INQUIRY INTO INFRASTRUCTURE DEMAND AND SHORTAGE OF ENGINEERING AND RELATED EMPLOYMENT IN AUSTRALIA.

Thank you for the opportunity to comment on the Senate Inquiry into infrastructure demand and the perceived shortage of engineering and related employment in Australia.

It's my experience that those who claim there is a widespread engineering skill shortage just don't know what they are talking about. There might be a shortage in some areas but it is foolish to state there is a carte blanche shortage across the board in every niche of every engineering discipline. On the contrary, there is a shortage of engineering and technically related jobs in many fields.

In addition, some of those companies or agencies that claim there is a shortage should look a little deeper into the matter to find out why they are not attracting engineers.

The lack of jobs is not due to infrastructure projects because governments are investing in infrastructure. The problem lies with (1) the lack of manufacturing in Australia and for it to move offshore; and (2) that some government departments have literally dumped their engineers to become contract management only departments and outsource to companies only to receive poor quality and overpriced projects in return.

Much of the blame can be placed on the federal Government in that it has allowed manufacturing to go off shore and allowed our Australian icon brand names to go with it. As an example, spanners are no longer made in Australia yet on eBay second-hand Australian Sidchrome spanners are highly sought after and sell for premium prices.

In addition, the federal Government has created the business of exporting our knowledge by forcing universities to take up large quantities of overseas students to pay for the cost of running our knowledge institutions. After graduation these people go back home to improve their own country's infrastructure, manufacturing industries and engineering capability. Traditionally Australia did this for them and we should continue to provide Australian manufactured products or construct their civil works for them rather than just giving our skills away.

Furthermore, even with our great mining industry, the federal government should require that our bulk products only be exported with some form of value adding made to them. If we only just pelletised our coal and iron so they were ready the blast furnace or power generator, it would add jobs for Australians and money for the government. Better still if we sold steel ingots rather than bulk iron ore, coal and limestone, Australian jobs and income would be far far ahead. As it is now,

we sell our bulk materials by the ton and buy them back by the kilogram. We could even make environmentally friendly blast furnaces by firing them with the natural gas off the north-west of Western Australia rather than selling the bulk gas overseas.

Another reason I have trouble understanding why some persons claim there is an engineering shortage is I know that for many of the jobs I have applied for there have been an enormous number of applicants. The average range of applicants was 80 to 180. For the last job I was interviewed for about four months ago there were so many applicants the interviews were held on the telephone and with a maximum time limit of twenty minutes.

Over the last nine years, on an almost daily basis, Seek and MyCareer send me the advertised engineering & technical management vacant positions. I believe I can speak with some authority because I know some of the historical data from what's been sent to me.

There are always jobs in Civil Engineering available. There was once a spike for Structural Engineers and a few spikes for Electrical Engineers mainly in the power line transmission field. That's about it in nine years! There has never been a plethora of advertisements in the other fields of engineering and those who claim there is a widespread shortage of engineers are just wrong.

I know this from personal experience. When I was fifty my employer made me and many of my fellow engineers redundant but kept hanging onto us for five years because of all sorts of emergencies occurring. I was finally let go when I was 55. However, in that time I applied for hundreds of jobs writing applications at night. On one week I submitted 10 applications. In five years I couldn't get one job because my field of engineering did not fit everything that was being sought. I had to 'technically' retire and start living off my superannuation.

I should add that when I spoke to the contact person for government positions I was very often told the job was already set up for an internal applicant who had their position made redundant.

Also, I note that one of the submissions made to the Inquiry about a shortage of engineers was made by a Local Government body. I applied for 10 positions in local government and wasn't interviewed for any of them even though I met with the contact person for several of them. Some of my applications went via a special employment agency that deals only in local government positions. After my tenth failure I asked one of the recruitment consultants in that agency why I couldn't even get to interview and I was told that they wouldn't hire persons over fifty and they expected applicants to have two degrees. That's all I wanted to know and I now bypass all vacant local government positions.

However, over that time I wasn't standing still. I continued to study. The popularity of the MBA started to slide and Project Management became the vogue. As such, I spent about three years studying a Diploma of Project Management and graduated. Also, OH&S became a must and I studied a Certificate IV course and two other related courses. Then training skills came into vogue as well and I completed two Certificate IV courses in training plus I attended a number of other seminars for knowledge improvement. Around that time my contribution made to the community by way of standards improvement and my other work experience was recognised and I became a Fellow of the Institution of Engineers. Only about 4% of all engineers in Australia are Fellows.

However, all this skill and knowledge only made me more of an oddity to the recruitment agencies.

I used my redundancy payout to pay for a Company Directors Diploma course with the Australian Institute of Company Directors (AICD) ($5800). The course was rather difficult although I did pass. I became a member of the AICD to improve my employment prospects and for an additional $80 on top of the $550 annual membership fee I would be sent a list of available company director positions (note I was experienced as a director in voluntary, not-for-profit but I needed some income). However, in the three years I've been with the AICD there have been no suitable directorships offered in the manufacturing or engineering/technical related roles. I can only presume the answer is again that there is very little manufacturing left in Australia. The AICD was another time consuming and expensive failure in a search for work.

At this point I want to mention that one of the early submissions made to the Inquiry came from an employment agency which again stated there was a shortage of engineers. I took the liberty of looking at that company's website which I must say was excellent. However, when I enter my particular engineering field into its website search engine it comes back with a result of 'no positions available'.

In order to improve myself and not stagnate in my field I also undertake voluntary work related to engineering. Last year I came across another unemployed engineer doing the same thing. However, this person had just finished an Honors degree two years earlier in robotics engineering but had been unable to find any employment since. He was now planning to study for another profession.

Allow me to back track again to the employment agency that made the submission to the Inquiry. I entered robotic engineering into its website search engine and again received the 'no positions available' response. Robotics is used in manufacturing and as I said earlier Australia's manufacturing is going offshore.

To further reinforce that there is a lack of jobs and to show that those who say the opposite are wrong, I took out a one-sixth page advertisement in an engineering journal which has a circulation throughout Australia and overseas. My advertisement was in the centre pages and it said I was looking for work (in a time when there is supposed to be a shortage of engineers). I might add that I had to negotiate the price for the advertisement because I was unemployed and it cost a lot of money. The net result was that not only did I not end up with a job; I didn't even receive a single reply from a nationwide advertisement. How can anyone say there is a shortage of engineers!

In regard to the profession, engineering is held in low regard. This is simply shown in that there are legal documents that require witnessing and the often they state persons such as a school teacher or accountant or police officer can witness them but an engineer is not included. In fact, I came across a web site where engineering wasn't even included as an occupation in a drop-down list of job descriptions.

In my employment I endured years and years of insults about the profession. Persons would just substitute the word engineer in place of 'Blond' or 'Irishman' in their jokes.

I wonder when they visit their doctor or dentist if they spend their time insulting their professions? How many people stand up in Court and insult the legal profession? Engineers are constantly insulted because the breadth of the profession is not only misunderstood by most but what comprises of the profession is not even known. I remember once looking out of the eighth floor window down onto the road below explaining to an unqualified Director the engineering process involved for a person just to cross from one side of a pedestrian crossing to the other. Most of it fell on 'deaf ears'. How many people would know that an engineer can investigate the combustion process inside the 'flame front' of the explosion of a car engine cylinder and then turn this into a mathematical equation? They do this to improve combustion which in turn reduces emissions, improves fuel economy, improves drivability and reduces wear and noise. The engineer can even control the rate the flame travels so as to alter the combustion process.

Again, when I was employed our legal people thought it was a great joke to regularly come around and tell us that if there was a problem they wouldn't support us and they hoped we had our own insurance. This is another example of insulting the profession.

My employer would rarely hire engineers to manage their engineering divisions. However, companies like Sony only employ engineers in all of their senior management roles. This shows the difference between how Australia treats its engineering professionals compared to the Japanese. Our engineering division was headed by a geologist; a person with an accountancy background; a few

lawyers; a school teacher with a BA; and most recently (even though I'm not there) a psychologist. All of who had no technical skills and in my opinion demonstrated they were unsuitable for the position particularly the BA who would sometimes burst into tears because they just didn't understand what it was all about.

Young people don't see engineering as a profession and experienced engineers leave the field because of poor remuneration. For instance, my 18 year old daughter received the same dollar per hour rate working in a bar at night as I did after nearly 30 years as a professional engineer holding highly responsible roles. Similarly, in other professions they can receive the same salary in one-tenth of the time as an experienced engineer. This is one reason why those companies or organisations who claim there is a shortage of engineers want to think a bit more about why.

Another issue why young persons and some experienced engineers might leave the profession relates to the additional hours they are expected to work. You understand that you were employed on a 35/37.5/40 hour week and then find you are working an extra 10 hours or more per week unpaid, virtually every week. When you divide the actual hours worked into your salary the dollar per hour rate drops substantially so the answer is to look for another job or another profession where the dollars per hour rate is better. Often those extra hours are taken up by non-engineering work because your employer has trimmed down all the ancillary staff and your time is taken up doing the support work that they would have done for you.

In the list of the submissions to the Inquiry there are a few references to 'licencing' engineers which they believe will 'save' the profession. This is wrong. Firstly, the Institution of Engineers has degraded the importance of the word Engineer over the years by allowing non-degree associate members into the Institution and making other changes that allow non-engineers to vote in engineering matters. It has done this to increase membership and therefore income – an understandable, simple matter of survival. However, it used to be the case where if someone said they were a member of the Institution you could be assured they were a qualified professional engineer but this is not the case nowadays. To counteract this, the Institution introduced new hurdles for engineers and introduced chartered status (CPeng) and the NEPR (national engineering practising register). However, all this just adds to the public's confusion and it's difficult for an ordinary person to be able to tell the difference between a real engineer and a non-professional engineer even though they can be a member of the Institution.

Similarly, introducing a licensing system for engineers as mentioned in some submissions is not the panacea it is made out to be. The only way this could be successful is if the word 'engineer' could only legally be used by a real licenced or degree qualified engineer. At present there is a great misuse of the word

engineer in job titles. For instance, I spoke to person who installed the Cable TV wire from the power pole to the barge board on a house and he called himself an installation engineer. This misuse of the word engineer is widespread. If a person calls themself a Lawyer or a Dentist or a medical Doctor you can be reasonably assured they are one but anyone can call themselves an engineer.

In addition, there is a national organisation that represents motor mechanics but it uses the word engineer to describe them. Government will have its hands full trying to remove the word engineer from these people and organisations and this is one of the reasons why licencing won't work.

In my second opening paragraph above I said that rather than some companies claiming there is an engineering shortage they should be asking why they aren't attracting engineers. One of the reasons is that they have a poor reputation for how they treat their staff. In the days of 'Work Choices' they carved up and segregated their engineering staff trying to lower wages and conditions with confidential contracts/agreements. They suffered from this and their poor reputation lives on.

These companies also treat their customers (meaning engineering job applicants) poorly. You spend the time to prepare a comprehensive application for a position and possibly even undergo an interview which could involve taking time off and travelling, yet they don't even have the courtesy to advise you that you were not successful. Government is not innocent either as this lack of manners also exists in government departments. As an example, I applied for a position where there were a large number of applicants. There were three interviews (one telephone and two face-to-face). I was also sent to a centre for psychological and other aptitude testing. I was told the final interview was between me and one other person only. After the interview I never heard any more however I kept the telephone number of the convenor who invited me to interview. I called that person who became slightly agitated wanting to know how I had his telephone number. In the conversation I was told I wasn't successful and it was company policy not to follow up with any applicants. How incredibly rude after I had spent all that time and effort. If I mentioned the name of the company every person on the Senate Inquiry would recognise it.

I've come across two instances where a computer generated response is emailed or the advertisement says that if you are not contacted by a certain date just assume you are not successful. How impersonal!

The point I am trying to get across in the above paragraphs is that if such companies and government departments lack common courtesy and treat their customers in this way, why would a person go to the effort to apply for another position with them at some time in the future. Isn't this an indicator of the company's ethics and business practices? I would also suggest that the senior persons in those companies would have no knowledge of this because they

delegate down the line to persons who just don't care or aren't trained properly. Their perception of an engineering shortage has been caused by their own poor management practices.

Similarly, a second downfall for many of these companies is that they use recruitment agencies often paying enormous amounts of money yet these agencies often know nothing about the role and their lack of knowledge is insulting when interviewing a professional. They are only interested in turnover. Again, if they treat their customers poorly, without courtesy, and demonstrate to a technically qualified person that they have very little understanding of the role why would you keep sending them job applications. Often, you can't speak to them; they won't allow you to visit to discuss the position; or, they won't return calls and the secretary who answers the phone just says to send in your CV without a covering letter.

On one only rare occasion, after not being selected for interview I did receive a response saying they wanted a person with engineering qualifications. I wrote back saying that if they had read my letter of application and CV they would have noted that I had an engineering degree. Their failure accords with what one recruitment consultant said to me that the initial cull is performed by the telephonist/receptionist on the front desk between answering telephone calls. In one of my recent interviews the consultant just didn't understand what the business did. I had worked in that business for many many years and my roles were 'left-field' for the recruitment consultant who was just not aware that my area was a major part of the business. They made a lot of money for filling that position however who knows if the choice was correct – another non-engineer was chosen for an engineering business. If that recruiter had just read a copy of the Annual Report they would have had a better understanding of the whole gamut of what entailed the business. My time at interview was spent explaining what comprised of the business because the recruiter didn't understand that all these other functions went on. This is typical of high turnover recruitment agencies and there are a few that I won't send an application to and in conversation with other engineers they have expressed the same sentiments. Possibly some of those companies or organisations who can't attract engineers or the right engineers for the position are using these hopeless recruitment agencies. Why would you use someone who knows nothing about your business to find your staff for you!

Another issue is that I have never come across a degree qualified engineer in a recruitment agency. I know of one agency that specialised in engineering positions by to my knowledge, none of the recruiters were engineers – the closest was an 'ex' mine quarry manager. Perhaps if the recruitment agencies employed engineers to recruit other engineers they might give a better impression for the business and there might not be so many complaints from industry about finding suitable engineers.

The last item I want to mention is that often employers ask in their job advertisements for (1) extremely specific experience or skills that are often only gained in house, or (2) an enormously broad skill set that would limit the number of applicants who could or even want to apply. For instance, I saw a Local Government job that had (as I recall) thirty-one specific criteria that the applicant was expected to address in their application. Similarly, there are positions advertised where you wonder how it is possible to gain the specific industry experience required. You come to the conclusion that you would have had to start in that field as a new graduate and have worked there for some time or would have had to have previously worked in that field and left the industry but are now returning to it. I appreciate that there is a submission made to the Inquiry from the rail industry but rail is one of those described above. Perhaps if those claiming there is a shortage of engineers either (i) reduced the large number of specific requirements advertised; or, (ii) relaxed or made their requirements more generic they might attract a greater pool of applicants to choose from.

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In conclusion, if I can summarise what I have said above with the nine terms of reference of the Inquiry, the following applies:

(a) Infrastructure is not the problem, it is a shortage of manufacturing which has been allowed to go offshore and the Government's lack of policing of rubbish imports that are poorly manufactured and often non-compliant with the appropriate standards.

(b) The outsourcing of engineering activities by government has already happened and this leaves a hole for engineering trainees because companies that win contracts have delivery deadlines and don't want to be training people along the way.

(c) There is not an engineering skills shortage across the board. There are many fields of engineering where there is no employment and engineers are leaving the profession. In addition, Australia should not train overseas students in bulk as it is doing now. We should train Australians and export our manufactured products rather than exporting our knowledge.

(d) The option for infrastructure delivery is to manufacture here and offer job opportunities to engineers with salaries commensurate with what should be their professional standing in society. Everything else will follow.

(e) Government and private industries do not appear to want to retain their expertise. Engineers are dumped with redundancies and cheap

manufactured products are imported from overseas. Government departments have shed their expertise to become contract managers. Over the years they have sold off their assets (which were publically funded) or leased out their functions so as to get money quickly to compensate for their poor long term planning. They are paying heavily for it now and will be in the future.

(f) Skills development is mandatory to be a Chartered Professional engineer but such skills development is a direct cost to private industry and it is not encouraged. Because it is a cost to business possibly some generous form of tax incentive could be introduced.

(g) If there is a supposed skill shortage in the construction sector, possibly those with such problems might consider not asking only for civil engineers but engineers from the other disciplines as there is a certain amount of parallelism between the engineering disciplines. In addition, often engineers work outside of their trained discipline for their entire career so why not choose someone different provided they can do the job.

(h) I'm not aware of the delayed infrastructure projects apparently caused by engineering shortages. All I seem to hear is Politicians delaying projects due to lack of funds or diverting work & funds to more pressing political projects.

(i) My 'Other Items' are detailed in the pages above.