INTRODUCTION

The Young Professionals Forum (YPF) of Consulting Engineers South Africa (CESA) is a voluntary group representing the interests of Young Professionals (YPs), i.e. engineering professionals under the age of 35 who are employed by CESA member firms. The YPF was formed in order to uplift the engineering industry and built environment professions, where new ideas could be generated to assist and promote the industry, and also to identify and address possible problems which the industry may be facing.

The purpose of this article is to present the results of a survey, undertaken between 2012 and 2013 by the Western Cape branch of the YPF.

In 2006 the YPF Western Cape (founding) branch conducted an industry-wide survey of Young Engineering Professionals (YPs) in the province in order to identify and define the problems facing the industry at large, and the YPs specifically.

The results of the survey would not only highlight a number of issues facing YPs at the time (dubbed the Golden Thread Issues), but would also form the basis of the mandate of the YPF committee going forward, which would later be fed into the YPF National Business Plan.

These Golden Thread Issues were defined within the following problem areas:

- Large age gap between junior and senior engineers
- Remuneration
- Recognition
- Mentorship.

The Golden Thread Issues identified by the Western Cape (WC) branch were agreed and adopted by all branches as being a common denominator, and the provincial committees then
started focusing on dealing with solutions to the problems. Over the years a number of workshops have been held to address the issues, as well as educate YPs and stimulate involvement with the growing number of YPs in the industry.

The industry has changed somewhat since 2006 and, as a result, the WC YPF committee ran its second industry-wide survey some six years after the first, starting in October 2012. The second survey was established with the following aims:

- To re-evaluate the pertinent issues facing YPs in the WC and, in doing so, redefine the Golden Thread Issues.
- To determine measures to address these issues.
- To re-focus the YPF WC committee to address these issues and, as a result, better serve YPs in the WC.

The survey was conducted in two stages, as follows:

- Stage 1: Online Survey (October 2012)
- Stage 2: Discussion Forums (July 2013)

Before moving on it must be stated that the contents of this article are not presented as purely factual, but rather represent the point of view of the YPs as given through the survey process. In some cases their perception of the issues may be incorrect, but the fact that this perception exists is a problem in itself. The appeal to YPs, senior staff and parent bodies is to take this information for what it is worth and use it to begin taking positive steps towards addressing both the real issues as well as the perceptions, in order to improve the industry as a whole.

**STAGE 1: ONLINE SURVEY**

The online survey was run from 2 October to 16 October 2012, using Google Survey as the platform, with responses from 174 young professionals (from a possible 220 registered CESA YPs in the WC). Of this group, 82% held a tertiary qualification in civil engineering. A full summary of the respondents’ demographics is available on request. The survey was unbiased and anonymous, with questions which were developed to re-evaluate the Golden Thread Issues, while investigating other issues which had become well established in the industry. It comprised a total of 30 questions, covering five sections:

- Demographics
- Remuneration
- Professional Registration
- Careers
- Tendering and Procurement.

The complete results of the survey are available from the YPF WC committee on request, but, for now, it is important to highlight what was arguably the most significant outcome of the entire survey process.

Question 1.5 of the survey, the first question asked once the demographics of respondents had been captured, was as follows:

“Please indicate up to 5 key issues that you feel affect young engineering professionals.”

This question was purposefully asked first in order to provide responses that represented the honest views of the YPs, and that would be unbiased by the rest of the survey (although there was significant personal bias in the responses!). The results were conclusive, with very little scatter for such an open-ended question, and formed the basis for the re-definition of the new Golden Thread Issues.

The responses indicated that the issues remain much the same as they were in 2006, with one notable difference being the recognition of the current public tendering and procurement processes as a burning issue.

The new Golden Thread Issues identified in the survey are shown in Table 1, in order of occurrence of mention in Question 1.5.

<table>
<thead>
<tr>
<th>Golden Thread Issue</th>
<th>Occurrence</th>
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<tbody>
<tr>
<td>Mentorship and Training</td>
<td>50%</td>
</tr>
<tr>
<td>Salary/Remuneration</td>
<td>37%</td>
</tr>
<tr>
<td>Career Development</td>
<td>32%</td>
</tr>
<tr>
<td>Tendering/Procurement</td>
<td>22%</td>
</tr>
<tr>
<td>Professional Registration</td>
<td>13%</td>
</tr>
</tbody>
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(Note: Table 1 shows the percentage occurrence of mention of the main issues identified, i.e. the number of times an individual YP independently mentioned one of these issues, divided by the total number of YPs who responded.)

**Mentorship and Training**

It is clear that YPs recognise the importance of mentorship and the development of skills early on in their career, and the fact that 50% of respondents independently raised these as issues, is a concern. This is further reinforced by the fact that 33% of respondents indicated that they felt they were not provided with adequate training once they started working (see Figure 1).

Many YPs are concerned that they are not receiving the training they require, that the training they are receiving is unstructured and that they do not have strong mentors. The current procurement system was also identified as an issue, as the fast-track project mind-set that comes with discounted tendering limits opportunities for training and technical development.

**Remuneration**

The second-most cited issue was remuneration, which was listed as an issue by 37% of respondents in Question 1.5. This is further reinforced by the fact that almost half of the respondents indicated that they do not feel engineers are fairly remunerated, and 67% of respondents indicated that they believe that remuneration for engineers is below average when compared with other professional services (see Figures 2).

Remuneration is always going to be a controversial subject, and it is not clear in the responses why there is this perception,
nor what YPs feel is “fair”. It is, however, important that the truth be separated from perception – an individual who believes he/she is not being fairly remunerated will be as dissatisfied and unmotivated as an individual who actually is not being fairly remunerated (an opportunity for further transparency, and education of YPs, perhaps?).

Career Development
The following factors affecting career development were also seen as pertinent issues facing YPs:
- Exposure to quality engineering work, the workings of the industry and training required
- Recognition for work done
- Responsibility – either lack thereof or responsibility above levels of ability.
These factors all tie in with other Golden Thread Issues, with the underlying notion being that YPs feel that these issues are affecting their career prospects and development as engineers.

Tendering/Procurement
Although the issues highlighted above are similar to those of 2006, the link between these issues and the procurement process is more strongly recognised by junior staff. There is a general sense that discounted work, as a result of price-based tendering, undermines the quality of engineering work, and results in work which is fast-tracked. This requires YPs to take on more responsibility (with added pressure), while limiting the amount of time senior staff can spend mentoring/training YPs. There is also a belief that the discounts are affecting company turnover and, as a result, the remuneration of YPs (see Table 2).

With that being said, YPs have also recognised value in this whereby they are given more responsibility which has had a positive effect on their career development.

### Table 2: Respondents’ feelings about tendering/procurement

<table>
<thead>
<tr>
<th>5.2 Price-based tendering (often requiring rates to be cut to less than those recommended by ECSA)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Results in reduced quality of designs and/or drawings</td>
<td>65%</td>
</tr>
<tr>
<td>Results in fast-tracked designs that are too conservative</td>
<td>40%</td>
</tr>
<tr>
<td>Undermines the complexity and responsibility that engineering designs require</td>
<td>67%</td>
</tr>
<tr>
<td>Inspires efficiency</td>
<td>20%</td>
</tr>
<tr>
<td>Has no effect</td>
<td>6%</td>
</tr>
</tbody>
</table>

Professional Registration
There is a general sense amongst YPs that the registration process for engineering professionals is unclear and not enough support is provided to YPs in demystifying this process. When asked if the registration process is clearly defined, 44% of respondents answered “No”. More concerning, however, is that 32% of respondents stated that they do not believe their companies implement their respective Commitment and Undertaking to provide support and training for YPs.

Positives
Despite the issues facing the industry, the replies indicate a general satisfaction with consulting engineering work, with 93% desiring challenging and/or stimulating work and 68% claiming they are receiving this. When asked if they were proud of what they did for a living 93% responded “Yes”.

### STAGE 2: DISCUSSION FORUMS
After the online survey had been completed and the results analysed, the second stage of the survey was undertaken. The purpose of the second stage was to sit with the YPs and discuss the issues highlighted in the online survey, so as to understand the magnitude of the problems, and more importantly, what the YPs thought could be done to alleviate or eradicate these issues.

The Mandated Young Professionals (MYPs) from each of the member firms were contacted and informed about the survey. They were sent a “discussion forum” pack, and asked to assist in
the process by sitting down with their YP peers in their respective offices and conducting discussion forums. The discussion forums commenced at the beginning of July 2013 and were concluded two months later, with a total of 13 participating companies and approximately 150 YP attendees.

The results of the discussion forums were subsequently collected and evaluated, and standardised responses were listed for each section from common answers. These results were converted into a narrative, which the CESA YPF WC committee believes represents the views of the vast majority of CESA YPs in the Western Cape.

Mentorship and Training
First of all, it must be noted that this does not refer to the mentorship that is required as part of the ECSA registration process by the CU (Commitment and Undertaking), but rather mentorship and training which should be provided by senior staff.

When reviewing the results of the discussion forums, it became evident that there are few formal mentorship programmes in companies, yet the YPs value these as an important part of their growth, and perceive these to be critical to their respective company’s performance. YPs have indicated that supportive mentors and/or supervisors are imperative to a YP’s career development, but these are few and far between.

Many noted that the lack of mentorship is a result of the prevalent age-gap problem, whilst others mentioned that mentorship should be driven by the YPs themselves. Collectively, however, it was noted that the cost of mentorship was the principal issue. The YPs believe that their companies run the risk of investing time and money in training and mentoring their YPs, only to have them move on to “greener pastures” at a later point in their careers.

The following were recommended as possible solutions to this issue:
- Formal mentorship programmes and other developmental activities should be issued as mandatory practices (and audited) by parent bodies, such as ECSA and/or CESA.
- Mentors should be assigned to YPs when they join a company, and a formal mentor list should be published and regularly maintained.
- A candidate engineer should only be allowed to apply to be professionally registered if he or she has gone through an accredited mentoring and/or training programme within his/her company.

Remuneration
There is a general perception that other mainstream professionals are being better remunerated for their services than engineers. It is well established, for example, that the financial sector is valuing and remunerating engineers better than the built environment. This is also believed to be true for engineering firms overseas. Many also mentioned that their peers in government jobs were better remunerated and “looked after” in other ways as well. In addition, the YPs believe their work to be significantly undervalued in society, particularly considering the long-term, legislated project liability that engineers are subject to.

When discussing the root cause of the problem, some noted the lack of marketing to be an issue, whilst others believed the lack of face-to-face business interaction with clients to be the problem. However, it was collectively and strongly noted by the YPs that the issue of poor remuneration is largely related to the current public tendering and procurement systems, which are widely thought to be ineffective, unfair and crippling to the industry.

When asked about the ECSA Fee Scales in general, YPs indicated that this system does not benefit engineers, and has yet to prove its worth regulating what engineers get paid, particularly when the clients are public, governmental departments. YPs mentioned that the fee scales are not a true reflection of the value of the technical services rendered, and that industry has conformed to giving significant and unsustainable discounts in order to remain competitive. The argument that the fee scales are simply a “guide” is unmerited as they do not offer the support of accountability in the face of the current public tendering and procurement practices.

When asked whether increased salaries would result in a better product for the client, the general sentiment amongst YPs was that it would, both at design and supervision level. It was noted, however, that tight project deadlines are more detrimental to the quality of design work. The key, therefore, is to allow adequate time and budget to complete work to the highest possible standard, giving engineering firms the opportunity to provide the most technically correct and efficient product possible.

Career Development
Exposure, Recognition and Responsibility
The strongest concern amongst YPs regarding their career development is that they are exposed to a poor quality of work and associated work ethic, and that their efforts are often undervalued. It was also noted that few companies have a formal career development structure, causing the level of exposure to quality work to be relatively volatile.

On the other hand, a number of YPs noted that their exposure to big projects, with increased responsibility, brought about the greatest boost to their careers, despite the fact that this level of responsibility exceeds what their experience allows or their remuneration reflects.

It has been collectively noted that increased pressure, and not responsibility, is a problem. YPs noted that they do not mind taking on more responsibility, provided that sufficient support and guidance are available. It is lack of guidance, in addition to increased responsibility, that ultimately results in pressure and consequently stunted career development. These issues were, once again, largely attributed to the current tendering and procurement processes.

Value of Engineering Services in SA
The YPs indicated that engineering services are significantly undervalued in South Africa, and have, once again, highlighted the tendering and procurement system as the biggest driver of this problem in the financial sense.

It has also been noted that engineering services are undervalued in terms of public perception and appreciation for the work done by engineering professionals, which appears to have been disconnected from society. Many lay-people are unaware of the effort involved in the design of infrastructure and civil services, yet other professional services hold a much higher status in society in the eyes of the public.

Tendering and Procurement
Tendering and procurement was highlighted as the single biggest problem in the industry, and the YPs noted that all the
other issues were exacerbated due to this principal issue. YPs are taking on greater responsibility, and liability, in their work, yet feel that their remuneration does not reflect this. As a result many YPs feel highly undervalued, and are motivated to look for other opportunities elsewhere in other industries.

The YPs made a number of suggestions as to how projects could be procured going forward:

- Employ technically competent people in local, provincial and national governing bodies to draft tenders correctly.
- Following the assumption that tenders are indeed drafted correctly, the lowest and highest prices should, for example, be discarded, and several mean prices should be considered.
- A competent person within the relevant tender issuing body should estimate the tender price and compare it with the prices that are received.
- Stricter evaluation of company competencies should be enforced, performed by an experienced engineering body within the issuing authority.
- The ECSA fee scales should be promulgated as law, or they should be discarded completely, as they are not used as a guideline, particularly not with the discounts that are being issued.

Another significant problem is that tender documentation is far too extensive, and requires too much time, especially of the more senior and costly employees. Tenders should be streamlined, perhaps in the form of a database approach, or something more innovative. It should not take more than one day to complete a tender, otherwise design houses are required to work at risk and spend too much time and money for this purpose.

It was also suggested that consulting companies be rewarded/compensated for thorough and effective design, in order to promote efficient design and greater overall project savings in construction (where the bulk of the money lies). The current procurement system often leads to inefficient and conservative design, as not enough time or money is allocated for more complete and effective design.

Professional Registration

The discussion forum asked the following six questions of YPs:
1. Do you understand the requirements of the new registration system?
2. Do you feel that the requirements of the new system are clearly and concisely defined?
3. Do you know when the new system comes online?
4. Do you know whether you will be able to register on the new or the old system?
5. Do you feel enough is being done to advertise and explain the new system to YPs?
6. Do you feel that the changeover to the new registration system will hinder your ability to register in any way?

Of the respondents 70% answered “No” to questions 1, 2, 3 and 5, while 50% answered “No” to questions 4 and 6.

These results point to the fact that the majority of YPs surveyed indicated that they did not understand the requirements of the new registration process, and are concerned that the changeover will hinder their ability to register.

This is obviously a two-way street, and YPs are expected to put in the time and the effort to decipher the new process, but they are finding it challenging and are looking for more support from ECSA to do this.

It is worth noting that many YPs find the annual Professional Registration Workshop, hosted by the YPF WC committee and presented by delegates from ECSA, very useful in addressing the requirements of professional registration, particularly considering that it is free to attend (many YPs have indicated that their companies are unwilling to pay for the various professional registration courses available).

Unfortunately the scope of what can be covered each year is limited, and YPs cannot wait for the workshop each year for their questions to be answered – ideally they would like to be able to contact ECSA directly with queries, or would like similar events to be held by ECSA more frequently in order to address their queries.

CONCLUSIONS

The results of the survey were conclusive and unambiguous – YPs in the Western Cape have cited a number of issues that are facing YPs in the industry at the moment, dubbed the Golden Thread Issues, many of which remain the same as identified in 2006. The current tendering procurement process has been identified as the most burning issue, and is the root cause of much of the dissatisfaction of YPs in the Western Cape. This is an unsurprising result, and mirrors the point of view of the industry as a whole.

A Way Forward

The key for the YPF WC committee is to now address these issues. The voices of YPs in the Western Cape have been heard, and now the committee needs to adapt to try to effect the changes we want to see in the industry. As a result the committee will be forming a series of working groups, each focusing on addressing one of the Golden Thread Issues. The working groups will be open to all YPs and will be proactively developing solutions to the problems, which will be reported through presentations to CESA, magazine articles and letters to the relevant controlling bodies. We aim to effect change by not only making a noise about the issues, but by offering solutions to the problems, as well as our time and expertise to put these solutions into effect.

But no committee is an island. There is a limit to what can be achieved by the YPF WC committee alone, and we will need the support from the other role-players in the industry to make a difference. The YPs themselves are in the best position to do this by being more proactive about addressing these issues – Complain less, do more.

If you would like to discuss any topics that you feel are relevant to SAICE members, scan the QR code alongside to go to SAICE’s blog.