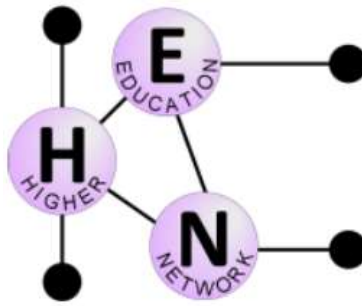


# ***Improving the Employability of Geoscience Graduates***

***17 January 2017, Burlington House***

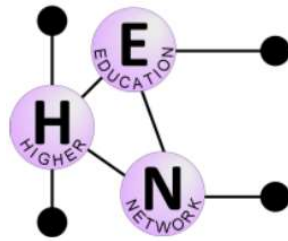


***Background: Review of STEM Degree  
Provision and Graduate Employability  
(Wakeham report, April 2016)***

- *“This review was charged primarily with identifying those disciplines within English Higher Education (HE) where graduate employment outcomes appear to be particularly poor, and where it can therefore be inferred that graduate skills and knowledge are not delivering what the associated economy and business community require.”*

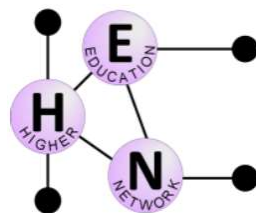
**Wakeham Review of STEM  
Degree Provision and  
Graduate Employability**





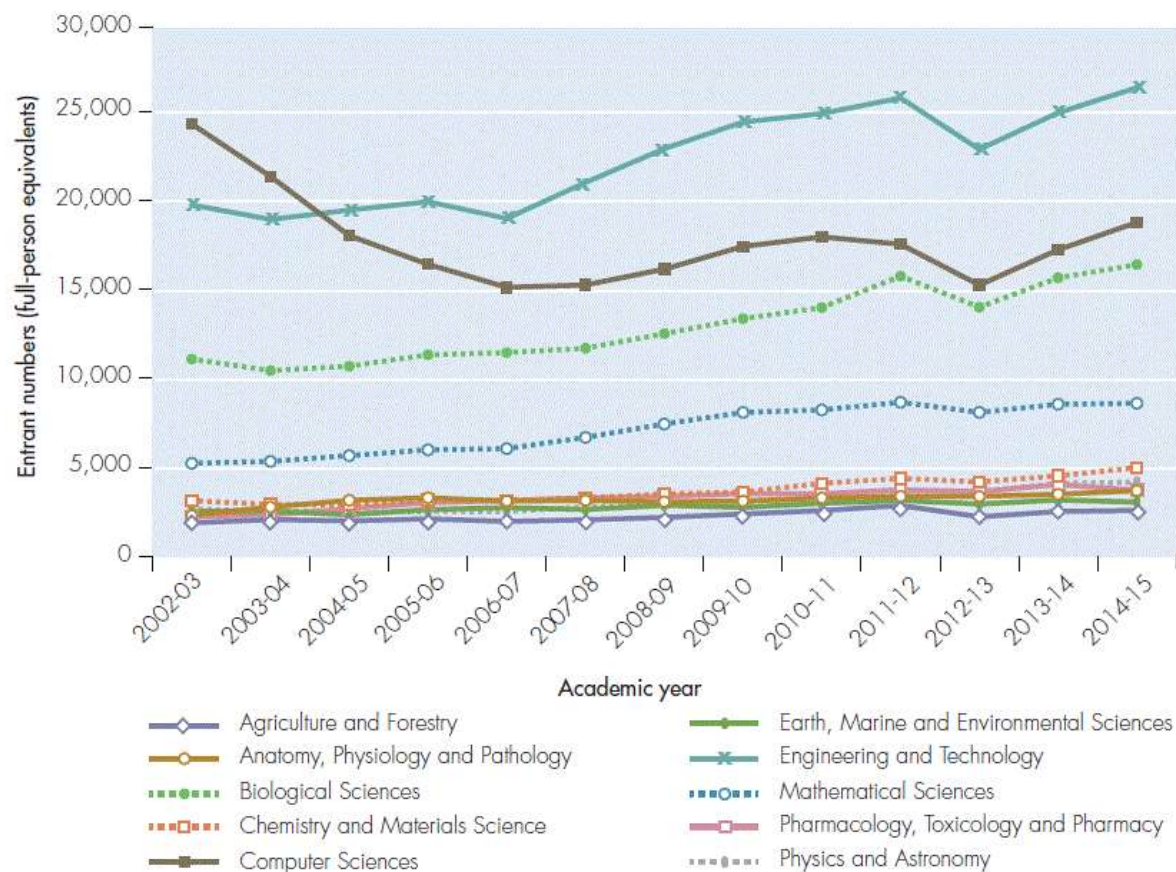
## ***Wakeham Report Executive Summary:***

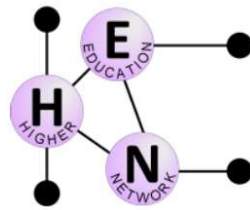
- *“2.4 Based on the accumulated evidence we have arrived at a list of degree disciplines where the graduate employment outcomes are sufficiently concerning for us to recommend additional targeted work. The STEM disciplines that the review has identified as being of particular concern are:*
  - *“Biological Sciences*
  - *Earth, Marine & Environmental Science*
  - *Agriculture, Animal Sciences and Food Sciences”*



## ***Numbers of full-time first degree entrants to STEM subjects (Wakeham, 2016, Figure 1):***

**Figure 1** Numbers of full-time first degree entrants to STEM subjects (including Agriculture and Forestry): entrants to publicly-funded English HEIs by STEM discipline, 2002-03 to 2014-15



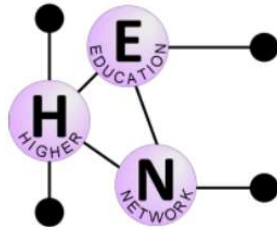


***Key Employment Statistics, Table 2, Wakeham 2016:***

	Unemployment level	Graduates in non-graduate roles	Graduates on low salaries
Earth, Marine and Environmental Sciences	Above average unemployment at high and medium tariff institutions, lower unemployment for low tariff institutions.	High proportion in non-graduate roles	High proportion in low-pay roles

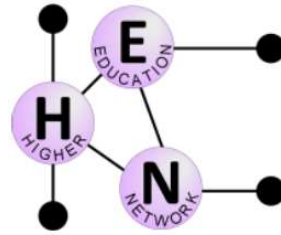
***For all F6, F7 & F9 subjects combined  
NB. Wakeham data for publicly-funded English HEIs***



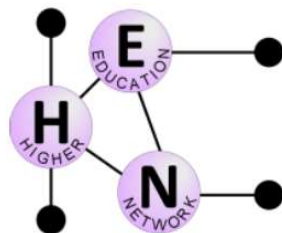


## ***Recommendation 2 (Wakeham 2016):***

- *“Earth, Marine and Environmental Sciences - Further work is needed to unpick and explore the nature of, and reasons for, the relatively poor employment outcomes of graduates from Earth, Marine and Environmental Sciences (EMES) degree programmes. Where clear problems are identified for particular disciplines within the EMES group, solutions should be proposed for improving outcomes.”*



# ***1. Unemployment in Geoscience (F6 degrees)***

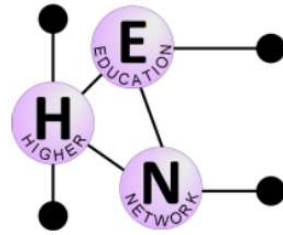


## ***Unemployment data for Geology (F6) from Annex i2, Wakeham 2016):***

	2011-12	2012-13	2013-14
Geology Overall	9.9%	9.2%	8.1%
Low below	8.5%	7.5%	6.6%
High above	12.7%	11.3%	10.0%
STEM Overall	10.6%	9.4%	8.3%
Geology rating	'Average'	'Average'	'Average'

***Geology average unemployment rate, slightly below  
overall STEM unemployment, and declining***

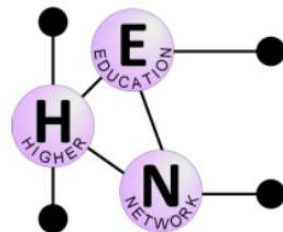




***Unemployment rates subdivided into HEIs with a) High, b) Medium, and c) Low Entry Tariff for Geology (Annex i2, Wakeham 2016):***

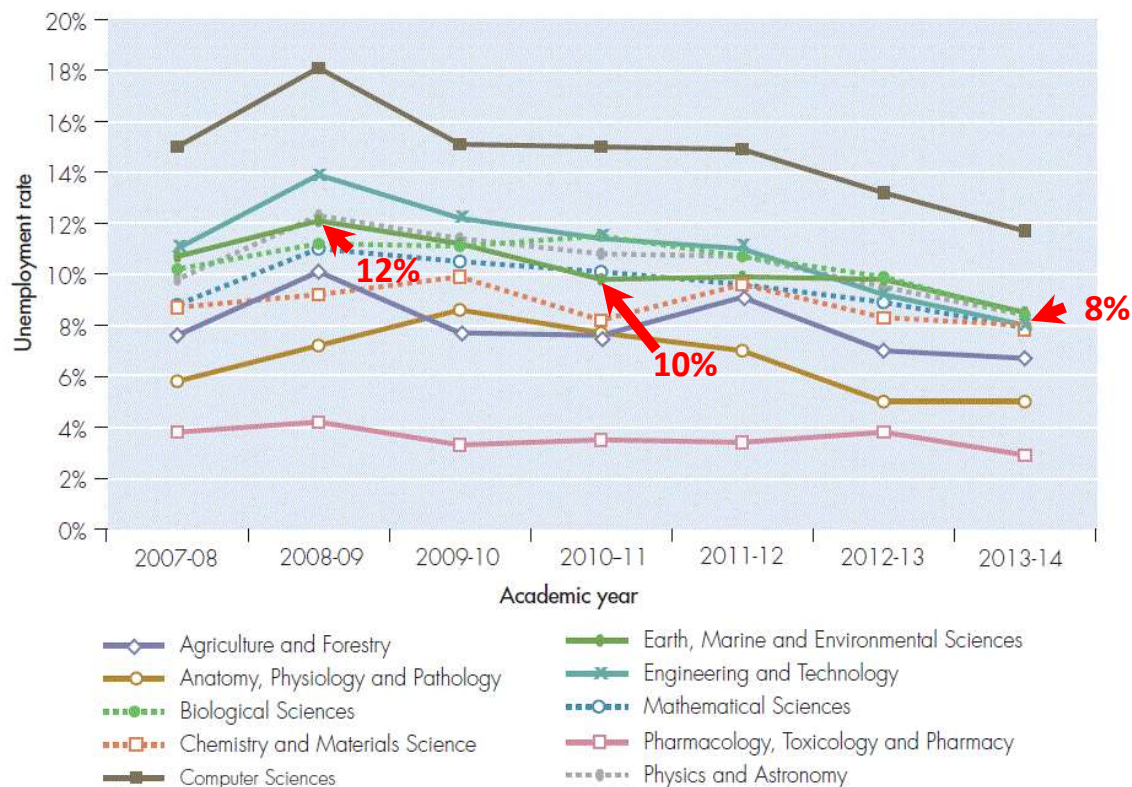
	2011-12	2012-13	2013-14
Population	750	885 (+18%)	975 (+10%)
High Tariff	Average (71%)	Average (72%)	Average (68%)
Medium Tariff	Average (17%)*	High (15%)*	Average (17%)*
Low Tariff	Average (12%)*	Average (13%)*	Average (15%)*
Low below	8.5%	7.5%	6.6%
High above	12.7%	11.3%	10.0%
STEM Overall	10.6%	9.4%	8.3%

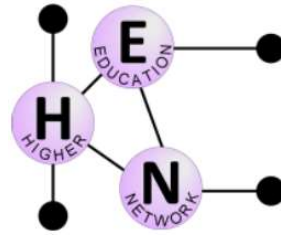
- ***\*Above STEM Overall unemployment rate***
- ***Significant growth in numbers***



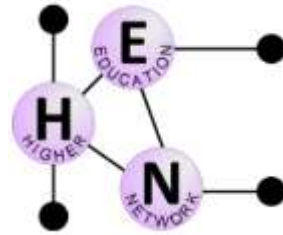
## ***Unemployment Rates for UK-domiciled first time degree graduates from STEM subjects (Wakeham, 2016, Fig 4)***

**Figure 4** Unemployment rates of UK-domiciled full-time first degree graduates from STEM subjects (including Agriculture and Forestry) six months after leaving HE: graduates from publicly-funded English HEIs by STEM discipline, 2007-08 to 2013-14





## ***2. Proportion of Geoscience graduates (F6) in non-graduate roles***



## ***Standard Occupational Classification 2010 (Soc2010):***

***Managers and Senior Officials***

***Professional occupations***

***Associated professional and technical occupations***

***Admin and secretarial occupations***

***Skilled trades occupations***

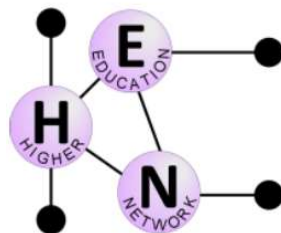
***Personal service occupations***

***Process, plant and machine operatives***

***Elementary occupations***

***Unknown***

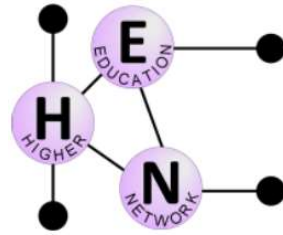
***All occupations***



***Proportion in non-graduate roles (Annex i2, Wakeham 2016):***

	2011-12	2012-13	2013-14
Population	430	485	530
Geology Overall	33.6%	32.1%	33.1%
Low below	21.5%	21.5%	20.1%
High above	32.2%	32.2%	30.1%
STEM Overall	26.8%	26.8%	25.1%
Geology rating	High	Average (just)	High

***Geology high (or marginally below) proportion in non-graduate roles & above STEM Overall average***

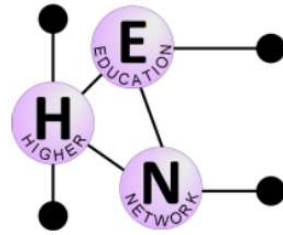


***Proportion in non-graduate roles subdivided into HEIs with a) High, b) Medium, and c) Low Entry Tariff for Geology (Annex i2, Wakeham 2016):***

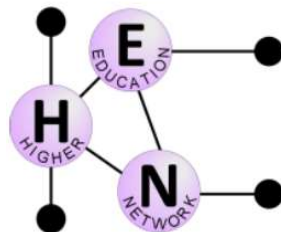
	2011-12	2012-13	2013-14
Population	430	485	530
High Tariff	Average (69%)*	Average (67%)*	Average (65%)*
Medium Tariff	High (16%)*	High (15%)*	High (19%)*
Low Tariff	High (15%)*	High (13%)*	High (16%)*
Low below	21.5%	21.5%	20.1%
High above	32.2%	32.2%	30.1%
STEM Overall	26.8%	26.8%	25.1%

- ***High or Average (mid) proportion in non-graduate roles***
- ***\*Above STEM overall***





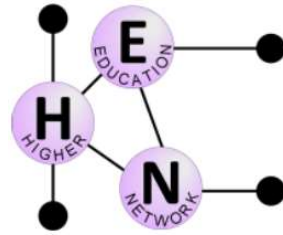
### ***3. Proportion of Geoscience graduates (F6) earning low salaries (<£20,000)***



***Graduates in full-time UK employment earning low salaries (< £20,000) (Annex i2, Wakeham 2016):***

	2011-12	2012-13	2013-14
Population	220	285	315
Geology Overall	51.2%	48.2%	44.4%
Low below	31.4%	30.4%	28.8%
High above	47.0%	45.5%	43.2%
STEM Overall	39.2%	37.9%	36.0%
Geology rating	High	High	High

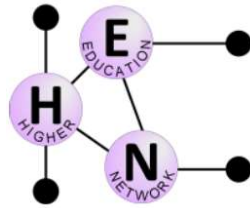
***Geology has high proportion earning low salaries, declining, above STEM overall average, but close to average in 2013-14***



***Proportion earning low salaries (<£20,000) subdivided into HEIs with a) High, b) Medium, and c) Low Entry Tariff for Geology (Annex i2, Wakeham 2016):***

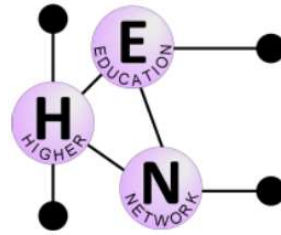
	2011-12	2012-13	2013-14
Population	220	285	315
High Tariff	Average (68%)*	Average (74%)*	Average (70%)*
Medium Tariff	High (18%)*	High (14%)*	High (14%)*
Low Tariff	High (14%)*	High (12%)*	High (16%)*
Low below	31.4%	30.4%	28.8%
High above	47.0%	45.5%	43.2%
STEM Overall	39.2%	37.9%	36.0%

- ***High or Average (mid) proportion earning low salaries***
- ***\*Above STEM overall***



## ***HESA data (for entire UK):***

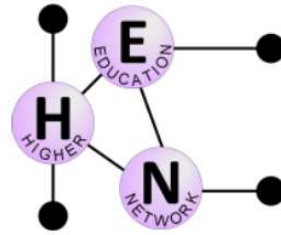
- ***For Geology F6 degrees (HEIDI – Higher Education Information Database for Institutions – run by HESA)***
  - ***Rounded to 5 to preserve anonymity***
  - ***Different response rate to HESA data***
    - ***(HEIDI excluded some leavers with further education qualifications, on intercalated course, etc).***



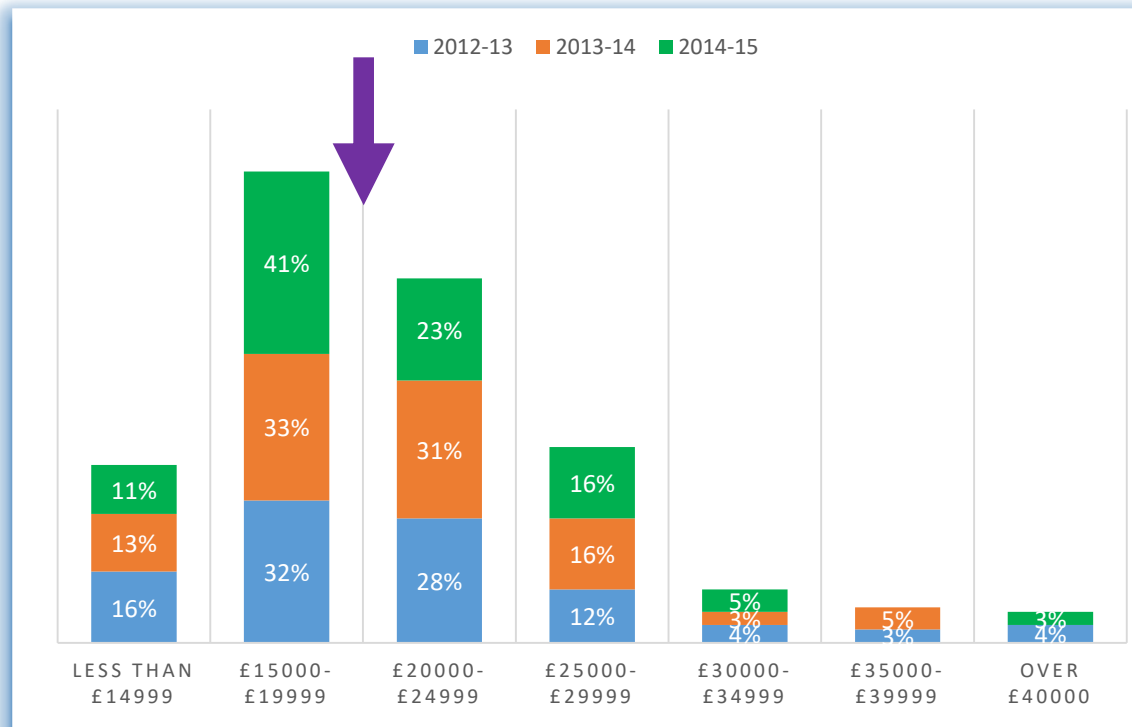
***Proportion earning low salaries (<£20,000) for Geology (Table 4, Wakeham 2016), compared with HESA data for all UK:***

	EMES 2013-14 (Wakeham 2016)	Geology - JACS F6 2013-14 [HESA/HEIDI]	STEM AVERAGE (Wakeham 2016)	All HE (Wakeham 2016)
<b><i>Proportion of Graduates earning low salaries (&lt;£20K)</i></b>	51%	<b>46%</b>	35%	45%

- High proportion but similar to all HE; HESA indicates that data unavailable for 29% of employed graduates***

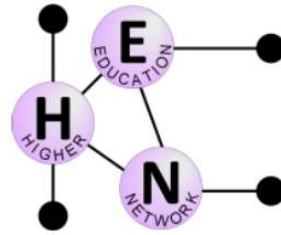


***Proportion earning low salaries (<£20,000) for Geology from  
HESA data for all UK:***



- High, but HESA indicates that data unavailable for 33%, 29% and 28% of employed graduates in each year***





## ***Geology (F6) :-***

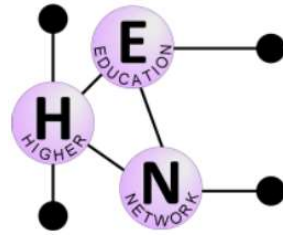
***Unemployment - Average***

***Non-graduate roles – High***

***Low salaries - High***

***“investigation may be needed into whether more granular data is required to pinpoint the specific nature of the problem.”***

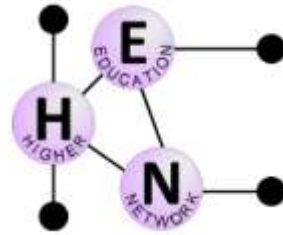
***(Wakeham 2016, section 6.6)***



***Wakeham, 2016, 5.7, p50: (Stakeholder survey)***

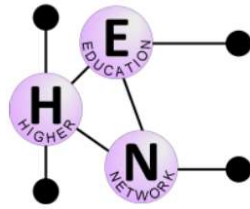
***“Responses to the stakeholder survey suggested that the following issues might be affecting employment outcomes for EMES graduates:***

- Graduates lacking ‘soft skills’***
- Graduates lacking business or commercial awareness***
- Graduates lacking work experience***
- Graduates lacking mathematical skills***
- Graduates struggling to translate theoretical knowledge into practice***
- Lack of graduate engagement in career planning.”***

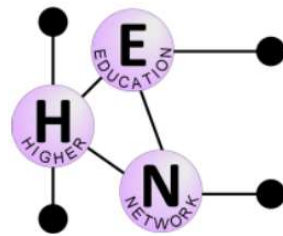


## ***Wakeham Recommendation 5 – Enhanced Employer engagement***

- *“Employers and HE providers should work more closely together in order to improve graduate employment outcomes. In particular, they should consider addressing the following areas:*
  - *Improving the opportunities for students to take up work experience and to maintain its quality*
  - *Embedding the development of soft skills into degree courses and improving work readiness*
  - *Better matching degree courses to employer demand for skills*
  - *Improving STEM careers advice and awareness of job opportunities for graduates and students, as well as even earlier in the education pipeline ”*

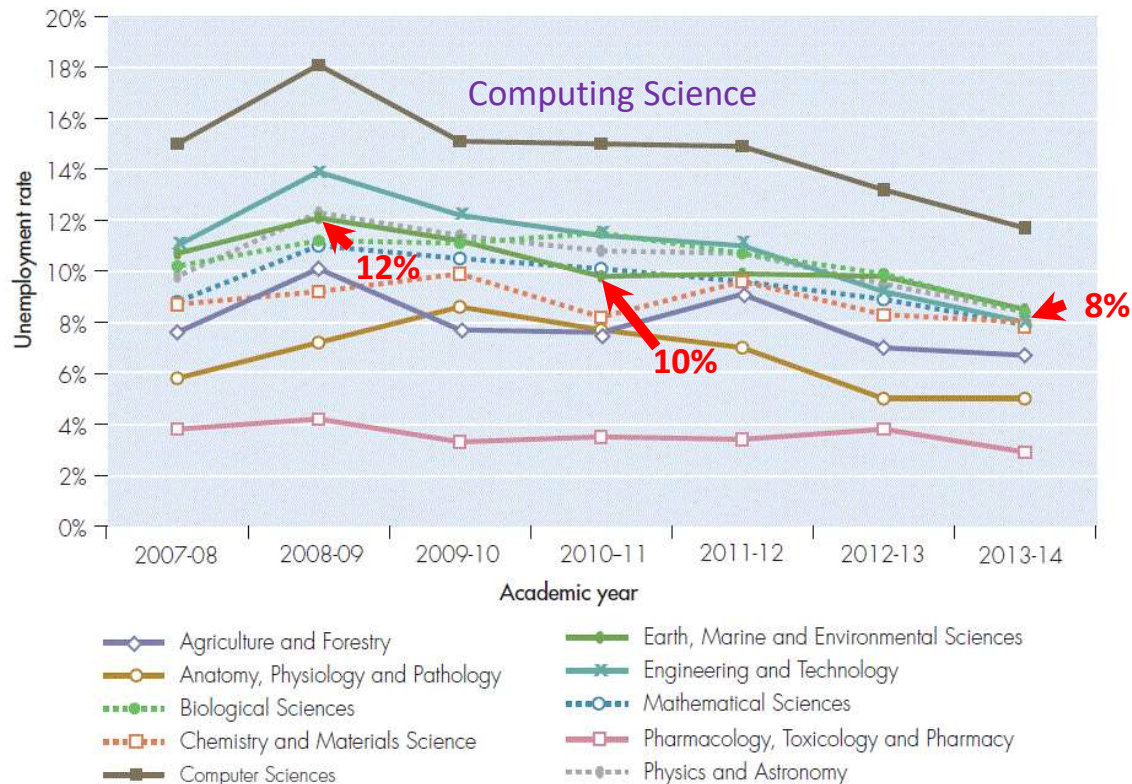


# ***Responses to employability issues in other STEM subjects?***

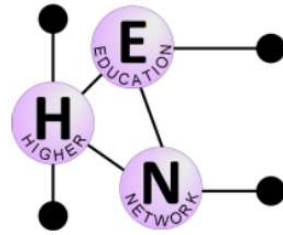


## ***Unemployment Rates for UK-domiciled first time degree graduates from STEM subjects (Wakeham, 2016, Fig 4)***

**Figure 4** Unemployment rates of UK-domiciled full-time first degree graduates from STEM subjects (including Agriculture and Forestry) six months after leaving HE: graduates from publicly-funded English HEIs by STEM discipline, 2007-08 to 2013-14







## ***Computing Science – Shadbolt review (2016)***

- *The headline unemployment rate of Computer Science graduates was 11.7%, 6 months after graduating.*
- *This was the highest of all STEM subject groups and well above the average.*
- *This trend had persisted for several years in the Destinations of Leavers from Higher Education (DLHE) survey.*

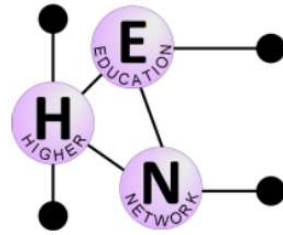
***Professor Sally Fincher, Univ of Kent, & Committee of  
Professors and Heads of Computing***

Shadbolt Review of Computer  
Sciences Degree Accreditation  
and Graduate Employability



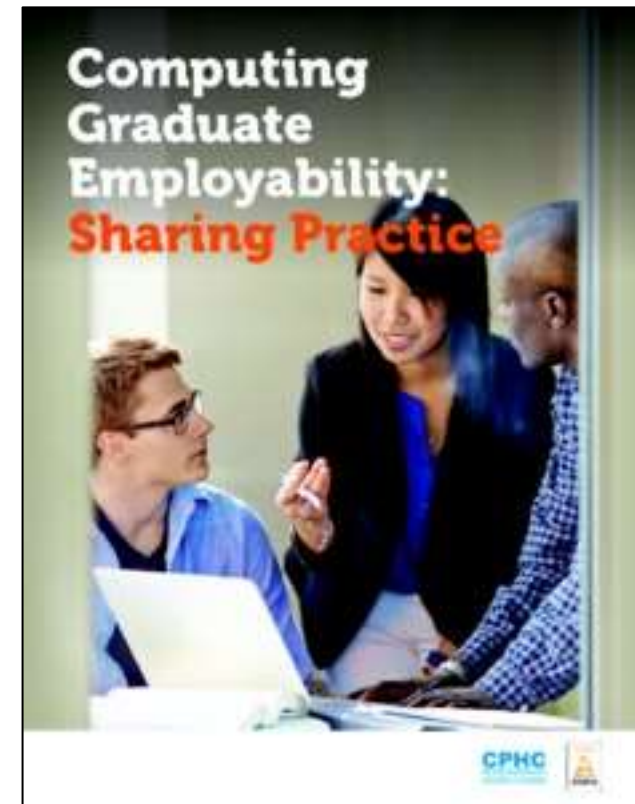
April 2016





## ***Response - GECCO:***

- *Building a Graduate Employability Community in Computing*
- *Based on the Disciplinary Commons, an established model that is successful in sharing practice and catalysing new practice.*
- *It involves a group of academics from diverse institutions (in this case, all involved with employability) meeting three times during a year to share, reflect on and document their practice.*



***Sharing Good Practice Publication – Fincher,  
2016***

## **Theme 1: Addressing Employability**

Prologue

Challenge of the Employability Agenda

Showcase: Auditing (York)

Challenge of Student Engagement

Clusters: Hackathons

Mentoring

Compulsion

Showcase: Transitions (Brunel)

Showcase: ThinkFuture (Napier)

## **Theme 2: Curriculum Issues**

Prologue

Challenge of Curriculum Design

Clusters: Employer-led curriculum

Industry-focused projects

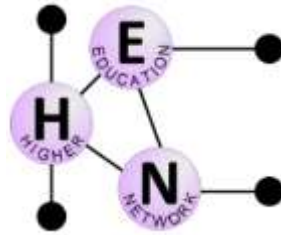
## **Theme 3: Placements**

Prologue

Challenge of Reaching the Tipping Point

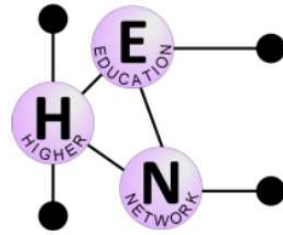
Cluster: Practices across the Placement Lifecycle

- Preparation
- Application
- Monitoring/visits
- Re-entry, de-brief
- Assessment



# ***Geoscience Community response?***

- ***Data?***
  - ***Employers?***
  - ***Communal teaching resources (consortia)?***
  - ***Accreditation?***
  - ***Naming of degrees?***
  - ***Nature of 'industries'?***
  - ***Motivation of entrants?***
- 
- ***Wakeham, 2016 indicates that employers consider the major issue to be that STEM graduates have poor 'readiness for employment'***



### ***Data on Geoscience Employability***

- *Job Satisfaction; Motivation; Careers outside Geoscience?*

### ***Links with Industry ('readiness for work')***

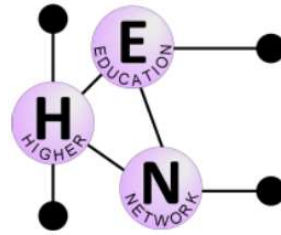
- *Day 1 survey; Case studies; Curriculum development; work-related learning; UK 'Micro-internship' scheme; Degree apprenticeships?*

### ***Graduate Skills Awareness***

- *ePortfolios & CPD; Alumni Case studies; Job categorisation; list of graduate jobs; Career tutor forum?*

### ***Other Suggestions?***

***\*Employability – potential for REF impact cases?***



## ***Higher Education Network:***

- ***Employability a future HEN meeting topic?***