

REF 2014

UoA 15: General Engineering Sub-panel

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Outline:

➤ **Some general comments**

- REF2014 overall compared to RAE2008
- UoA 15 compared to 2008 and compared to average for REF2014
- UoA descriptor compared to what we actually saw

➤ **UoA 15 Results...**

- Quality Profiles
- Overall outcome and by outputs, environment, impact

➤ **How were these results arrived at? Panel working methods**

- Output allocation & calibration
- Impact and environment assessment

➤ **Some reflections on REF 2014 looking towards REF 2020**



REF 2014:

- **REF2014 similar size to RAE2008** ¹

Only -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);

- **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

- **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/>



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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*)

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



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Quality Profiles:

For HEI not FTE weighted. UoA 15 overall profile heavily affected by 7 large submissions

Overall quality profile

Quality level	4*	3*	2*	1*	u/c
% of research	12	37	41	10	0

Outputs				
4*	3*	2*	1*	u/c
12.8	32.8	43	11.4	0

65%

Impact				
4*	3*	2*	1*	u/c
20	45	35	0	0

20%

Environment				
4*	3*	2*	1*	u/c
0	40	40	20	0

15%



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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... Includes ...single organisational units within institutions that include activities spanning two or more of the other 3 UoAs in the fields of engineering.it will cross refer any outputs that they consider to be more expertly assessed by other sub-panels.....

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



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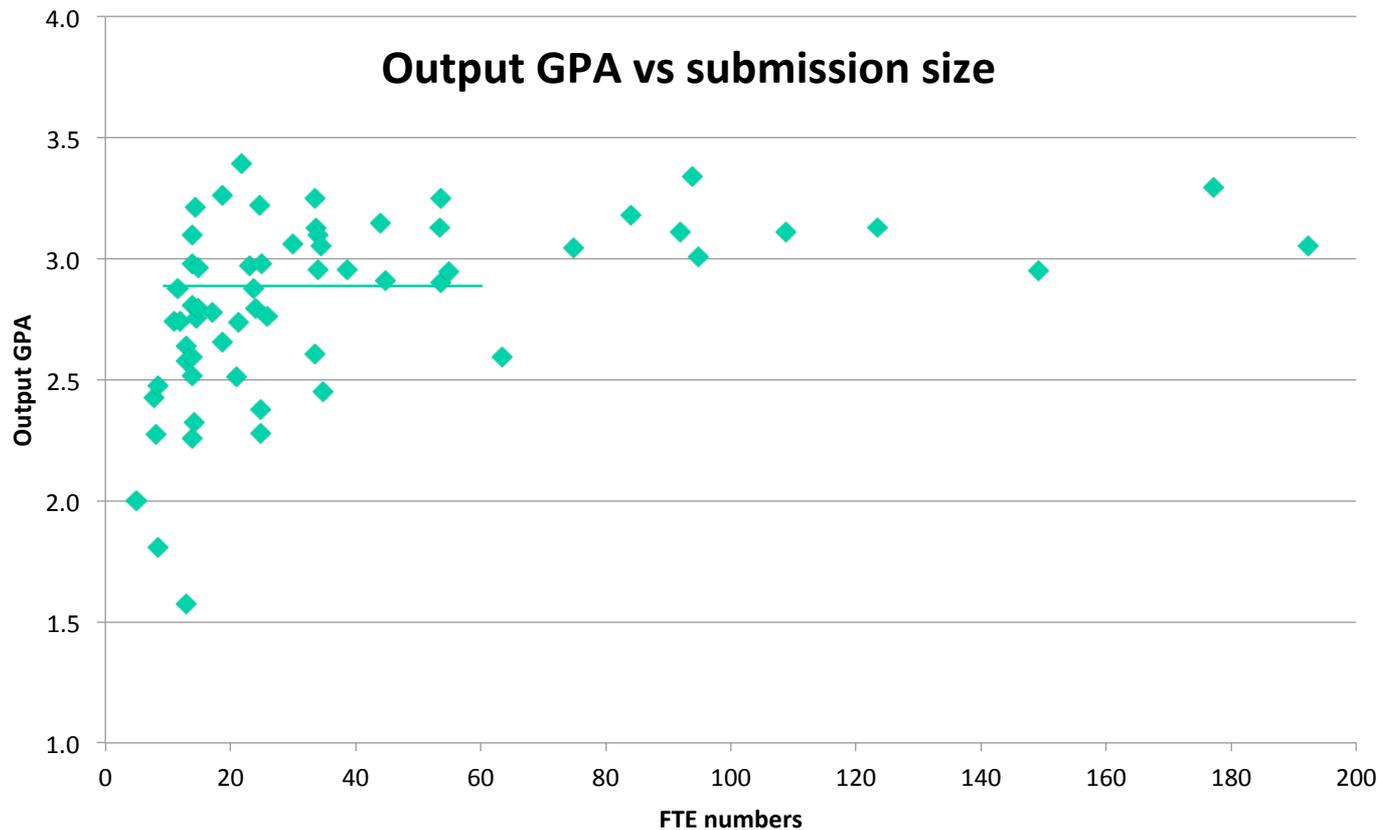


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UoA15 Results: Outputs

- 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



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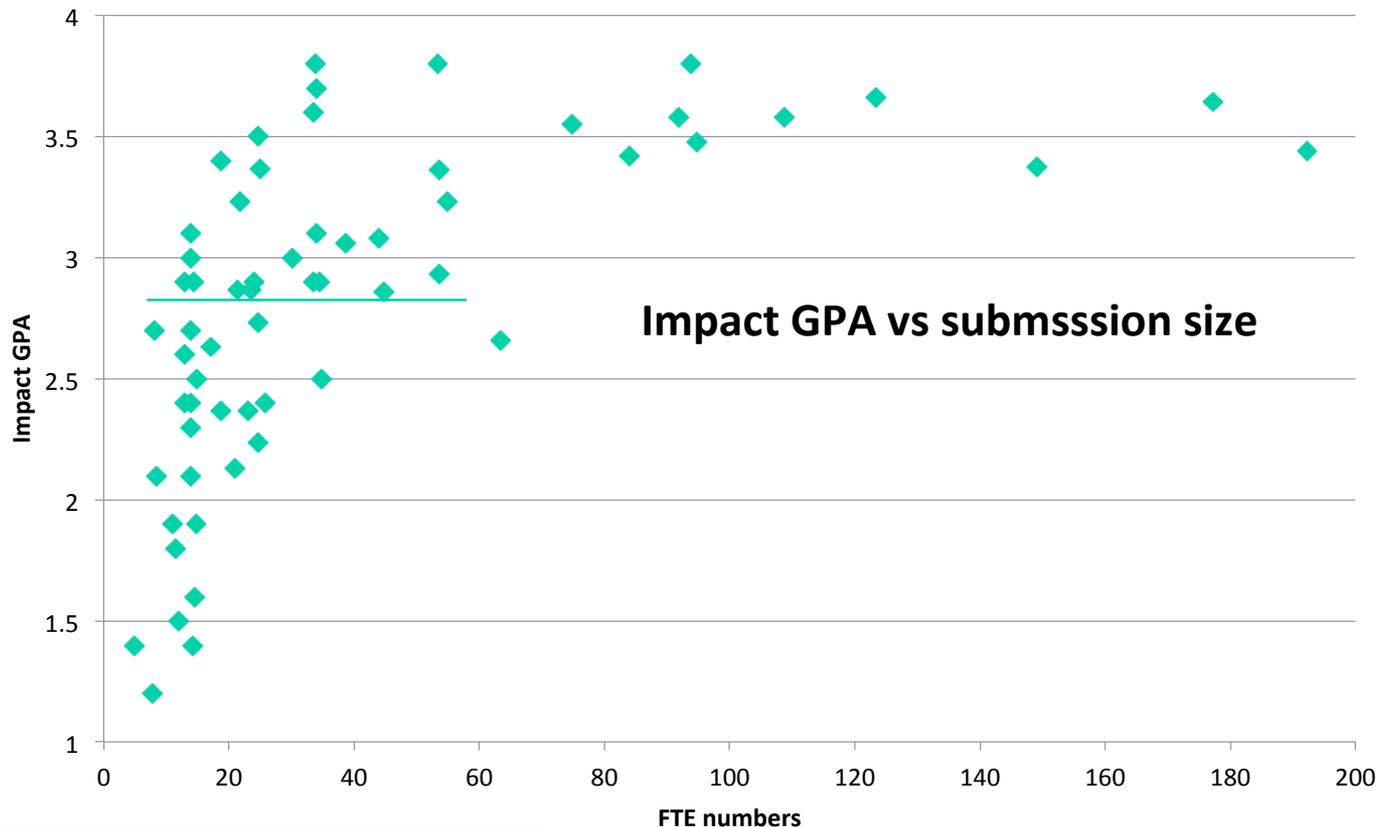


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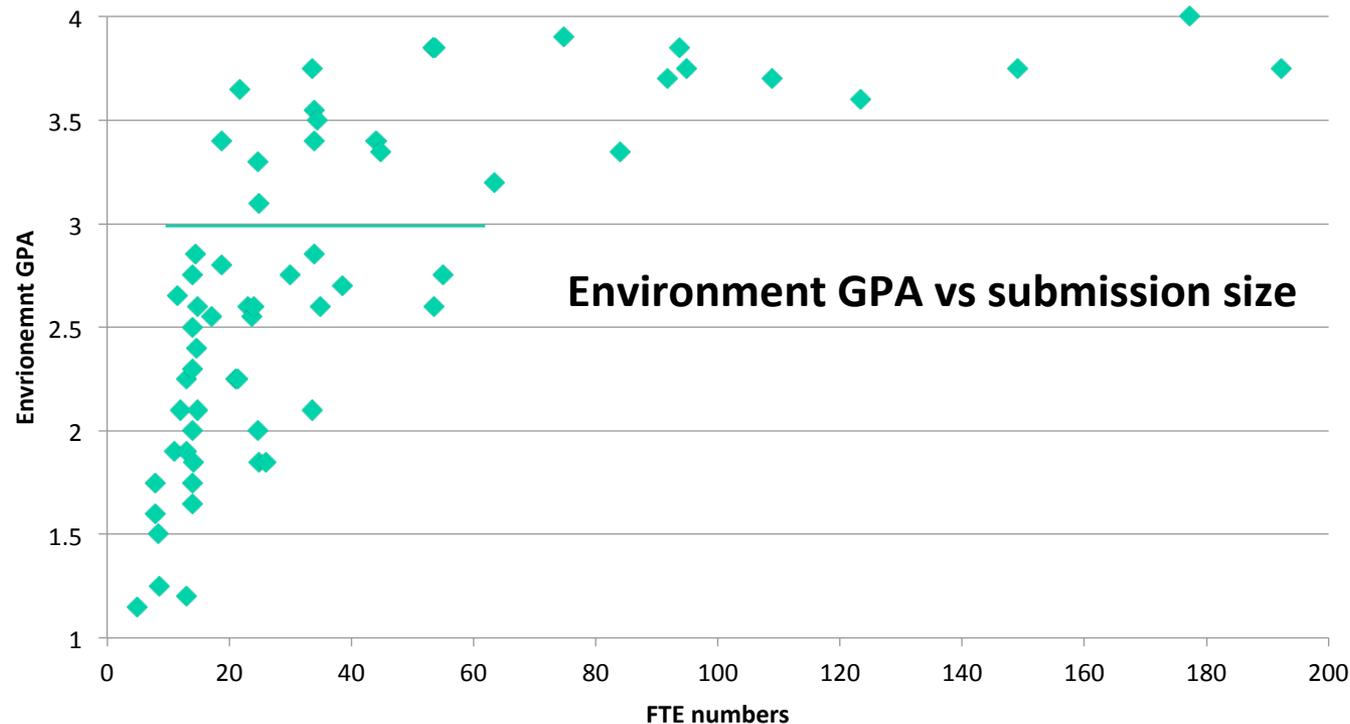
UoA15 Results: Impact

- Spread much greater (0.5 omitted) – less experience ?
- Need >14 staff before performance as good as large HEIs
- 21 at or below 2.5



UoA15 Results: Environment

- Spread also larger than for outputs
- While being large did not guarantee high score, 1st HEI with GPA >3 had 18.75 staff
- 21 below 2.5



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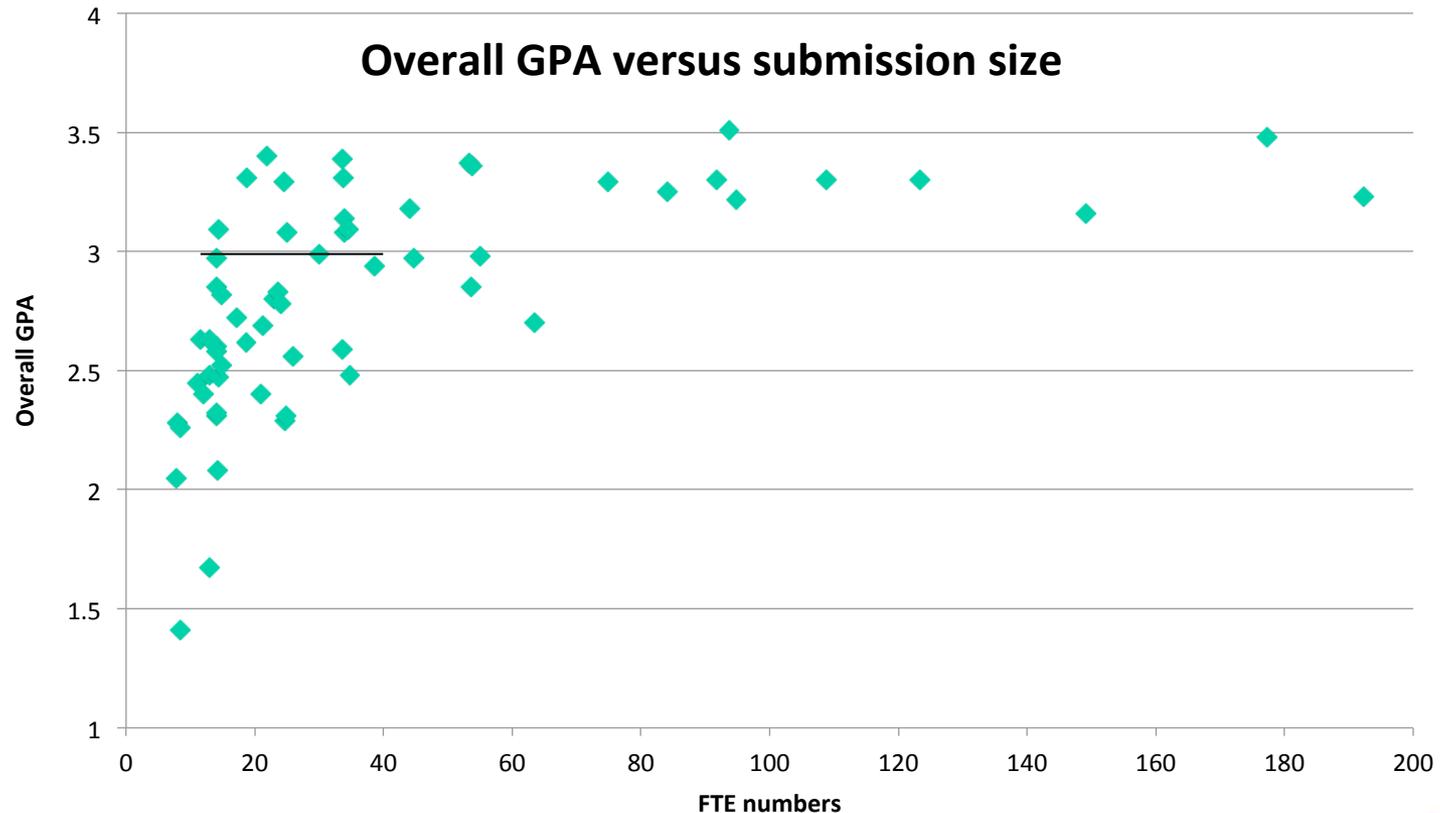


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UoA15 Results: Overall

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



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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 in terms of originality, significance and rigour as being of at least internationally excellent quality i.e 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



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UoA 15: Panel working 2: Impact

- Case studies 80% (of 20%) with remainder for template
- Impact template assessed on the unit's approach being conducive to achieving impacts of reach and significance
- Scored on half point system: 1, 1.5, 2, 2.5, 3, 3.5, 4
NB Same across all main panels
- Three panel members assigned to each case study/template including user members who were the lead partners for Impact Assessment
- Calibration exercise conducted



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UoA 15: Panel working 2: Impact

Threshold criteria assessed by academics

- Was the underpinning research produced since 1 Jan 1993?
- .Were the staff working in the submitting HEI when they carried out the research?
- Was the underpinning research predominantly of at least 2* quality?
- Did the submitting HEI's research make a distinct and material contribution to the impact?
- .Does the impact meet the REF definition of impact?

Impact Quality assessed by all – excellent agreement; even better than for outputs



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UoA 15: General Panel Observations: Impact

- Impressed by the wide range of types of impact received, and by the range and significance
- Some case studies suffered from a lack of clarity about the links between the underpinning research and the impact claimed
- In some cases more quantitative evidence of the impact in the assessment period would have been helpful
- Some case studies included description of anticipated future impact, which was not eligible for assessment
- Variability of impact scores high – except this to be less next time as institutions more experienced at understanding and presenting impact



UoA 15: Panel working 2: Environment

a.	Overview	For information only
b.	Strategy	20%
c.	People (staffing strategy and staff development; and research students)	30%
d.	Income, infrastructure and facilities	30%
e.	Collaboration and contribution to the discipline or research base	20%

- Scored on half point system: 1, 1.5, 2, 2.5, 3, 3.5, 4 (Same for all main panels)
- Four panel members assigned to each template including user members
- Calibration exercise conducted
- Income and PhDs awarded considered relative to average/median



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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 understanding and presenting impact



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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)



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