

REF 2014 Workshop: *The Impact of Impact*

UoA 13: Electrical & Electronic Engineering, Metallurgy & Materials Sub-panel

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UoA 15: General Engineering Sub-panel

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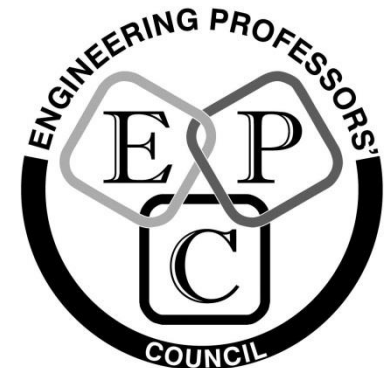


Outline:

Setting the scene & outputs (SKH)

- **Some general comments**
 - REF2014 overall compared to RAE2008
 - UoA 15 compared to 2008 and compared to average for REF2014
- **Summary of UoA 15 Output Results...**
- **Panel working methods**
- **Some reflections on REF 2014 looking towards REF 2020**

Impact & Environment (AMH)



REF 2014:

- **REF2014 similar size to RAE2008** ¹
 - 2.5% drop in staff nos 57,563=> 56,069);
 - 19% no submissions (2,363 => 1,911) and
 - 11.3% outputs (215,507=> 191,148);

Average overall quality profile and sub-profiles (FTE weighted)

| | 4* | 3* | 2* | 1* | U/C |
|-------------|------|------|------|-----|-----|
| Overall | 30 | 46 | 20 | 3 | 1 |
| Outputs | 22.4 | 49.5 | 23.9 | 3.6 | 0.6 |
| Impact | 44.0 | 39.9 | 13.0 | 2.4 | 0.7 |
| Environment | 44.6 | 39.9 | 13.2 | 2.2 | 0.1 |

<http://www.ref.ac.uk/results/analysis/>

- **HEFCE** ‘.... significant improvement in the quality of submitted research outputs since the 2008 RAE.’ Evidenced by 4* (14 => 22%) and 3* (37 => 50%) over all UoAs. This is paralleled by UK citations in top 1%, 5% ¹



REF 2014 UoA15 profile:

- Average overall quality profile and average sub-profiles for all submissions in the UOA (FTE weighted) ¹

| | 4* | 3* | 2* | 1* | U/C |
|-------------|------|------|------|-----|-----|
| Overall | 26 | 56 | 16 | 2 | 0 |
| Outputs | 17.2 | 65.8 | 15.5 | 1 | 0.5 |
| Impact | 41.6 | 39.8 | 15.5 | 2.3 | 0.8 |
| Environment | 46.5 | 34.9 | 16.4 | 2.2 | 0 |

- UoA 15 overall profile heavily affected by 7 large submissions
Other Engineering UoAs very similar profiles
- **HEFCE** ‘.... significant improvement in the quality of submitted research outputs since the 2008 RAE.’ Evidenced by 4* (14 => 22%) and 3* (37 => 50%) over all UoAs.
This is paralleled by UK citations in top 1%, 5% ¹

See: <http://www.ref.ac.uk/results/analysis/>



UoA 15 REF 2014:

- UoA 15 continued to grow: 62 submissions of 2,447 FTE;
52 submissions 1,454 FTE
(5th largest after Clinical Medicine, Allied Health, Psychology and
Business & Management)
- UoA 15: 26 (4*), 56 (3*), 16 (2*), 2 (1*)
Overall: 30 (4*), 46 (3*), 20, (2*), 3 (1*)

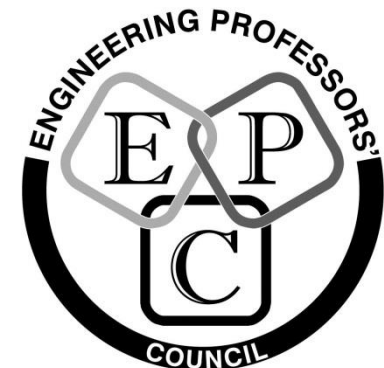


UoA 15 Descriptor:

The UoA includes multi-disciplinary and interdisciplinary engineering research in such fields as medical engineering, bioengineering, biomechanics, environmental engineering, sustainability engineering, offshore technology, renewable energy/energy conversion, spacecraft engineering, control systems engineering & industrial studies.....

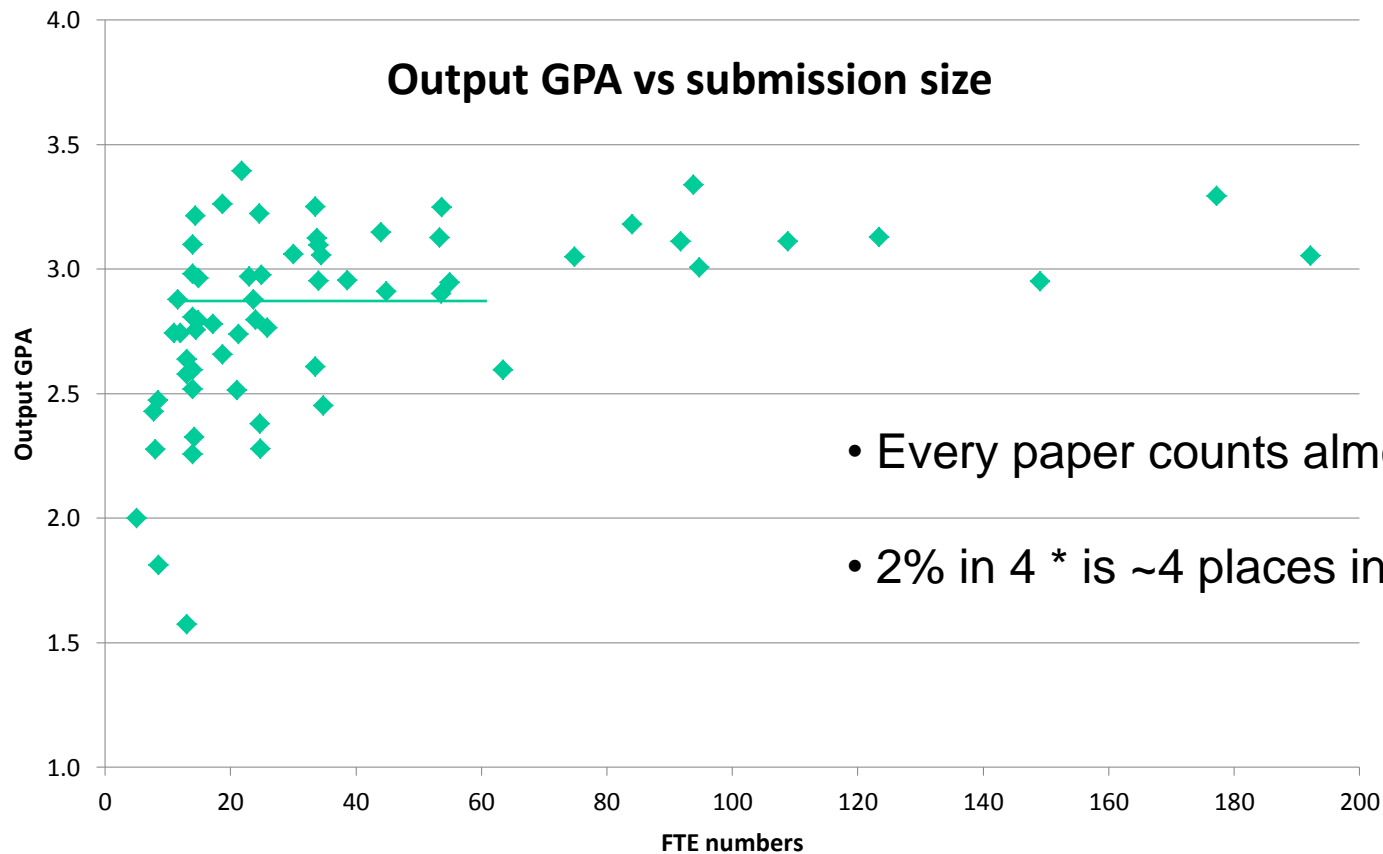
...single organisational units within institutions that include activities spanning 2 or more of the other 3 UoAs **in the fields of engineering**.....

Received: VERY broad spectrum of work: some referred to Maths, Music, Psychology but reviewed lots of Chemistry, Physics, Biology

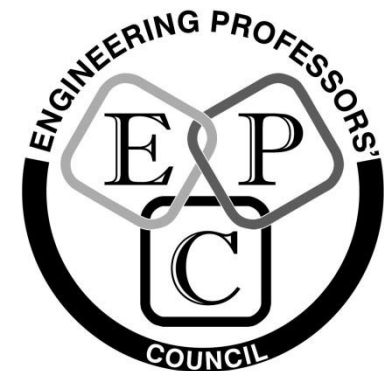


UoA15 Results: Outputs

- Narrow spread between 2.5 and 3.5 for most HEIs; only 11 below 2.5
- For >11 FTE, performance could be as good as much larger HEIs

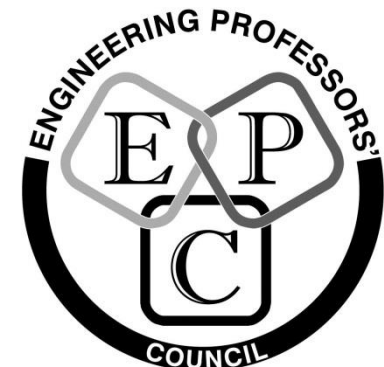
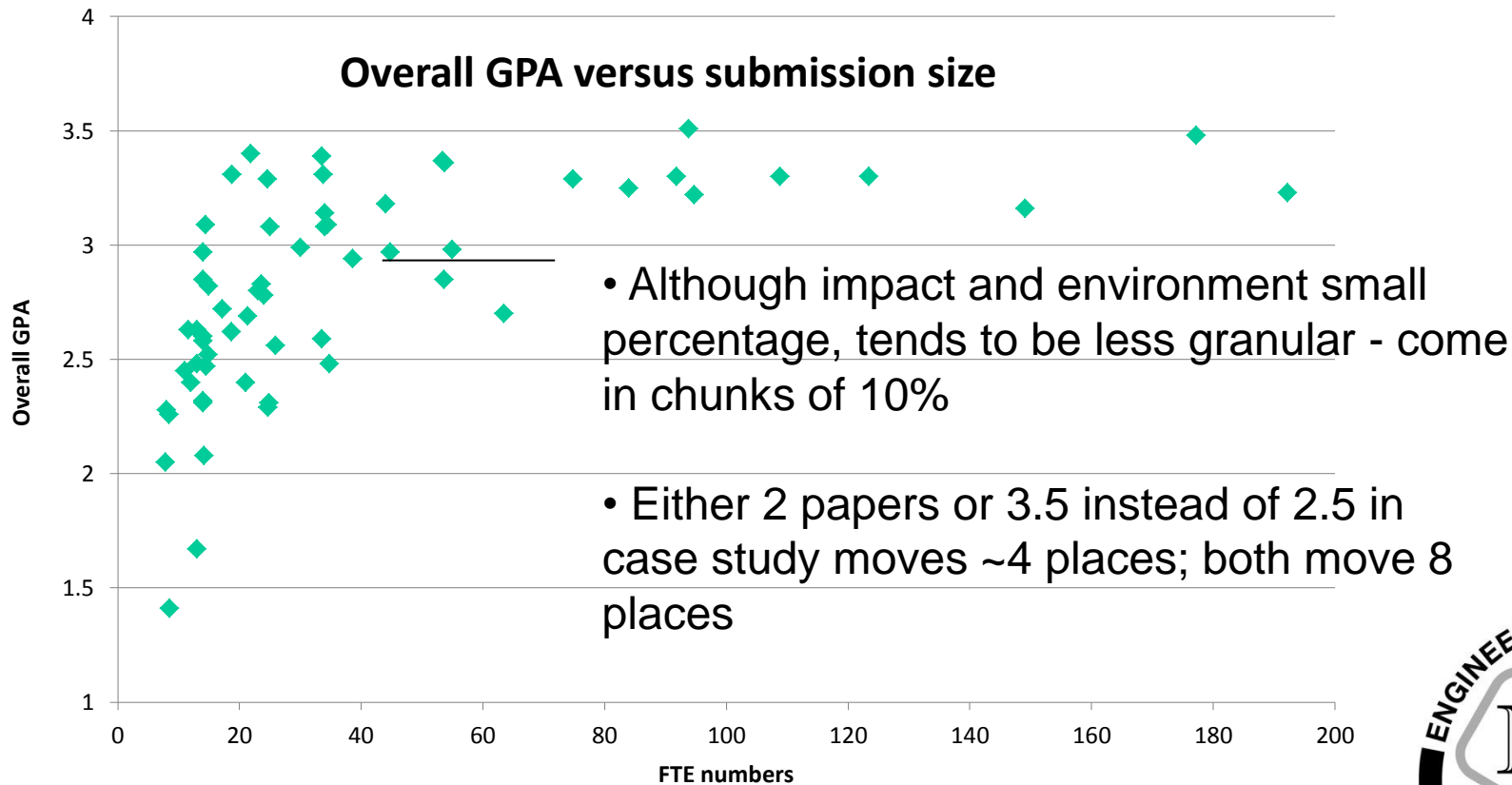


- Every paper counts almost 2%
- 2% in 4 * is ~4 places in tables



UoA15 Results: Overall

Some small submissions (14 and above) scored well but clearly 'easier' for large submissions to score highly; 18 at or below 2.5



UoA 15: Panel working 1: Outputs

Outputs:

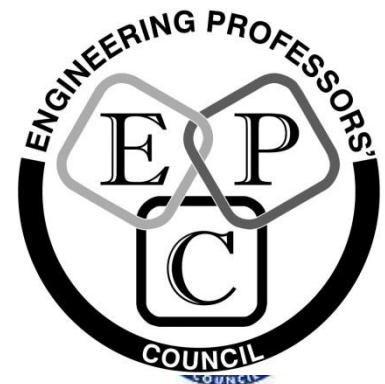
- Assigned a field for allocation to reviewers e.g. medical engineering, energy, photonics, control....; matched to two reviewers
- Everyone worked with multiple partners
- Scored individually on a 12 point system e.g. 7,8,9, corresponds to 3-,3,3+ ; uploaded and discussed by phone; occasionally a 3rd reviewer brought in if agreement not reached
- Papers evaluated alphabetically by first author NOT institution
- Remarkably good agreement but 2/3 and 3/4 *boundaries* key - assisted by calibration exercise but also review process well understood
- Citations not used to form panel judgements

| | |
|------|---|
| ~25% | 0 |
| ~38% | 1 |
| ~25% | 2 |
| ~8% | 3 |
| ~3% | 4 |
| ~1% | 5 |



UoA 15: General panel observations: Outputs

- The overall quality of research was found, in general, to be very high with over 83% of outputs assessed as being 3* or 4*.
- 100 words found to be very valuable – 10% HEIs did not use or not for all papers ; even more did not supply ‘factual information about significance’ as requested
- Review articles were used even when they did not ‘ contain ...unpublished research or a new insight’
- The guidelines stated that ‘Common material may be disregarded’ but overlapping papers were submitted



UoA 15: Some personal observations on outputs

Things to consider

Consider writing your papers in a 'REF-friendly' way: Abstract, Conclusions, Lay-reader box as found in Nature and Biology fields

Choose journals that are well regarded – reader starts with an idea of quality which is influenced by reading

Use a spread of work – beware overlap

Follow the rules and guidance e.g. Use the 100words & don't be afraid to repeat things for more than one publication - does not have to be completely different for each paper; Write SOMETHING – prizes? grants? collaborators?

ENGAGE beforehand to establish most important guidelines



UoA 15: Some personal observations on outputs

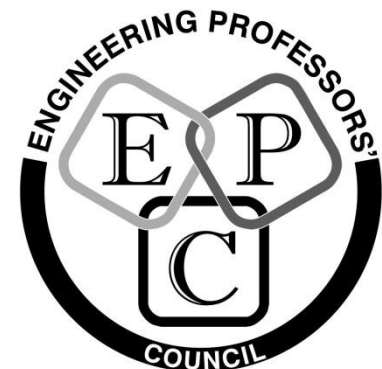
Things not to do

Don't include a review unless you can explain its novelty very clearly

Don't include outputs in which your work is peripheral because they are high profile/topical e.g. a paper with 1000 authors on particle physics where you had an important but minor contribution; pick the paper which demos your work best and refer to applications/collaborations in the 100 words

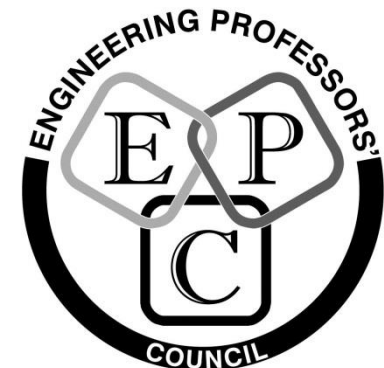
Don't annoy the reader: 'this is ground-breaking work...'

Don't take risks e.g. submitting artefacts and objects; you might be lucky and get away with it but you won't do better than playing it straight and you might fail badly



Summary

- UOA15 continues to grow and become more varied
- Quality is high >83% 3* and 4* papers; Easier for large institutions to provide a strong environment – and to some extent impact
- Large submissions skew the Impact and Environment overall figures
- Good agreement between panel members
- Scope for making panel's job easier/improving performance by:
 - Using 100 words (better)
 - Presenting impact in more accessible manner (especially threshold criteria)



REF 2014 Outcomes -

Some thoughts for REF 2020?

Prof Alison Hodge MBE - Aston University,
Member of REF Sub-panel B13
(Electrical and Electronic Engineering,
Metallurgy and Materials)

Impact cases – reach, significance

- ▶ Underpinning research in the HEI since 1st Jan 1993
 - ▶ 2* outputs at least
- ▶ Staff at the HEI involved in the research
- ▶ HEI pathway to impact – need direct deliberate linkages
- ▶ Distinct and material difference made by HEI research to impact
- ▶ Impact quantified, with evidence from 3rd parties
- ▶ Not future expectations
- ▶ One or 2 key impacts, not multiple diffuse impacts



Impact templates

- ▶ 20% of impact
- ▶ Approach being conducive to achieving impacts with reach and significance
- ▶ Future strategy as well as past successes
- ▶ How well are processes embedded, are they replicable, maintainable
- ▶ Submission specific, not just University processes to stimulate



Impact overall

- ▶ Impact scored well – above outputs
- ▶ Range of impacts – economic, health, some policy
- ▶ This was the first attempt
- ▶ It has been shown that it can be done
- ▶ SO ---
- ▶ It will have to be even better next time!



Environment – *vitality and sustainability*

- ▶ 20% Strategy – delivering the past, presenting the future
- ▶ 30% People (all staff and research students, technicians, support)
- ▶ 30% Infrastructure and facilities, income
- ▶ 20% Contribution to discipline and collaboration
 - ▶ *Strongly interconnected*



Observations

- ▶ Strategies – some appeared genuine and followed since 2008, some showed that they had been written for the REF 2014!
- ▶ What will the Group aim to achieve in 5-10yearsand what had it achieved in the past 5years in line with the RAE 2008 strategy?

Will impact template and environment templates be merged in REF 2020?



Look at what was required --- it was very clear

- ▶ Staff / students, support, facilities etc matched to plans
- ▶ How do sub-groups fit in the strategy
- ▶ Are small sub-teams well coupled or on the fringes?
 - ▶ Allocate researchers to sub-groups, show full consideration
- ▶ Staff - training, development, opportunities, broader horizons
- ▶ Students – recruitment, progression, support, monitoring, training, careers
- ▶ Formalities – ECRs, Diversity, Equality, Safety, Ethics

Observations

- ▶ Balance of experienced and less experienced people
 - ▶ *Eg was there adequate senior leadership in the local environment if groups had very high numbers of ECRs and research students, particularly from overseas*
 - ▶ *NB Panels did not know who had been excluded from submissions, teaching commitments, senior people travelling etc*
- ▶ Academic leadership - External engagement, visits / visitors, events, participation
- ▶ Recognition - external prizes, awards, fellowships
- ▶ Elite and 0.2FTE appointments were spotted and considered not to contribute to sustainability and vitality

General observations for implementation

- ▶ Alignment with strategies
- ▶ Investment and use of equipment and facilities
- ▶ External awareness and engagement
- ▶ Cooperation and collaboration with global academic communities
- ▶ Ditto with appropriate non-academic stakeholders
- ▶ Prizes / awards / appointments / external recognition



Not the small print!

Some other submissions failed to score well because they had not followed the requirements!

NO information about requirements for REF 2020 has been provided yet



Some reflections on REF 2014 looking towards REF 2020

- May recommend that an explanation of the original research content of review papers is mandatory - only encouraged for REF
- Volume of case studies relative to submitted FTEs was thought appropriate
- 2 star threshold for the quality of the underpinning research appropriate
- Time period for underpinning research mostly thought appropriate
- 20% weighting for impact about right?
- Could impact template be combined with the environment template?
- Variability of impact scores – expect this to be less next time as institutions more experienced at presenting impact

N.B. No decisions made on 2020

