migrant engineers will end up getting a right job and not ending with driving a taxi, and so on. The traineeship is a good way of getting migrants into the work place and it allows new migrants to learn Australian engineering standards, values, culture and norms without putting either party at risk. The federal and State can form a partnership with leading Industry bodies on traineeship issue and the program can be monitored through Centre Link. The remuneration of migrant trainees can be funded by the federal /state & companies (50:50 with a capping) and if required, an induction program can also be included at the start of the traineeship to educate Migrant Engineers about the workplace ethics, values, and so on.

I believe those policies were very effective and I know how much I was benefited by such programs in the past I think this is a great way to bring a lot of unemployed Migrant Engineers in to the Australian work force and it is definitely a win-win situation for both parties.

1.3 The dependency on Engineers who come on Work Visa (457 VISAS)

I believe this program has been successful and it gives flexibility for the Australian Employers to choose who should work for them under what terms and conditions.

However, we need to make sure that those 457 Engineers are also maintaining the same or equivalent qualifications and competencies similar to our local Engineers. Otherwise local unemployed Engineers (including migrants) are being disadvantaged and we are unable to maintain the consistent standard of the engineering profession.

As we know migrant unemployed engineers don't get any centre link payments for the first 2 years and they undergo a lot of difficulties during this period.

So to be fair by all parties, federal government needs to make sure that Engineers coming in to the industry from the 3 sources (Locals, migrants and 457) are equally competent and ready to deliver their duties.

Also federal government could request 457 visa holders to go though an induction program if the employers consider it is necessary.

(2) POINT (I) –OTHER REALTED MATTERS

2.1 Registration of Engineers

The registration of Engineers is another key area that we should address in this debate. It provides an opportunity to asses how many qualified Engineers are currently working in Australia, and how many more we need now and in the future.

What is required is a national registration system and Queensland Model (RPEQ) can be expanded to other states. This allows Industry to main a consistent standard across the nation and Engineers can also work in every state once they become a Registered Professional Engineer Australia (RPEA). With the current system, Engineers in other states are not eligible to practise in Queensland unless they are RPEQ S.

We have a Board of Professional Engineers in Queensland and it can become the state branch if we can establish the National Board of Engineers Registration.

The risk of performing engineering functions by non Engineers can also be eliminated through the National Registration process.

2.2 Political leadership

We are a true democratic nation. I personally have no issue with any political party governing the country. However, when Senior Politicians make investment choices at the highest political level federally, every citizen would like to see that those decisions are made in the best interest of the country.

My understanding is, Honourable Ministers and the Shadow Ministers are receiving professional advices from their Advisors before making such investment decisions and I am confident that Advisors provide such advices in good faith of the country. Suppose if the Cabinet Minimiser or the Shadow Minister is an Engineer, don't we think that he or she would be able to make robust decisions by using his or her engineering knowledge, skills and experiences.

I don't want to undermine any other professions or saying all Ministers or Shadow Ministers must be Engineers. What I am suggesting is that the Federal Cabinet or the Opposition should have at least couple of Engineers who are capable of handling portfolios which are mainly involved in infrastructure investments and choices.

Australia has produced a quite large number of World Class Engineers. The Engineers Australia Institute recognises the top 100 Engineers every year and I have read their profiles in the Institution publications. I am sure some of them may be interested in active politics or there can be others who have won the heart of average citizen through various community development programs.

My simple request for the ruling party and the opposition is that they should invite prominent Engineers to take part in active politics. It will not only assist the government or the opposition to understand the engineering issues better, but will be the best investment the nation can make for the future of engineering industry.

2.3 Engineering Education

It is a known fact that Engineers need management skills when they climb up in their career.

When they lack of these competencies, it will compromise their ability to promote themselves in their engineering career.

The employers recruit non engineers for senior positions sometimes when they can't find quality Engineers with management qualifications.

I have seen now more and more engineers are studying post graduate qualifications such as MBA to enhance their career opportunities. I am holding a MBA from the James Cook University, Cairns and I know its value and benefits. Also some kids are undertaking double degrees (Engineering and Business management) to enhance the prospects of good jobs. These two help to resolve the issue to some extent.

If Australian Universities can produce quality Engineering Managers, not purely Engineers, the country will have good Engineering Managers at all levels in the industry.

What I suggest is to modify the current engineering degree to be awarded as MBBE i.e Bachelor of Engineering and Bachelor of Management and the length of the course to be extended to at least 5 years or 6 years. Then the students would be able to learn subjects such as economics, accounting, management, marketing, Contract/Business Law and they will be ready to make engineering decisions with a good understanding of other disciplines.

I suggest this idea to be debated among the Engineering Academics of this country and get their views on this.

END OF SUBMISSION