

Skilled Shortage Sensible

Full review of the recommended
shortage occupation lists for the UK
and Scotland

Migration Advisory Committee

September 2011



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Chairman's foreword



Immigration under Tier 2 General – the shortage route plus the Resident Labour Market Test route (RLMT) – is now limited. For

2011-12 the limit is 20,700. This report is the fifth Migration Advisory Committee (MAC) recommended shortage occupation list, but the first one under the new limits regime. Tier 2 also intensified its selectivity in April: only people in job titles and occupations skilled to National Qualifications Framework level 4 or above are permitted entry now. Further, individuals no longer score points for age and qualifications.

In the new system there is a monthly allocation of Certificates of Sponsorship and applications are prioritised in the following order: shortage occupation list; PhD level job; RLMT (with extra points for higher pay in the latter two cases). Therefore, a job title or occupation on the shortage occupation list confers a considerable advantage to the potential worker and employer. Consequently, the MAC has been particularly robust in testing claims of labour shortage: if we erroneously

included an occupation the subsequent entrants would probably deny potentially valuable migrant workers to other occupations.

Using the official classification system, there is only one complete occupation on our list. Mostly we focus on specific job titles within occupations. The number of workers (not migrants) employed in the job titles on our list is 190,000 or under 1 per cent of the UK workforce. This compares with a figure of one million in 2007 before the MAC first recommended the shortage occupation lists.

Previously the MAC categorised four types of labour shortage: cyclical; structural; global talent; and public spending-related. Cyclical shortages have not played a substantive role in determining the composition of our new recommended lists, reflecting the fact that the UK labour market is still recovering from recession.

Our recommended lists include job titles under each of the other three categories. First, a structural shortage occurs when the employers are up-skilling the UK workforce but need immigrant labour in the meantime: electricity linesmen are an example. Second, some employers compete in a world market and the UK talent pool may need boosting with labour from outside the

European Economic Area. Top musicians and ballet dancers come into this group.

Finally, limitations on public spending may generate shortages in some public or publicly-funded jobs. This is presently the case for social workers employed in children's and family services. This category presents a dilemma for the Government: there is real tension between the two goals of reducing both public spending and net immigration.

In this report we publish, for the first time, a list of occupations and job titles which have been on the shortage occupation list continuously since 2008. The MAC believes there is a strong case for cross-government engagement with the relevant sectors to fully understand why these occupations and jobs require ongoing access to migrants. And, where appropriate, to promote further initiatives to cut such dependence.

As always, we are grateful to our partners for their evidence. In this new limits regime it is vital that they provide us with robust evidence of labour shortage for occupations to be included on our list. In the MAC's report on annual limits on Tiers 1 and 2 last year, we relayed the concerns of many employers and organisations in relation to the policy of limiting migration. All of those partners have had the opportunity to submit evidence to this review.

The MAC is again grateful to its secretariat – both policy and analyst colleagues – for their excellent work and commitment to the task: exemplary public service in difficult times.



Professor David Metcalf CBE

The Migration Advisory Committee and secretariat

Chair



Professor David
Metcalf CBE

Members



Dr Diane Coyle OBE



Dr Martin Ruhs



Professor Jonathan
Wadsworth



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UK Commission for Employment and Skills representative



Mark Spilsbury

UK Border Agency representative



Glyn Williams

The secretariat

Vanna Aldin; Samantha Allen; Anne Ball; Alex Barr; Jeremy Clarke; Ros Coles; Cordella Dawson; Stephen Earl; Mark Franks (head of secretariat); Kathy Hennessy; Daniel Pease; Andrew Watton

Chapter 1 Introduction

1.1 The Migration Advisory Committee

1.1 The Migration Advisory Committee (MAC) is a non-departmental public body comprised of economists and migration experts that provides transparent, independent and evidence-based advice to the Government on migration issues. The questions we address are determined by the Government.

1.2 Previously, we have provided advice on the design of Tiers 1 and 2 of the Points Based System (PBS) for managed migration, the transitional labour market access for citizens of new European Union (EU) accession states and the first annual limits on Tiers 1 and 2 of the PBS. Most recently, we provided advice on occupations and job titles skilled to National Qualifications Framework (NQF) level 4 and above (NQF4+) for Tier 2 of the Points Based System.

1.2 Scope of this report

1.3 The commissioning letter from the Government asked that we answer the following

question: *“In which occupation(s) or job title(s) skilled to National Qualifications Framework level 4 or above is there a shortage of labour that it would be sensible to fill using labour from outside the European Economic Area (EEA)”*. We address this commission in this report by recommending two shortage occupation lists: one for the whole of the UK and one for Scotland only.

1.3 Policy context

1.4 In this section we provide a brief overview of the main routes under the PBS via which immigrants can come to the UK together with a more detailed look at the Government’s recent changes to the routes relevant to the shortage occupation list.

Routes of immigration to the UK

1.5 Non-EEA nationals coming to the UK for the purpose of work or study must generally apply under the PBS for managed migration. There are different provisions for specific nationalities and there are some other non-PBS extant routes which regulate work-related migration (for

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example, the business visitor route) and these were discussed in our report on the levels of the limits of migration (Migration Advisory Committee, 2010a). The PBS consists of five tiers:

- **Tier 1:** Investors, entrepreneurs, exceptionally talented migrants and the post-study work route for migrants who have recently graduated from UK universities.
- **Tier 2:** Skilled workers with a job offer in the UK.
- **Tier 3:** Low skilled workers needed to fill specific temporary labour shortages. Tier 3 has never been open, and is presently suspended.
- **Tier 4:** Students.
- **Tier 5:** Youth mobility and temporary workers. Those allowed to work in the UK for a limited period of time to satisfy primarily non-economic objectives.

1.6 Tier 2 consists of five different routes: the intra-company transfer route; the Resident Labour Market Test (RLMT) route; the shortage occupation route; the sportspersons route; and the ministers of religion route. The RLMT and shortage occupation routes together are referred to as the Tier 2 General route. Entry under the shortage occupation route is limited to occupations on the Government's shortage

occupation list. The purpose of this report is to recommend shortage occupation lists for the UK and Scotland.

1.7 Following a commission from the Home Secretary, on 18 November 2010 we published our report on the first annual limits on PBS Tiers 1 and 2 for 2011/12 and supporting policies (Migration Advisory Committee, 2010a). In that report we set out required limits on Tiers 1 and 2, based on assumptions on matters including the coverage of the limits, the underlying objective for net migration and the role of work-related migration in achieving that objective. We also set out potential policies to improve selection of the migrants who have the most to contribute to the UK. We suggested that, in line with the general objective of improved selectivity, consideration could be given to raising the minimum skill level for the RLMT, shortage occupation and intra-company transfer routes of Tier 2.

1.8 On 23 November 2010 the Home Secretary outlined a policy package for the PBS, which was introduced alongside the first annual limits on non-EEA migration in April 2011. The Home Secretary announced that the RLMT and shortage occupation routes would be subject to an annual limit of 20,700 places for main out-of-country applicants in the year from April 2011. The Home Secretary also announced that the RLMT and shortage

occupation routes would be restricted to ‘graduate-level’ occupations, deemed by the Government to be those skilled to NQF4+, from April 2011.

1.9 In December 2010 the Government asked the MAC to provide advice in relation to the minimum skill requirement for occupations and job titles under Tier 2. Specifically, the Government asked that we answer the following two questions:

1. *“What Standard Occupational Classification (SOC) codes should be considered as graduate level occupations for the purposes of Tier 2 of the Points Based System?”; and*

2. *“How should the current Shortage Occupation Lists for the UK and Scotland be revised to remove jobs below graduate level?”*

1.10 We published two reports in February and March 2011 addressing these questions. The February report (Migration Advisory Committee, 2011a) considered the first of the Government’s questions and produced a list of occupations that met the Government’s increased skill specification. The March report (Migration Advisory Committee, 2011b) responded to the second question and recommended changes to the shortage occupation list to include only those occupations and job titles that met the increased skill level. This report did not

constitute a full review of the shortage occupation lists. It considered only the skill level of occupations and job titles currently on the Government’s list.

1.11 On 6 April 2011 the first annual limits for non-EEA migration were introduced, with accompanying changes to policy. Changes that have been made to the Tier 2 General route, in addition to the imposition of the limit of 20,700, are described below:

- The skill level for an eligible job under the shortage occupation, RLMT and intra-company transfer routes has been raised to NQF4+.
- The English language requirement for Tier 2 General has been raised from basic to intermediate English at level B1 of the Common European Framework of Reference for languages.
- The points requirements have been altered for all Tier 2 applicants applying for entry clearance or switching employers.

1.12 Categories not included within the limit are:

- intra-company transfers;
- Tier 2 migrants extending their stay with their original employer;
- Tier 2 migrants with valid leave extending their stay

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by switching to a new employer;

- those admitted in another category and applying to switch in-country to the Tier 2 General category;
- those already in the UK as a Tier 2 migrant or work permit holder and covered by transitional arrangements;
- those seeking admission to fill a vacancy with a salary of £150,000 or more; and
- Tier 2 sports people or ministers of religion.

1.13 In addition, under the intra-company transfer route migrants paid at least £24,000

but less than £40,000 and above the appropriate rate for their occupation (set out in the relevant UK Border Agency code of practice) will be granted leave of up to twelve months. Those paid at least £40,000 and above the appropriate rate will be granted leave of up to three years, with the possibility of extending for a further two years.

Prioritising applications for Certificates of Sponsorship

1.14 When the monthly allocation of restricted CoS is oversubscribed with eligible applications, these applications will be prioritised using the points system described in Table 1.1.

Table 1.1: Certificate of Sponsorship (CoS) allocation points table

Route	Points	Salary (mandatory)	Points
Shortage occupation list	75	£20,000 to £20,999	2
PhD level posting and Resident Labour Market Test (RLMT)	50	£21,000 to £21,999	3
RLMT	30	£22,000 to £22,999	4
		£23,000 to £23,999	5
		£24,000 to £24,999	6
		£25,000 to £25,999	7
		£26,000 to £26,999	8
		£27,000 to £27,999	9
		£28,000 to £31,999	10
		£32,000 to £45,999	15
		£46,000 to £74,999	20
		£75,000 to £99,999	25
		£100,000 to £149,999	30

Minimum of 30 points required for the route and 2 points for the salary requirement

Source: UK Border Agency (2011a)

1.15 Applicants can only score for one entry in each column. For example, if a job is in a shortage occupation and is a PhD level posting, the applicant will score 75 points from the first column, not 125. Further examples are as follows:

- a RLMT applicant paid £24,500 would score 36 points.
- an applicant in a shortage occupation paid £20,999 would score 77 points.

- an applicant in a PhD level job paid £22,100 would score 54 points.
- a RLMT applicant paid £75,000 would score 55 points.

1.16 The list of PhD level jobs includes all those in the following 4-digit SOC codes, regardless of whether the applicant holds a PhD or not:

- 1137 – Research and Development Managers;
- 2111 – Chemists;

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- 2112 – Biological Scientists and Biochemists;
- 2113 – Physicists, Geologists and Meteorologists;
- 2311 – Higher Education Teaching Professionals;
- 2321 – Scientific Researchers;
- 2322 – Social Science Researchers; and
- 2329 – Researchers not elsewhere classified.

1.4 Economic and migration context

1.17 This section provides the data context to our analysis of the recommended shortage occupation lists for the UK and Scotland. We focus in particular on trends since we published Migration Advisory Committee (2010a), which covered the issues discussed in this section in more detail.

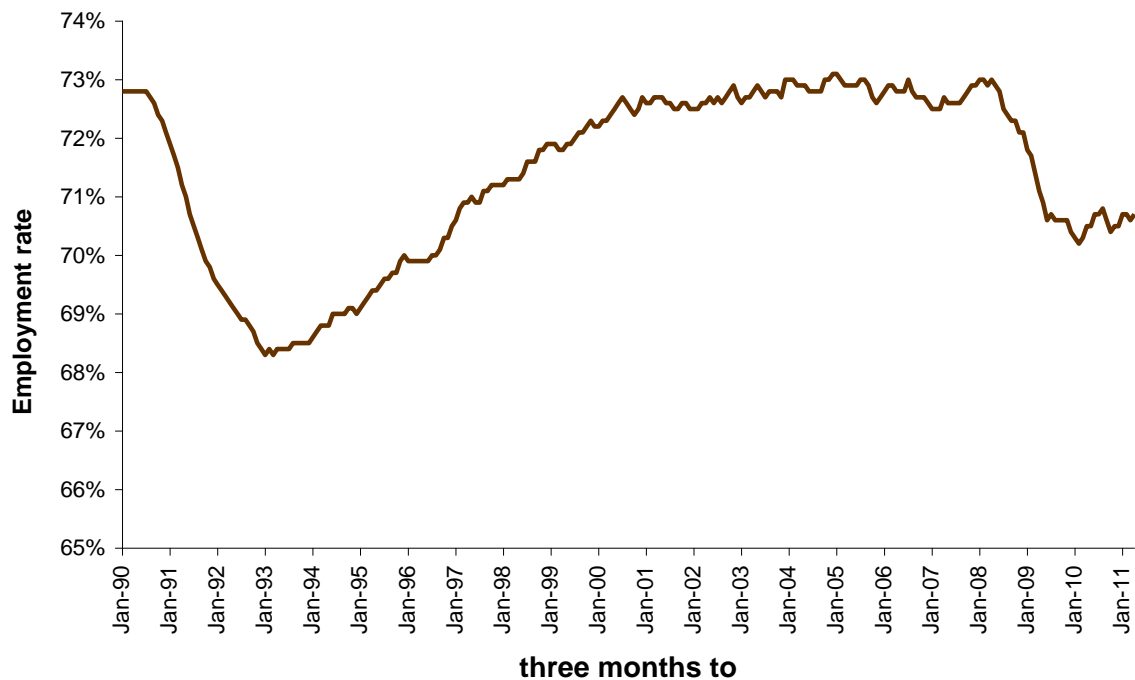
UK economy

1.18 From 1992 to 2007 the UK experienced a sustained period of growth in Gross Domestic Product (GDP),

averaging 2.8 per cent per annum. This contrasts with the six consecutive quarters of negative growth from the second quarter of 2008; over this period UK GDP contracted by 6.4 per cent (Office for National Statistics (ONS), 2011a).

1.19 The UK has experienced almost continuous, albeit modest, growth in GDP since Q3 2009, falling only in the three months to Q4 2010. GDP rose by 0.2 per cent in the 3 months to Q2 2011, and by 0.7 per cent in the 12 months to Q2 2011 (Office of National Statistics, 2011a).

1.20 Short and medium-term economic forecasts are subject to uncertainty and are continually revised. The independent Office of Budget Responsibility (OBR) (2011) forecasts that GDP will grow by 1.7 per cent in 2011, followed by 2.5 per cent in 2012 and 2.9 per cent in 2013. This is higher than the average forecasts of a range of financial and economic institutions compiled by HM Treasury (2011), which predict that GDP will grow by 1.3 per cent in 2011 and by 2.0 per cent in 2012.

Figure 1.1: UK working age employment rate, January 1990 to May 2011

Notes: Seasonally adjusted. The employment rates are those calculated in the three months to the date shown. The employment rate is calculated from the Labour Force Survey (LFS) and is given by the number individuals aged 16 to 64 who did at least one hour's paid work in the week prior to their LFS interview, or who have a job that they are temporarily away from, as a proportion of the working age population.

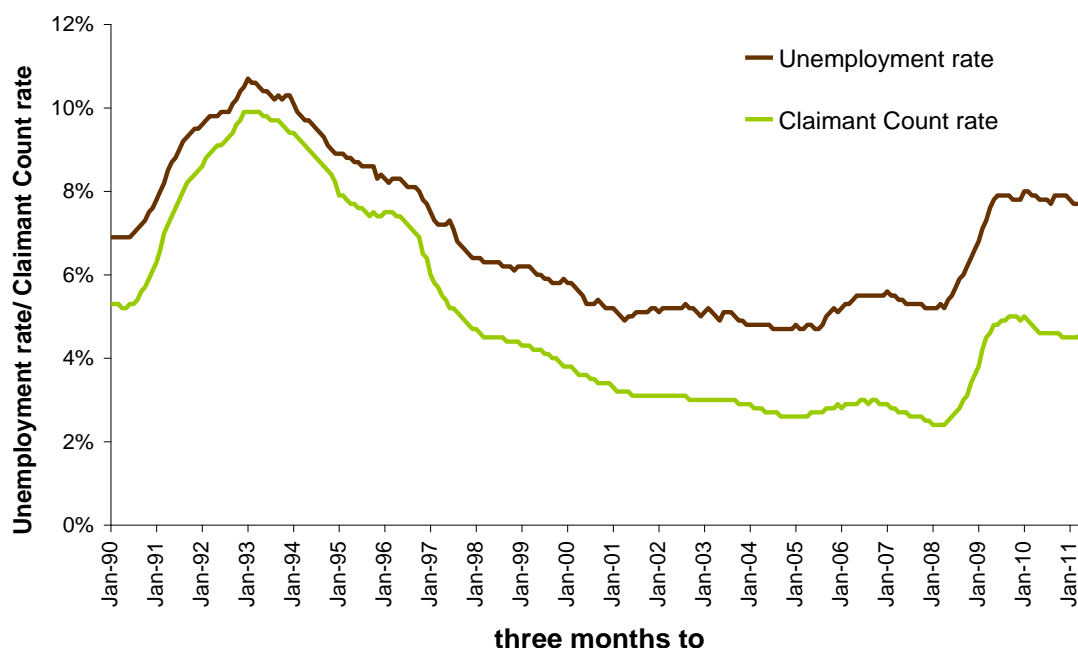
Source: Office for National Statistics (2011b)

1.21 The UK employment rate has decreased since the start of 2008 to a low of 70.2 per cent in the three months to March 2010 (see Figure 1.1). The employment rate has since stabilised, and was 70.7 per

cent in the three months to May 2011. Employment growth typically lags GDP growth by approximately a year (Migration Advisory Committee, 2010a).

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Figure 1.2: UK unemployment rate, January 1990 to May 2011, UK claimant count rate, January 1990 to June 2011



Notes: Seasonally adjusted. The claimant count consists of all people between the ages of 18 and state pension age claiming Jobseeker's Allowance at Jobcentre Plus local offices. They must declare that they are out of work, capable of, available for and actively seeking work during the week in which their claim is made. The claimant count rate is the number of claimants expressed as a percentage of the sum of claimants and workforce jobs (mid-year estimates are used). The unemployment rates are those calculated in the three months to the date shown. The definition of unemployment is internationally agreed and recommended by the International Labour Organisation. Individuals are defined as unemployed if they are aged 16 and above and are without a job, want a job, have actively sought work in the last 4 weeks and are available to start work in the next 2 weeks; or are out of work, have found a job and are waiting to start it in the next 2 weeks. The unemployment rate is calculated from the LFS and is given by the proportion of the economically active population (those who are in employment or unemployment) who are unemployed.

Source: Office for National Statistics (2011b)

UK Labour Market

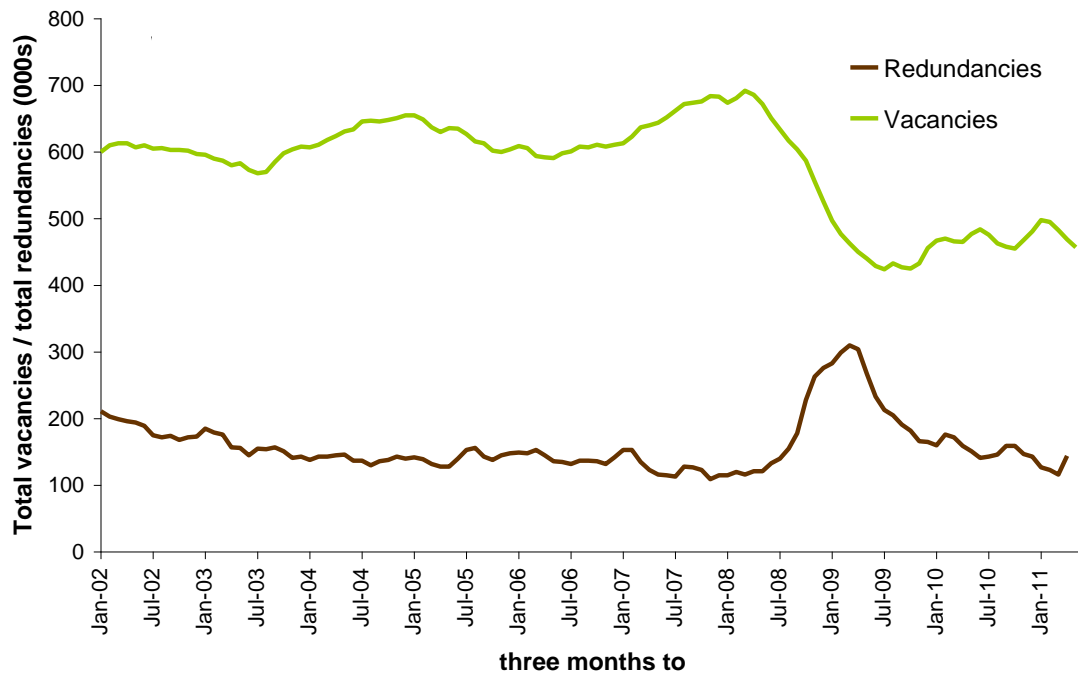
1.22 The UK unemployment rate also increased over the same period, peaking at 8.0 per cent in the three months to March 2010 (see Figure 1.2). The unemployment rate has since stabilised, and was at 7.7 per cent in the three months to May 2011.

1.23 Similarly, the claimant count rate, which captures Job Seekers Allowance claimants,

peaked at 5.0 per cent in the January 2010, at a level of 1.6 million claimants. The corresponding figure was 4.7 per cent in June 2011, or 1.5 million claimants.

1.24 Both the unemployment rate and claimant count rate are forecast to peak in 2011 before starting to decline (Office of Budget Responsibility, 2011; HM Treasury, 2011).

**Figure 1.3: Total vacancies, January 2002 to June 2011,
Total redundancies, January 2002 to May 2011**



Notes: Seasonally adjusted. Total redundancies are estimated from the LFS and describe the number of people who had been made redundant or had taken voluntary redundancy in the month of the survey or in the two calendar months prior to this. Total vacancies are estimated from the monthly Vacancy Survey, which asks employers how many vacancies they have in total for which they are actively seeking recruits from outside their organisation, for example: by advertising or interviewing. Vacancies do not include those in agriculture, forestry and fishing, and are for the 3 months to the date shown.

Source: Office for National Statistics (2011b)

- 1.25 As shown in Figure 1.3, total job vacancies fell from a peak of 692,000 in the three months to March 2008 to a low of 424,000 in the three months to July 2009. The number of job vacancies was at 458,000 in the three months to June 2011.
- 1.26 Total redundancies rose from 109,000 in the three months to December 2007 to 310,000 in the three months to April 2009, but have since declined markedly. In the three months to May 2011 redundancies had fallen to 144,000. This is one of the few economic
- variables to have returned to its pre-recession level.
- 1.27 Year-on-year nominal regular earnings growth (excluding bonuses) has decreased, from 3.5 per cent in the year to January 2009 to 1.6 per cent in the year to July 2010 (Figure 1.4). Growth in nominal total earnings (including bonuses) was negative at 0.2 per cent in the year ending March 2009, but jumped to 4.7 per cent in the year ending April 2010 before falling to a lower level thereafter. Growth in nominal total earnings has since fallen

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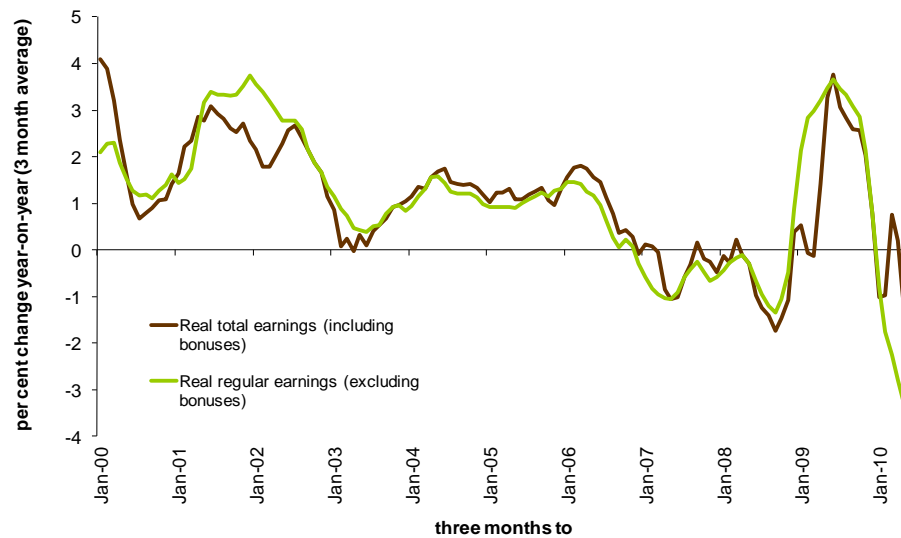
- to 2 per cent in the year ending July 2010.
- 1.28 During 2009 real earnings increased, partly due to the fall in value added tax (VAT) to 15 per cent on 1 December 2008 and the reduction in mortgage payments resulting from lower interest rates. Real earnings have since declined as a result of factors such as the rise in VAT to 17.5 per cent on 1 January 2010 and declining nominal earnings from 2009 onwards.
- 1.29 Figure 1.5 presents the claimant count and job vacancies by occupation at the most aggregated ('1-digit') SOC 2000 level. The SOC 2000 classification is discussed in Chapter 2. All of the occupations judged sufficiently skilled for Tier 2 of the PBS (121 '4-digit' SOC occupations) fall into the top three '1-digit' occupations. In June 2011, the claimant count by occupation sought was marginally lower for the top three 1-digit occupations than in June 2010.
- 1.30 Total vacancies are limited to those recorded at Jobcentre Plus and therefore represent only a proportion of total vacancies. Of the top three 1-digit occupations, vacancies for associate professional and technical occupations fell between June 2010 and June 2011, while vacancy levels for managers and senior officials and professional occupations remained close to their June 2010 levels.

Figure 1.4: Year-on-year growth in nominal earnings and real earnings, Great Britain, January 2000 to July 2010

Year-on-year growth in nominal total earnings (including bonuses) and nominal regular earnings (excluding bonuses), Great Britain, January 2000 to July 2010



Year-on-year growth in real total earnings (including bonuses) and real regular earnings (excluding bonuses), Great Britain, January 2000 to July 2010

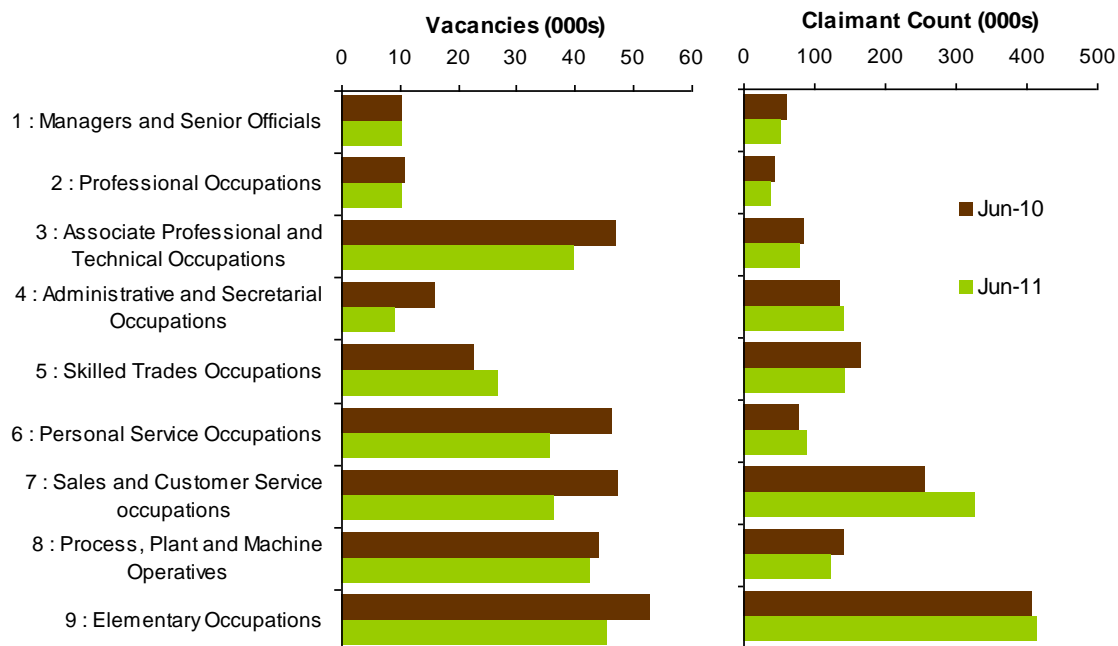


Notes: Nominal earnings have been seasonally adjusted. Average nominal earnings are calculated by dividing the total amount paid by the total number of employees paid in Great Britain. The growth rate is equal to average nominal earnings over a three month period against the same three month period a year ago. Real earnings have been estimated using data from the retail price index (RPI), which is not seasonally adjusted.

Source: Office for National Statistics (2011c) and Office for National Statistics (2011d)

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Figure 1.5: Jobcentre vacancies, claimant count, and vacancies per claimant by occupation sought, Great Britain, June 2010 and June 2011



Notes: Seasonally adjusted. Total vacancies are estimated from the monthly Vacancy Survey, which asks employers how many vacancies they have in total for which they are actively seeking recruits from outside their organisation, for example: by advertising or interviewing. Vacancies do not include those in agriculture, forestry and fishing, and are for the 3 months to the date shown. The claimant count by occupation sought consists of all people between the ages of 18 and state pension age claiming Jobseeker's Allowance at Jobcentre Plus local offices. They must declare that they are out of work, capable of, available for and actively seeking work during the week in which their claim is made. The claimant count rate is the number of claimants expressed as a percentage of the sum of claimants and workforce jobs (mid-year estimates are used).
Source: Nomis (2011)

Table 1.2: Vacancies per claimant by occupation sought (V/U ratio), Great Britain, June 2009, June 2010 and June 2011

Occupation	June 2009	June 2010	June 2011
Managers and senior officials	0.17	0.17	0.20
Professional occupations	0.20	0.25	0.26
Associate professional and technical occupations	0.42	0.55	0.49
Administrative and secretarial occupations	0.07	0.12	0.06
Skilled trades occupations	0.07	0.14	0.19
Personal service occupations	0.48	0.59	0.40
Sales and customer service occupations	0.16	0.19	0.11
Process, plant and machine operatives	0.09	0.31	0.34
Elementary occupations	0.08	0.13	0.11

Notes: Seasonally adjusted. Total vacancies are estimated from the monthly Vacancy Survey, which asks employers how many vacancies they have in total for which they are actively seeking recruits from outside their organisation, for example: by advertising or interviewing. Vacancies do not include those in agriculture, forestry and fishing, and are for the 3 months to the date shown. The claimant count by occupation sought consists of all people between the ages of 18 and state pension age claiming Jobseeker's Allowance at Jobcentre Plus local offices. They must declare that they are out of work, capable of, available for and actively seeking work during the week in which their claim is made. The claimant count rate is the number of claimants expressed as a percentage of the sum of claimants and workforce jobs (mid-year estimates are used).

Source: Nomis (2011)

1.31 The number of vacancies relative to unemployment (the V/U ratio) is an additional measure of the state of the labour market, presented in Table 1.2. A high, or rising, V/U ratio may suggest that it is difficult, or becoming more difficult, to fill vacancies. The V/U ratio increased for all of the top three 1-digit occupations between June 2009 and June 2011.

UK born individuals living in the UK increased from 5.1 million in Q1 1994 to 7.3 million in Q1 2011, with the latter figure accounting for 12 per cent of the UK population. Similarly, the stock of non-EEA born individuals living in the UK increased from 3.4 million to 4.7 million over the same period. Therefore, non-EEA born account for 8 per cent of the UK population.

Migration stocks and flows

1.32 The proportion of the UK population which was not born in the UK has increased over the last twenty years. The Labour Force Survey (LFS) reports that the stock of non-

1.33 Figure 1.6 presents migrant flows from 1991 to 2009, defining migrants as those intending to change their place of residence for one year or more. Net migration (inflows minus outflows) to the UK has risen over this period

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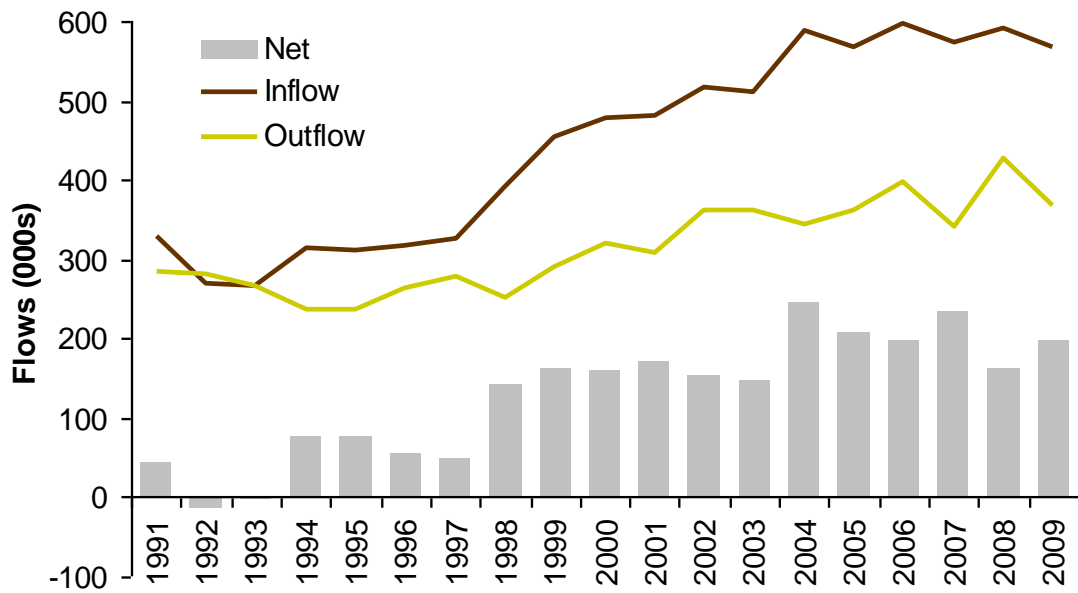
from 44,000 in 1991 to 198,000 in 2009. Net migration has since increased to 242,000 in the 12 months to September 2010 (provisional estimate).

- 1.34 Examining the breakdown of net migration by nationality groups, net inflows of non-EU nationals increased from 90,000 in 1991 to 234,000 in 2002, falling back to 184,000 in 2009. Net inflows of EU nationals were almost zero

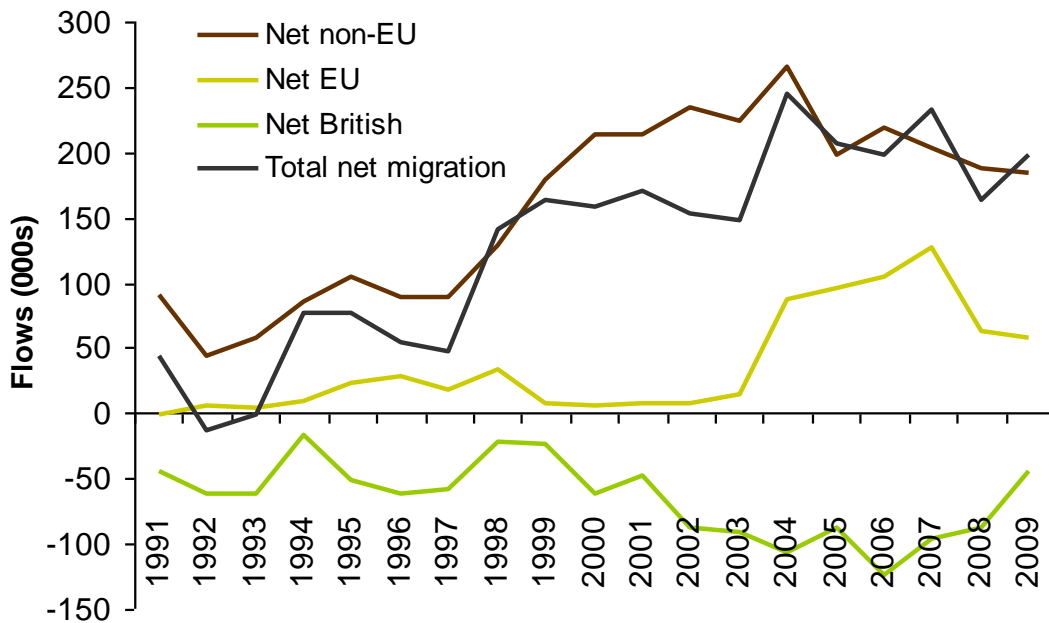
until the expansion of the EU in 2004, after which net inflows peaked at 127,000 in 2007. Net inflows of EU nationals have since fallen to 58,000 in 2009. Net outflows of British nationals increased from 44,000 in 1991 to 124,000 in 2006, partially offsetting the rise in net inflow of non-British migrants. Nevertheless, net outflows of British nationals fell back to 44,000 in 2009, contributing to the rise in total net migration.

Figure 1.6: Flows of long-term migrants to and from the UK and net long-term migration by citizenship, 1991 to 2009

Inflows, outflows and balance of long-term migrants to and from the UK, 1991 – 2009



Net long-term migration by citizenship, 1991 – 2009

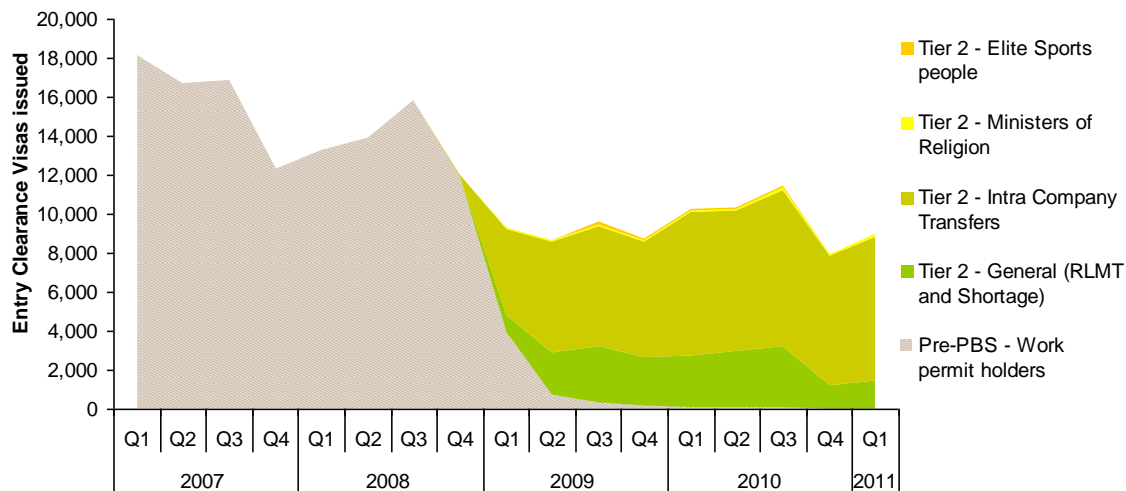


Notes: Long-term migrants are defined in the International Passenger Survey as those individuals who intend to change their place of residence for a year or more. This definition includes all nationalities, including British nationals. EU includes EU15, A8, Bulgaria, Romania, Malta and Cyprus.

Source: Office for National Statistics (2011e)

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Figure 1.7: Entry clearance visas issued to Tier 2 and work permit main applicants by route, Q1 2007 to Q1 2011



Notes: Tier 2 was launched on 27 November 2008. The work permit system was the predecessor to Tier 2. Tier 2 General includes the Resident Labour Market Test and shortage occupation routes. Operational procedures before and after the introduction of the Points Based System (PBS) were different, which may potentially distort any 'before-and-after' comparisons. In particular, previously migrants would have had to apply first under the HSMP or for a work permit and then for a visa, whereas in the PBS these processes take place at the same time.

Source: UK Border Agency (2011b)

Tier 2

1.35 Figure 1.7 presents the total number of entry clearance visas issued to Tier 2 and work permit main applicants by route. The shortage occupation and RLMT routes are together referred to as Tier 2 General. The Government introduced an interim limit on Tier 2 General in July 2010, prior to the introduction of annual limits, and the number of entry clearance visas issued to Tier

2 General main applicants fell afterwards: from 2,900 in Q2 2010 to 1,400 in Q1 2011 (UK Border Agency, 2011b).

1.36 The permanent limit on Tier 2 General was introduced on 6 April 2010. Current experience is that applications for restricted CoS (those affected by the limit) by firms have been lower than the monthly available limit in each month between April 2011 and July 2011.

Table 1.3: Certificates of Sponsorship (CoS) used and entry clearance visas issued under selected Tier 2 routes to out-of-country main applicants, January 2010 to December 2010

Route	CoS used (1)	Entry clearance visas issued (3)
Tier 2 General	11,600	9,900
...of which Resident Labour Market Test (2)	7,800	-
...of which shortage occupation	3,800	-
Intra-company transfer	30,400	29,200
Total	42,000	39,100

Note: (1) These figures describe used CoS, where an application that corresponds to the certificate has been submitted, but not necessarily approved. They are management information and may be subject to change. (2) Data for CoS used by RLMT migrants may include some ministers of religion and sportspersons where the employer has stated a labour market test has been conducted. (3) It is not possible to distinguish between RLMT and shortage occupation routes in data for entry clearance visas issued.

Source: UK Border Agency management information data, January 2010 – December 2010; UK Border Agency (2011b)

- 1.37 Unfortunately, the Control of Immigration statistics does not distinguish between the RLMT and shortage occupation routes. To understand the relative size of the shortage occupation route under Tier 2, we can look at the numbers of CoS that have been used by out-of-country applicants. These do not equate to visas issued, as the certificates are allocated by the employer prior to a potential immigrant using their CoS. We also exclude ministers of religion and sportspeople, although a small number may be included within RLMT figures if the employer has stated that a RLMT has been conducted. These data suggest that the shortage occupation route accounted for around 9 per cent of out-of-country CoS used under Tier 2 in 2010, or around 33 per cent of out-of-
- country CoS used under the Tier 2 General route.
- 1.38 Table 1.3 also shows, for comparison, the numbers of entry clearance visas issued for Tier 2 routes. The number of visas issued is lower than the number of CoS used, due to refusals of applications and drop-out rates. However, the difference between the two is not large, and implies that data from used CoS is broadly representative of approved applications.
- 1.39 Table 1.4 sets out the top ten occupations of immigrants applying for Tier 2 via the shortage occupation route in the year to April 2011 by 4-digit SOC occupation, which is the most detailed breakdown available. The data used are management information for the numbers of CoS issued by

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- employers for shortage occupations where a migrant application has also been received.
- 1.40 From 6 April 2011, all occupations and job titles below NQF4+ have been removed from the shortage occupation list. The following occupations from the top ten shortage occupations in Table 1.4 were removed in their entirety from the list on this date: care assistants and home carers; agricultural and fishing traders n.e.c; and butchers and meat cutters. Chefs were retained on the list, but subject to new requirements designed to identify only those posts skilled to NQF4+. Because of these changes, the distribution of Tier 2 CoS in terms of occupations and nationalities from past data, described below, may not reflect their future equivalents.
- 1.41 Public sector (or primarily publicly funded) occupations
- tend to be heavily represented amongst the most numerous users of the shortage occupation route, although many also use other routes within Tier 2. The most common occupation for shortage occupation immigrants between May 2010 and April 2011 was chefs and cooks, which accounted for 35 per cent of all CoS used (both in-country and out-of-country applications).
- 1.42 Table 1.5 sets out the top 10 nationalities of immigrants applying for the shortage occupation route in the year to April 2011. As with Tier 2 overall, Indian nationals are the most numerous users of the shortage occupation route. Filipino nationals are also very common users of the shortage occupation route, particularly in comparison with the number of Filipino nationals recruited via other Tier 2 routes.

Table 1.4: Top ten occupations using the shortage occupation route, in country and out-of-country applications, May 2010 to April 2011

Occupation on shortage list (4 digit SOC 2000)	Status on the shortage occupation list from 6 April 2011 onwards	Shortage occupation CoS used	Total Tier 2 CoS used	Shortage occupation CoS used as a percentage of total Tier 2 CoS used
5434 Chefs, cooks	Retained – skill threshold raised	2,555	2,725	94
6115 Care assistants and home carers	Entirely removed	1,935	2,200	88
2211 Medical practitioners e.g. doctors and surgeons	Some job titles retained	751	2,199	34
2314 Teacher, secondary education	Some job titles retained	255	559	46
3211 Nurses	Some job titles retained	255	1,776	14
2442 Social workers	Some job titles retained	229	261	88
5119 Agricultural and fishing trades n.e.c.	Entirely removed	140	212	66
3434 Photographers and audio-visual equipment operators	Some job titles retained	139	158	88
3214 Medical radiographers	Some job titles retained	132	144	92
5431 Butchers, meat cutters	Entirely removed	111	112	99

Note: These figures describe used CoS, where an application that corresponds to the certificate has been submitted, but not necessarily approved. They are management information and may be subject to change. The shortage occupation list only includes specific job titles from the occupations listed above.

Source: UK Border Agency management information data, May 2010 – April 2011

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Table 1.5: Top ten nationalities using the shortage occupation route, in country and out-of-country applications, May 2010 to April 2011

Country of nationality	Shortage occupation CoS used	Total Tier 2 CoS used	Shortage occupation CoS used as a percentage of total Tier 2 CoS used
India	2,405	29,942	8
Philippines	988	1,962	50
China	708	2,420	29
Pakistan	444	1,537	29
Nepal	400	506	79
United States	244	6,552	4
Bangladesh	220	402	55
Thailand	206	388	53
Australia	175	1,657	11
Sri Lanka	146	494	30

Note: These figures describe used CoS, where an application that corresponds to the certificate has been submitted, but not necessarily approved. They are management information and may be subject to change.

Source: UK Border Agency management information data, May 2010 – April 2011

1.5 Structure of the report

1.43 Chapter 2 of this report provides details of the approach we adopted to compiling the shortage occupation lists for the UK and Scotland. Chapters 3, 4 and 5 describe in detail the evidence we received and our analysis of it in relation to healthcare, engineering and other occupations respectively. Chapter 6 discusses the evidence we received in relation to Scotland provides our revised recommended shortage occupation list for Scotland.

1.44 Our recommended shortage occupation list for the UK is presented in Chapter 7. Chapter 8 presents our concluding remarks and discusses next steps for this work and the MAC.

1.6 Thank you

1.45 We are grateful to all who responded to our call for evidence and to those who hosted and attended meetings, events and visits by the MAC.

Chapter 2 Methodology

2.1 Introduction

- 2.1 For an occupation or job title to be placed on our recommended shortage occupation lists for the UK and Scotland it must pass three tests:
- first, we consider whether individual occupations or job titles are sufficiently **skilled** to be included on the shortage occupation lists;
 - second, we consider whether there is a **shortage** of labour within each skilled occupation or job title; and
 - finally, we consider whether it is **sensible** for immigrant labour from outside the European Economic Area (EEA) to be used to fill these shortages.
- 2.2 In this chapter we discuss how we compiled the recommended shortage occupation lists for the UK and Scotland. First, we introduce our conceptual approach, which combines top-down analysis of national-level data with bottom-up evidence relating to individual

occupations and job titles. Next, we discuss our three tests of skill, shortage and sensible in turn, in each case discussing our top-down and bottom-up approaches. We then outline the way in which we present our top-down results for individual occupations in Chapters 3, 4 and 5 and provide a summary of our top-down results for all relevant occupations.

2.2 Our conceptual approach

- 2.3 In order to assess occupations and job titles against the three tests outlined above, we use a hybrid method that combines the consistency and comprehensive labour market coverage of ‘top-down’ national data, with more granulated ‘bottom-up’ evidence submitted to us by our corporate partners. Throughout this report where we refer to either ‘corporate partners’ or just ‘partners’ we mean all parties with an interest in our work or its outcomes, so private and public sector employers, trade unions, representative bodies and private individuals are included within this term.

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2.4 We refer to the process of considering the top-down and bottom-up evidence in combination as ‘dovetailing’, and it is critical in determining the final recommended shortage occupation lists. We discuss this process at the end of this section.

2.3 Occupations and job titles

2.5 We base our analysis on the official Standard Occupational Classification (SOC) for the UK, SOC 2000, which uses four levels of aggregation. An updated version, SOC 2010, has been developed and is now in the process of being incorporated into the datasets that we use for our analysis. However, most of the data that we used in the analysis presented in this report are still based on SOC 2000. There is one exception to this which is discussed under ‘shortage’ in section 2.4. The ‘unit group’ (4-digit) level, which is the SOC level most relevant to our work, breaks down the labour market into 353 occupations. It is the most detailed and disaggregated occupational breakdown available for our top-down analysis. In this report, when we refer to an occupation we specifically mean a 4-digit SOC 2000 occupation unless otherwise stated.

2.6 Labour shortages often occur at the more detailed sub-occupational or job title level. In referring to job titles in this report we mean those job titles that are more specific

than the SOC coding system provides for. National-level data are not available for individual job titles, meaning that bottom-up evidence is of particular importance in these cases.

2.7 Both individual job titles and whole occupations may be recommended for inclusion on the shortage occupation lists.

Top-down

2.8 For our top-down approach we have analysed the most timely and relevant national-level labour market data available to us. The data sources used for our top-down analysis are the Labour Force Survey (LFS), the Annual Survey of Hours and Earnings (ASHE), the National Employers Skills Survey (NESS) and Jobcentre Plus (JCP) claimant count unemployment and vacancy data. In Migration Advisory Committee (2008) we set out in more detail the potential data sources available to us and these have not changed since that time.

2.9 We use these data sources to assess occupations and job titles against our tests of skill, shortage and sensible. For the skill and shortage tests, we set threshold values for our top-down indicators against which the occupational data are assessed. For instance, if an occupation is above the relevant threshold for a sufficient number of skill indicators it passes as skilled. A similar approach, with different indicators and

thresholds, is used to assess shortage. The way in which we have calculated these threshold values is discussed under the relevant headings in sections 2.3 and 2.4. We do not use threshold values when interpreting our top-down indicators of sensible.

Bottom-up

2.10 Bottom-up evidence comes from closer examination of individual occupations and job titles than national data allow. Crucially, this is informed by engagement with, and evidence provided by, a wide variety of corporate partners. The bottom-up evidence used in this report was collected by means of face-to-face meetings, written submissions of evidence and visits to workplaces.

2.11 Our approach to gathering bottom-up evidence has not fundamentally changed since we described it in detail in Chapter 5 of Migration Advisory Committee (2008). For this review, a 12 week call for evidence was launched on our website in March 2011 accompanied by letters to over 1,300 corporate partners including Sector Skills Councils, officials in the Scottish Government, trade unions, trade bodies, employers and employer representatives. In addition, a letter was sent to all Permanent Secretaries of UK Government departments informing them of the review and providing them with the opportunity to provide input.

2.12 We received 94 responses to our call for evidence. Much of it was highly useful. We acknowledge the widespread recognition of our skilled, shortage and sensible methodology and the need to tailor evidence to that. A large quantity of useful data was also provided, although there was still room for improvement in some cases, particularly in terms of ensuring assertions of labour shortage were backed up with numerical evidence wherever possible. Additionally we think that some employers and organisations could do more to demonstrate that they are genuinely committed to investing financial and organisational effort into reducing long-term dependence on migrant labour wherever possible. Where clarification was required, and where time allowed, we went back to those who submitted evidence for further advice.

2.13 We also took as many opportunities as possible to meet partners face to face and see people doing jobs at the ground level. We liaised with UK Border Agency sponsor visiting officers and bodies such as the Regional Strategic Migration Partnerships to engage with partners at a local and regional level. Two large forum events were held in London which were attended by over 70 partners. We also held individual workshops with the social work, catering and education sectors. Skills for

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Health facilitated a similar workshop for the health sector. The MAC Stakeholder Panel, made up of representatives from the Confederation of British Industry, Trades Union Congress, British Chamber of Commerce and the National Health Service Employers, also met to discuss the review.

Dovetailing

- 2.14 Clearly it is most straightforward when the top-down and bottom-up data on any particular occupation or job title point to the same conclusion. However, there are reasons why this will not always be the case.
- 2.15 On some occasions, the top-down and bottom-up data will point to conflicting conclusions because evidence relates to different levels of disaggregation. There may be a shortage of workers with specific skills within an occupation (for example, a shortage of secondary school maths teachers) but not in the broader occupational group as a whole (for instance, no shortage of secondary school teachers in general). If the bottom-up evidence relates to a more specific job title than the top-down evidence then, even when the two sets of evidence point in different directions, they are not necessarily inconsistent with each other.
- 2.16 In addition, the usefulness of different indicators will sometimes vary between the

top-down and bottom-up approaches. For instance, it may be difficult to obtain robust information on earnings growth (one of our indicators of shortage) within an occupation from sectoral or occupational bodies, whereas national-level data can provide this. In contrast, it is difficult to measure the level of on-the-job training (one of our indicators of skill) in some occupations using national-level data, whereas partner evidence can provide us with this information. These factors limit the extent to which we can corroborate top-down and bottom-up data against each other.

- 2.17 Broadly speaking, we look for indicators of skill, shortage and sensible in both the top-down and bottom-up evidence before making recommendations about the shortage occupation list. Our approach distinguishes between cases where top-down data are highly relevant and where they are less so. Crudely, it can be categorised as follows:
- in cases where the top-down data are highly relevant, generally because the asserted shortage relates to the whole of the broad 4-digit occupation or a large part of it, we include occupations or relevant job titles on our recommended shortage occupation lists if, overall, there is a combination of

good top-down and good bottom-up evidence;

- if the top-down data are not highly relevant, generally because the assertion of shortage relates to a narrow category within the relevant 4-digit occupation, we include the relevant job title on the lists if there is sufficient bottom-up evidence.

2.18 We do not include occupations on the recommended shortage occupation lists where bottom-up evidence:

- does not satisfy our tests, in that the evidence indicates either that the occupation is not skilled to the appropriate level, or is not in shortage, or that it is not sensible to fill any shortage through immigration, or any combination of these; or
- is non-existent, partial or not relevant, making it impossible to form a conclusion.

2.19 It follows from the above that we do not include occupations on our recommended UK shortage occupation list on the basis of top-down evidence alone. We also have to use a degree of judgement in weighing 'strong' top-down evidence against 'weak' bottom-up evidence, or vice versa. In Chapters 3, 4 and 5 we set out explicitly where we have made such judgments.

The Scotland list

2.20 By definition, a UK list covers Scotland, meaning that the UK list will apply to Scotland as well as to the rest of the UK. Our work plan also requires that we produce a separate shortage occupation list for Scotland only, containing any additional occupations and/or job titles in Scotland that satisfy our three tests. In this way Scotland gets a 'second bite of the cherry'. This list is discussed in Chapter 6.

2.21 Because of Scotland's smaller population, the national-level data for Scotland are not based on a sufficient sample size for us to be able to use the same top-down methodology as for the rest of the UK. Therefore, the Scotland list has been compiled primarily using bottom-up evidence.

2.22 As part of our consideration of the Scotland list, we asked employers what efforts were being made to recruit people from elsewhere in the UK and the reasons why those efforts were not proving successful.

2.4 Skilled

2.23 There is no unique, objectively defined measure of skill. Our methodology examines factors that indicate whether an occupation is skilled to National Qualifications Framework (NQF) level 4 or above (NQF4+). This follows from the requirement that individual jobs under Tier 2 of the Point Based System

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(PBS) need to be skilled to NQF4+. Previously the required level was NQF level 3 or above (NQF3+). Our methodology was developed in Migration Advisory Committee (2011a). It is summarised below and discussed in more detail in Annex B to this report.

2.24 There are five main indicators that we believe are relevant to assessing skill:

- the skill level defined in the SOC hierarchy;
- formal qualifications;
- earnings;
- on the job training or experience required to carry out the job; and
- the level of innate ability required.

Top-down

2.25 For our top-down analysis, the first three of these indicators can be measured using national-level data. Each of these top-down indicators is assessed against a threshold value, at or above which we consider the indicator to demonstrate skill to NQF4+. We consider an occupation to be skilled according to our top-down analysis if it passes the relevant threshold for at least two of the three top-down indicators.

2.26 Details of the three top-down indicators and their associated threshold values are given in Table 2.1. The methodology we used to determine the thresholds for our three top-down indicators of skill is described in Annex B.

Table 2.1: Our three top-down indicators to identify occupations skilled to NQF level 4 or above

Indicator	Definition	Data source	Threshold value
Earnings	Median hourly earnings of full-time employees	Annual Survey of Hours and Earnings (2010)	£13.40
Qualifications	Proportion of working-age, full-time employees qualified to NQF4+	Labour Force Survey (2007 Q4 – 2010 Q3)	41 per cent
SOC 2000 skill level	4-tier skill level hierarchy	Office for National Statistics	SOC level 4

Source: Migration Advisory Committee (2011a)

Bottom-up

- 2.27 In considering the bottom-up evidence, we take into account information on earnings and qualifications relating to specific job titles within an occupation. We also take into account two further indicators of skill: on the job training or experience; and innate ability, which cannot be measured using national-level data.
- 2.28 In Migration Advisory Committee (2011b) we also assessed bottom-up evidence of skill to ensure that any skilled occupations not identified in our top-down approach could still be considered for inclusion on the final list of skilled occupations. However, our assessment of the bottom-up evidence did not result in any occupations being added to the list generated by the top-down approach. This is because the bottom-up evidence received either corroborated our top-down analysis, or was not considered sufficiently strong to override it.
- 2.29 Our general presumption is that if a specific job title falls within one of the occupations identified as skilled to NQF4+ the job title itself would be skilled to NQF4+. The job title cardiac physiologist within SOC 2112 biological scientists and biochemists, which is on the current UK shortage occupation list, is such an example. Nevertheless, in relation to such job titles we did request information on the typical skills, earnings and the qualifications of the workforce on the basis that we could challenge the skill level of the job title in question if necessary.
- 2.30 We acknowledge that certain job titles not within an occupation skilled to NQF4+ may nonetheless be skilled to NQF4+, although the lack of corroborating top-down evidence means that strong bottom-up evidence is required to demonstrate this.
- 2.31 In Migration Advisory Committee (2011b) we assessed the skill level of all job titles on the shortage occupation list at the time of that report that were not within NQF4+ occupations. We concluded that some such job titles were skilled to NQF4+. Commissioning engineer within SOC 3113 engineering technicians was such an example. We did not request new information on skill for these job titles for this review as we do not believe that the level of skill will have changed significantly since that time.
- 2.32 Other job titles in Migration Advisory Committee (2011b) were not judged to be skilled to NQF4+, such as airframe fitter under SOC 5223 metal working production and maintenance fitters. Because we had recently assessed them as not skilled to NQF4+ we were, in this review, only prepared to consider such job titles for inclusion on the

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shortage list in exceptional circumstances.

2.33 Our analysis of skill for this review, therefore, consisted mainly of considering job titles both not within an occupation skilled NQF4+ and not reviewed in Migration Advisory Committee (2011b). This analysis is discussed in Chapters 3, 4 and 5. In our call for evidence we requested bottom-up information on as many of the following indicators of skill as possible:

- Typical **earnings**, or ranges of earnings, in the job title.
- Information on the **proportion of individuals qualified** to various levels (particularly to NQF4+).
- **Minimum qualifications required** (either informally or on a regulatory basis) to be a skilled practitioner in a particular job title.
- Evidence on the **required or compulsory level or duration of on-the-job training or experience** to become a skilled practitioner.
- Evidence that **innate ability**, of a level or rarity which exceeds such requirements in a typical NQF4+ job title, is required.

2.34 In Chapters 3, 4 and 5 we have sometimes needed to convert bottom-up information on annual earnings into hourly equivalents, in order to make

direct comparisons to our £13.40 benchmark. The rule of thumb we have used to do this is to divide annual earnings by 2,109 in order to estimate an hourly equivalent. Therefore, for a full-time worker, we consider an annual earnings figure of £28,260 to be equivalent to £13.40 per hour.

2.35 The 2,109 figure is the ratio between mean annual pay of full-time employees (£32,178) and equivalent mean hourly pay (£15.26) in the ASHE 2010. While we recognise that this ratio may vary across occupations, depending on the degree to which bonus payments contribute to annual remuneration, and variation in the average number of hours worked per year, we believe that this rule of thumb approach is appropriate to compare hourly earnings data with our top-down threshold value.

2.5 Shortage

2.36 As with skill, there is no single universal or infallible definition or measure of 'labour shortage'. Various approaches are used across different countries. In our analysis of shortage, we use a range of top-down and bottom-up indicators.

2.37 To fully assess labour shortage it is necessary to look at various price indicators (wages), as well as quantities (vacancies, employment and unemployment). In Migration Advisory Committee (2008) we identified a total of 12

indicators of labour shortage for our top-down analysis. The 12 top-down indicators fell into four broad categories:

- employer-based indicators (e.g. reports of shortage);
- price-based indicators (e.g. earnings growth);
- volume-based indicators (e.g. employment or unemployment); and
- other indicators of imbalance based on administrative data (e.g. vacancy duration or vacancy/unemployment ratios).

Top-down

2.38 In Migration Advisory Committee (2010b) we considered and revised our 12 top-down indicators of shortage based on external research that we commissioned and our own in-house analysis. Since that time we have also decided to make further changes to one of the price-based indicators, which provides an estimate of the return to an occupation (coded P3). All of these changes are discussed in detail in Annex B.

2.39 As with our top-down indicators of skill, we assign each top-down indicator of shortage a threshold value. For each indicator, apart from the percentage change in unemployment (coded V1), the value of the indicator must equal or exceed the threshold for shortage to be inferred. As

we expect lower levels of unemployment to indicate shortage, this condition is reversed for indicator V1.

2.40 As discussed in Migration Advisory Committee (2010b), we have decided to adopt what we refer to as a 'benchmarking' approach for assessing our top-down indicators of shortage. This approach involves fixing the threshold for an indicator to its value at a point of historical stability in the labour market, which we have defined as having occurred at the end of 2008. The specific data that we have used to calculate the threshold values are outlined in Table 2.2.

2.41 Under the benchmarking approach, if the distribution of indicator values for a specific indicator shifts downwards in response to changes in economic conditions then fewer occupations are identified as in shortage, and vice versa. Benchmarking provides a method of setting an 'absolute' threshold for each indicator over time and, as a result, provides them with an 'automatic stabiliser' property.

2.42 To calculate the threshold values that we have used in this report, we first estimate the indicator values using the data listed in Table 2.2. We then use the distribution of indicator values for the 121 occupations that we identified as being skilled to NQF4+ to calculate the threshold values for the 12 top-down indicators

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of shortage. As discussed in Migration Advisory Committee (2008), for each indicator our first option is to calculate the threshold value using the 'median plus 50 per cent' rule. Specifically, under this rule the threshold value is the median plus 50 per cent of the absolute value of the median. In those cases where we believe the shape of the distribution makes it unsuitable to use the median plus 50 per cent rule, we instead use the top quartile value as the threshold. For the indicator that measures the percentage change in unemployment (coded V1), these conditions are reversed, such that in the first instance the threshold value is given by the median minus 50 per cent of the median, and in the second it is given by the bottom quartile.

2.43 There is one exception to the benchmarking approach described above. Due to the nature of the indicator that estimates the return to occupation (coded P3), it is not appropriate to benchmark the threshold value for this indicator. Specifically, were the threshold value of this indicator to be benchmarked as described above, the number of occupations being assessed as experiencing labour shortage according to this indicator would increase over time, even without an increase in actual labour shortage, because both nominal and real pay tend to

increase over time. Therefore, we have decided to calculate the threshold value for this indicator based on the distribution of indicator values used in this report, rather than to benchmark it to the end of 2008.

2.44 The data that we have used to estimate our 12 top-down indicators of shortage are described in Table 2.2. The occupation data for the most recent quarter of LFS data used in the analysis, 2011 Q1, was provided to us coded to the more recent SOC 2010, while all other LFS data used was coded to SOC 2000. Therefore, we converted the 2011 Q1 LFS data to SOC 2000 using a 'probabilistic mapping technique' provided to us by the ONS. This allowed us to construct a consistent set of time series data using the most recently available data.

2.45 The revised list of our 12 indicators of shortage, the data source we use to estimate each, and the specific data we used to calculate the threshold and indicator values are listed in Table 2.2. The data in the table allow us to calculate, for each occupation skilled to NQF4+, the number of indicators that are demonstrating shortage. For example, an occupation would have to experience real pay growth over 1 year (indicator P1) of more than 0.76 per cent for shortage to be inferred from that indicator.

Table 2.2: The 12 top-down indicators of shortage

Code	Indicator	Source	Threshold data	Threshold value	Indicator values data
P1	Percentage change of median real pay (over 1 year)	ASHE	2006-2007	0.76	2009-2010
P2	Percentage change of median real pay (over 3 years)	ASHE	2004-2007	5.12	2007-2010
P3	Return to occupation	LFS	2010Q2-2011Q1	0.06	2010Q2-2011Q1
I1	Change in median vacancy duration (over 1 year)	JCP	Apr06-Mar07 to Apr07-Mar08	-3.25	May09-Apr10 to May10-Apr11
I2	Vacancies / claimant count	JCP	Jan07 to Dec07	0.50	May10 to Apr11
V1	Percentage change of claimant count (over 1 year)	JCP	Mar07 to Mar08	-23.25	Apr10 to Apr11
V2	Percentage change of employment level (over 1 year)	LFS	2006Q1-2006Q4 to 2007Q1-2007Q4	8.48	2009Q2-2010Q1 to 2010Q2-2011Q1
V3	Percentage change of median paid hours worked (over 3 years)	ASHE	2004-2007	0.10	2007-2010
V4	Change in new hires (over 1 year)	LFS	2006Q1-2006Q4 to 2007Q1-2007Q4	0.02	2009Q2-2010Q1 to 2010Q2-2011Q1
E1	Skill-shortage vacancies / total vacancies	NESS	2007	35.84	2009
E2	Skill-shortage vacancies / hard-to-fill vacancies	NESS	2007	98.52	2009
E3	Skill-shortage vacancies / employment	NESS/ LFS	2007	0.24	2009

Notes: The threshold data refer to the data used to calculate the threshold values for each indicator. The indicator values data refer to the data used to calculate the values of each indicator used to assess current labour shortage in this report.

2.46 In some cases it is not possible to estimate an indicator for a certain occupation or occupations, perhaps because of missing data. Therefore, although the text in Chapters 3,4 and 5 discusses the number of indicators passed, we actually assess our top-down shortage results with regard to the proportion, rather than the absolute number, of available indicators passed.

2.47 In contrast to our top-down analysis of skill, we do not require a minimum number of indicators to be passed (in the case of our skill test, two out of three) for an occupation to

be considered in shortage. In this, as in previous reports, we consider 50 per cent of available shortage indicators being passed to be a good potential indication that an occupation is in shortage. At the job title level we balance this top-down evidence against the degree to which we consider the top-down data to be relevant to the job title under consideration, and the strength of the available bottom-up evidence.

Employer-based top-down indicators

2.48 As shown in Table 2.2, the data used to estimate our

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three employer-based indicators (E1, E2 and E3) all come from additional analysis commissioned by the MAC of the 2009 version of the NESS. As the fieldwork for this survey was conducted in March-July 2009, these data are now more than two years old.

2.49 We have decided to retain these three indicators in our top-down analysis of shortage as we believe that they provide information which cannot be supplied by the remaining nine indicators. However, to reflect the age of the data used to estimate these indicators, we approached our analysis in Chapters 3, 4 and 5 prepared to give less weight to these three top-down indicators in cases where they would potentially make a material difference to our recommendations, particularly where we believed that the available bottom-up evidence was able to substitute for them.

Bottom-up

2.50 Our bottom-up approach to assessing shortage has not changed from that described in Migration Advisory Committee (2008). Bottom-up evidence on shortage was required in relation to all occupations considered in this review. In our call for evidence we requested information on as many of the following as possible:

- numbers, rates and typical durations of **vacancies**

- Typical **earnings growth** over recent months or years.
- The extent to which **newly qualified workers** are being recruited and how this has changed over time.
- Normal number of **hours worked** and how this has changed over time.
- Growth in **expenditure on training and recruitment** by employers.
- Information on past or projected **future trends in the demand for, and supply of, workers** within an occupation: this may include information on the age profile of the workforce, expected retirement patterns, and the number of newly qualified workers expected to come on stream.

2.51 However, as is the case when assessing bottom-up evidence of skill, we did not restrict ourselves to a pre-determined list of indicators. Instead, we considered any evidence from our partners potentially relevant to consideration of whether an occupation or job title is experiencing labour shortage.

2.6 Sensible

2.52 In our first review of the shortage occupation lists (Migration Advisory Committee, 2008) we said: *“It is worth emphasising from the outset that ‘sensible’ can be*

interpreted in many different ways based on a wide range of considerations. Clearly, any definition of what is sensible critically depends on the underlying objectives. The objectives of immigration policy are determined by the Government and not by this Committee. Therefore, to reconcile competing interests we need to look at government policies to identify how the Government balances and/or prioritises different interests". We retain that view.

Previous approach

2.53 Our approach since 2008 has been to consider the issue of sensible on a case-by-case basis with reference to four broad and inter-related lines of inquiry:

- What are **the alternatives to employing immigrants in response to perceived staff shortages**, are these alternatives feasible, and have employers explored them fully? If not, what are the actual or perceived obstacles?
- How would bringing in immigrants relate to **skills acquisition** of the UK workforce? Are there enough UK resident workers in training/education to fill shortages? Will bringing in immigrants reduce employers' incentives to invest in training and up-skilling of UK workers?

- How will the employment of immigrants affect **investment, innovation and productivity** growth? Is there a particular case for employing immigrants to support and maintain the UK's international competitiveness in certain sectors?
- How will our decision affect **the wider UK labour market and economy**? How, if at all, will access to immigrant labour affect employment opportunities and conditions of the UK workforce?

2.54 As set out in Migration Advisory Committee (2008) each of the above lines of inquiry was developed through consideration of multiple Public Sector Agreement (PSA) objectives of the previous Government.

Reviewing our approach

2.55 For this review we re-examined our sensible criteria and considered whether they accurately reflected the objectives of the current Government. We considered the coalition programme for Government (Cabinet Office, 2010). Some extracts with relevance to our economic criteria are as follows:

- On the **economy**: "*We recognise that deficit reduction, and continuing to ensure economic recovery, is the most urgent issue facing Britain.*"

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- On **business**: *“The Government believes that business is the driver of economic growth and innovation, and that we need to take urgent action to boost enterprise, support green growth and build a new and more responsible economic model. We want to create a fairer and more balanced economy, where we are not so dependent on a narrow range of economic sectors, and where new businesses and economic opportunities are more evenly shared between regions and industries.”*
 - On **developing the UK workforce**: *“We will seek ways to support the creation of apprenticeships, internships, work pairings, and college and workplace training places as part of our wider programme to get Britain working.”*
- 2.56 On migration, Cabinet Office (2010) said *“The Government believes that immigration has enriched our culture and strengthened our economy, but that it must be controlled so that people have confidence in the system. We also recognise that to ensure cohesion and protect our public services, we need to introduce a cap on immigration and reduce the number of non-EU immigrants.”* When the MAC was asked to advise on the first annual limits on Tiers 1 and 2 of the PBS, the emphasis on public service and social impacts was reiterated when we were commissioned to consider these impacts alongside the economic ones (Migration Advisory Committee, 2010a).
- 2.57 We supplemented our consideration of the coalition agreement with examination of publications produced by relevant Government departments including HM Treasury, the Department for Business, Innovation and Skills and the Department for Work and Pensions. As detailed earlier in this chapter, we also invited all Government departments to submit evidence to this review.
- 2.58 Overall, the objectives of the current Government correspond quite well with the MAC’s previous ‘sensible’ criteria. Some Government priorities in relation to the economy and labour market, such as raising the skills of UK workers, stimulating inward investment and promoting high levels of employment, link specifically to the MAC’s lines of inquiry. Other priorities such as support for green growth and the creation of a more balanced economy can also be accommodated within the previous MAC framework.
- 2.59 Furthermore, some of the economic lines of inquiry set out above could be associated with broader public service or social impacts. For

- instance, if employment of migrants were to have a negative impact on employer incentives to train resident workers, that could have adverse consequences for social cohesion. Migrants in more highly paid occupations will also generally make a higher than average contribution to the funding of public services through higher tax contributions.
- 2.60 Nevertheless, public service and social impacts of employing migrants in particular jobs or occupations are often difficult to identify, and where they can be identified interpretation is not straightforward. For instance, in some occupations migrants demonstrably play a key role in the provision of key public services, but it does not automatically follow that continued dependence on migrants to fill these roles is desirable.
- 2.61 We approached this review prepared in principle to take public service and social impacts into account to the extent that they could be reliably identified and interpreted. But the complex and context-specific nature of such impacts meant we decided not to amend our sensible criteria to reflect this.
- 2.62 In conclusion, we decided that our previous sensible criteria were sufficiently broad and flexible to capture the priorities of the current Government. We retained all
- four lines of enquiry, without adding to or amending them.
- 2.63 Nevertheless, in this review, as in previous ones, a clear challenge remains in the form of the need to potentially trade priorities against one another. One such case is the potential tension between the short run and long run. For example, using immigration to fill labour shortages may be essential in the short run to ensure the survival of businesses or the provision of crucial services. However, in the long run it may reduce the incentives to invest in the training and upskilling of UK resident workers, and therefore contribute to maintaining or even increasing dependence on immigrant workers. Our approach to such difficult issues has been to attempt to make our decisions in a balanced and consistent manner. Crucially, we also set out our reasoning in detail so that the Government and our partners may understand it and, if they wish, challenge it.

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“Businesses understand that the migration system must carefully balance competing social and economic pressures and any further polarisation of the debate on this issue is not helpful. In considering the criteria of ‘sensible’ when assessing occupations the Committee has allowed for careful discretion. We welcome this as a means of recognising the reality of business needs and judgements which firms make when choosing to hire through the [shortage occupation list] and Tier 2 more widely.”

Confederation of British Industry response to MAC call for evidence

Top-down

2.64 There are a limited number of numerical indicators available that might provide context to our consideration of sensible:

- The **share of non-EEA immigrants** already employed in an occupation gives an indication of the reliance on immigrant labour from outside the EEA.
- The percentage of the workforce in **receipt of training** within the last 13 weeks provides some measure of investment in training, although the LFS variable available provides only a crude measure of training activity.
- The **change in earnings** provides an indication of

whether employers have made efforts to respond to shortages by raising wages or, conversely, whether migrants may be being used as a cheaper substitute for domestic labour.

- The **proportion of unemployed** workers associated with an occupation, or a rise in that proportion, gives an indication of the scope for increasing employment of UK resident workers as an alternative to employing migrants (but it does not capture inactive workers).
- The **change in hours worked** for full-time employees provides an indication that employers may be increasing hours as an alternative to using immigration when vacancies cannot be filled, subject to practical and legal constraints on working hours.

2.65 These data are presented for individual occupations in Chapters 3, 4 and 5. The first two of these indicators are based on the last four quarters of the LFS for which data are available, covering 2010Q2-2011Q1 inclusive. The other three top-down indicators listed above are shortage indicators, discussed in the previous section, that double-up as indicators of sensible.

Bottom-up

2.66 Top-down data provide useful context, but in terms of sensible the most useful information usually comes from bottom-up evidence, gathered through our call for

evidence, visits, and meetings with employers and representative bodies. Table 2.3 describes the key bottom-up indicators or criteria we have considered, and provides examples.

Table 2.3: Our key criteria for assessing bottom-up evidence when assessing whether it is sensible to fill shortages with immigration

Key criteria for 'sensible'	What change might indicate 'sensible'?	Bottom-up examples
Alternatives to employing immigrants: What feasible alternatives to immigration have been considered? Are there obstacles for employers in pursuing alternatives to migration?		
Recruitment efforts	High or increased spending and investment in recruitment	Spending on advertising, using different channels, using different labour pools e.g. unemployed, part-time workers
Attractiveness of employment package	Increased incentives for the current workforce to remain in occupation and for new recruits to enter the labour market	Holiday allowances, bonuses, other benefits
Increased working hours	Increased working hours of current workforce	Evidence that employers are doing this
Capital substitution	Increased investment in technology to make production less labour or skill intensive	Installing labour-saving machinery
Changing production methods	Changed production methods to make production less labour or skill intensive	Restructuring the production line
Outsourcing or off-shoring	Increased use of contracting in or of overseas sites	Evidence that employers are doing this
Current use of immigrants	High use of immigrants may mean it is difficult to respond to shortage in other ways, but may also mean employers aren't doing enough to up-skill UK resident workers	Current use of immigrants

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Skills acquisition: What efforts have been, or could be made, to train and up-skill the UK resident workforce?		
Training	High or increased investment in training of current and future UK workforce	Employers working with schools/universities and/or new training programmes and apprenticeships
Training length	A long training period would make it harder to quickly respond to shortage through training	Evidence of length of training required to become fully proficient
Availability of training or qualifications	If training for an occupation is not readily available this may increase the need for immigrants, but it may also indicate inadequate efforts by employers to ensure qualifications are provided	Evidence that employers are working with their Sector Skills Council to develop qualifications
Productivity, innovation and international competitiveness: What impacts will access to immigrant labour have on productivity, innovation and international competitiveness of an industry?		
Productivity	Decreased productivity may indicate it is sensible to bring in immigrants. However, low productivity could imply scope to substitute labour with capital	Higher wastage, slower production process, reduced quality product and/or evidence of 'low skills equilibrium' of labour intensive production
Innovation	Risk of reduced innovation in a sector where immigration is a source of innovation may indicate it is sensible to bring in immigrants	Emerging technologies overseas
Competitiveness	Employment of immigrants may support international competitiveness of certain sectors through their skills and innovation. It would not be sensible to bring in immigrants to maintain competitiveness only through their willingness to accept lower pay	Sector requires highest levels of skills and/or immigrants bring different skills/innovation

Wider economic and labour market effects: What wider effects will access to immigrant labour have on the economy and labour market?		
Impacts on wages and employment rates	No adverse impact on wages, employment conditions and/or employment levels	Steady or rising wages and employment conditions
Business failure	Higher numbers of businesses failing may indicate shortages cannot be filled, but may be other causes and it may also be a natural market correction	Closure of businesses and/or reduced profits
Public service impacts	It may be sensible to bring in immigrants if public services are jeopardised, but in the longer term it would not be sensible for public services to rely on cheap immigrant labour	Reduced quality of public services and/or insufficient or reduced availability of public services (e.g. increased waiting times)
Other regulatory and economic context	Other reasons outside the control of employers that make it difficult or impossible to pursue alternatives	

2.7 Presenting the top-down results in this report

- 2.67 In Chapters 3, 4 and 5 we present the results from our top-down analysis of skill, shortage and sensible for each 4-digit occupation:
- that is skilled to NQF4+; and
 - for which job titles or the occupation as a whole has been considered for inclusion on the shortage occupation list for the UK.
- 2.68 Due to the nature of our methodology, it is not possible to generate top-down shortage results for those occupations that are not skilled to NQF4+. We also do

not present the top-down results for occupations considered for the Scotland shortage occupation list in Chapter 6 as these are not relevant to the discussion.

- 2.69 In Chapters 3, 4 and 5 we present the most recent set of results, defined as summer 2011, for our skilled, shortage and sensible top-down indicators. For our top-down shortage indicators we also present the results from spring 2010 and autumn 2010 in order to assess the trend in shortage over the period.
- 2.70 Our last shortage occupation review was published in spring 2010 (Migration Advisory Committee, 2010c), although the results in that

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report will not match with the results presented in Chapters 3, 4 and 5 due to the changes in our methodology since that time. Although we did not carry out a shortage occupation review in autumn 2010, we have presented the results that would have been generated at that time using our current methodology. We have done this in order to 'fill in the gap' between our spring 2010 and summer 2011 results to allow a better assessment of the extent of shortage at the occupational level over time. The data used to generate these results are described in Table 2.4.

2.71 In Chapters 3, 4 and 5 we also present an estimate of total employment in the 4-digit occupation associated with the occupation or job titles

under consideration. This estimate of employment is provided by the LFS (2010Q2-2011Q1). Unless the entire occupation is under consideration, this estimate will not reflect employment in the job title(s) under consideration.

2.72 When presenting our top-down results for **skill** and **shortage**, we use a colour coded system to indicate whether the indicator passes or does not pass its associated threshold value. We define an indicator as passed and colour it green if it indicates that the occupation is skilled to NQF4+ (for the skill indicators) or if it indicates shortage (for the shortage indicators). If the indicator does not pass then we colour it red.

Table 2.4: The data used to generate the three sets of results over time presented in Chapters 3, 4 and 5

Code	Indicator	Source	Spring 2010	Autumn 2010	Summer 2011
P1	Percentage change of median real pay (over 1 year)	ASHE	2008-2009	2008-2009	2009-2010
P2	Percentage change of median real pay (over 3 years)	ASHE	2006-2009	2006-2009	2007-2010
P3	Return to occupation	LFS	2008Q4-2009Q3	2009Q3-2010Q2	2010Q2-2011Q1
I1	Change in median vacancy duration (over 1 year)	JCP	Oct07-Sep08 to Oct08-Sep09	Apr08-Mar09 to Apr09-Mar10	May09-Apr10 to May10-Apr11
I2	Vacancies / claimant count	JCP	Oct08 to Sep09	Apr09 to Mar10	May10 to Apr11
V1	Percentage change of claimant count (over 1 year)	JCP	Oct08 to Oct09	Mar09 to Mar10	Apr10 to Apr11
V2	Percentage change of employment level (over 1 year)	LFS	2007Q4-2008Q3 to 2008Q4-2009Q3	2008Q3-2009Q2 to 2009Q3-2010Q2	2009Q2-2010Q1 to 2010Q2-2011Q1
V3	Percentage change of median paid hours worked (over 3 years)	ASHE	2006-2009	2006-2009	2007-2010
V4	Change in new hires (over 1 year)	LFS	2007Q4-2008Q3 to 2008Q4-2009Q3	2008Q3-2009Q2 to 2009Q3-2010Q2	2009Q2-2010Q1 to 2010Q2-2011Q1
E1	Skill-shortage vacancies / total vacancies	NESS	2009	2009	2009
E2	Skill-shortage vacancies / hard-to-fill vacancies	NESS	2009	2009	2009
E3	Skill-shortage vacancies / employment	NESS/ LFS	2009	2009	2009

Source: MAC analysis

2.73 We do not use the colour coded system for our top-down indicators of **sensible** as they do not have associated threshold values. Three of our top-down indicators of skill double-up as top-down indicators of sensible. Therefore, in Chapters 3, 4 and 5 these indicators have a colour attached to them. In assessing sensible, these colours have no meaning.

2.8 Summary of results

2.74 As discussed in section 2.4, we consider an occupation to be skilled to NQF4+ if it passes on at least two of our three top-down indicators of skill. According to our

analysis, 121 of the 353 4-digit SOC occupations are skilled to NQF4+, which covers 39 per cent of all working-age, full-time employees in the UK labour market (Migration Advisory Committee, 2011a).

2.75 As discussed in section 2.5, we consider 50 per cent of available shortage indicators being passed to be a good indication that an occupation is potentially experiencing labour shortage.

2.76 Figure 2.1 shows the distribution of the proportion of available top-down shortage indicators passed for each of the 121 skilled occupations. The number of occupations passing on at least 50 per

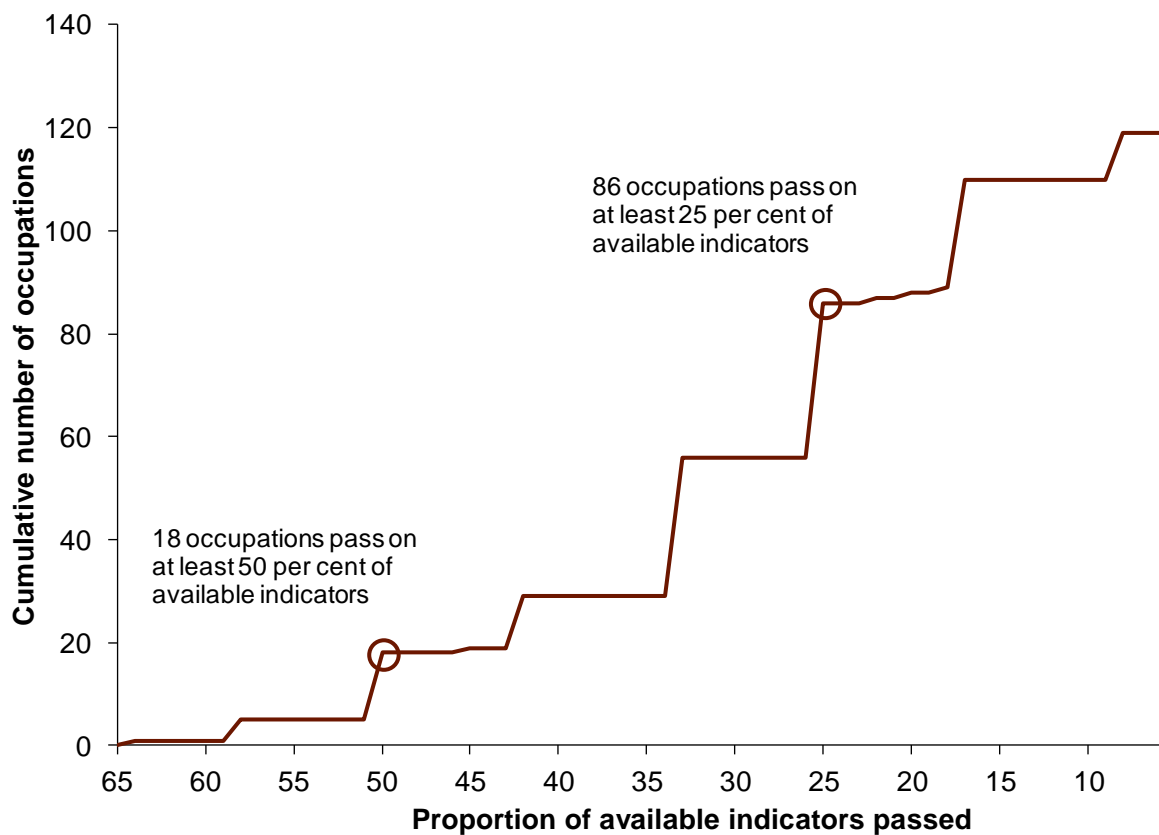
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cent of available shortage indicators has increased from 12 in our spring 2010 results to 18 in our most recent set of results used in this report.

sensible indicators discussed in Chapters 3, 4 and 5, we report the medians of these indicators for all occupations skilled to NQF4+ in Table 2.5.

2.77 In order to contextualise the top-down results for our

Figure 2.1: Cumulative distribution of the proportion of available top-down shortage indicators passed by each of the 121 occupations skilled to NQF4+



Note: The figure shows the cumulative number of occupations passing the given proportion (per cent) of available indicators.
Source: MAC analysis

Table 2.5: Top-down sensible indicators and their median values for the 121 occupations skilled to NQF4+

Indicator	Spring 2010	Autumn 2010	Summer 2011
Percentage of workforce born non-EEA	8	8	8
Percentage of workforce trained in past 13 weeks	33	32	32

Notes: No explicit thresholds are used for the sensible top-down indicators. The medians are reported here instead.

Source: Labour Force Survey, 2010Q2 – 2011Q1

2.9 Conclusions

- 2.78 Our broad approach to compiling the recommended shortage occupation lists for the UK and Scotland has not changed substantially to that which we first presented in Migration Advisory Committee (2008). Since that review, we have updated our top-down methodology for identifying skilled occupations both to reflect the increase in the skill level of Tier 2 from NQF3+ to NQF4+ and as a result of the findings from our externally commissioned and internal research. Other than to reflect this increase in the skill level of Tier 2, our bottom-up approach has remained unchanged since autumn 2008.
- 2.79 Since Migration Advisory Committee (2008), we have also revised our methodology for assessing labour shortage using top-down data, again as a result of the findings of our externally commissioned and internal research. Some of these changes have been relatively minor: for example, increasing the length of time over which a particular indicator is estimated. Some
- have been more substantial; for example, the introduction of our benchmarking approach to defining the threshold values for our indicators. Our bottom-up framework has remained unchanged since autumn 2008.
- 2.80 Assessment of our sensible test has been heavily contingent on bottom-up, rather than top-down, evidence since Migration Advisory Committee (2008) and remains so. We have not made any changes to our top-down indicators of sensible since that review.
- 2.81 In this report we have reviewed our bottom-up methodology for assessing the sensible test in light of the change of Government in May 2010 and decided that our previous sensible criteria were sufficiently broad and flexible to capture the priorities of the current Government.
- 2.82 In the following chapters we assess job titles and occupations for inclusion on our updated recommended shortage occupation lists for the UK and Scotland. Where appropriate, we have

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presented our top-down results for skill, shortage and sensible. When discussing occupations as a whole, we consider our top-down results to be entirely relevant to the

discussion. When discussing job titles, we have made a judgement as to how relevant we believe the top-down results to be.

Chapter 3 Healthcare occupations

3.1 Introduction

3.1 This chapter discusses evidence in relation to occupations in the health sector.

3.2 Evidence from our partners

The Centre for Workforce Intelligence

3.2 In previous reviews it was agreed that the NHS Workforce Review Team (WRT) was well placed to act as co-ordinator for evidence gathering within the healthcare sector, and would utilise workforce information gathered as part of its annual assessment of workforce priorities carried out on behalf of the Department of Health (DH). NHS Employers (NHSE) has previously provided input from the employers' side, and Skills for Health (SfH) from the devolved administrations and the independent sector.

3.3 In 2010 the WRT was merged into a new national authority on workforce planning and development for the health and social care sectors. The Centre for Workforce Intelligence (CfWI) was established to provide

workforce intelligence to the health and social care system to enable better decisions to be made.

3.4 The support previously provided by the WRT to our reviews of the shortage occupation list was taken up by the CfWI for this review. The evidence provided for this review by the CfWI has been invaluable and we are grateful for their input into the process.

3.5 The CfWI is commissioned by the DH to make an assessment of priority issues affecting the workforce in health and social care, based on healthcare policy and workforce needs. This includes modelling staff numbers based on various known demand and supply drivers. The CfWI is, therefore, well placed to be able to offer evidence to this review.

3.6 The CfWI applied our skilled, shortage and sensible methodology when assessing job titles and occupations, and, for each of these, provided a summary indicating the CfWI's view of whether the occupation or job title passed our criteria. The evidence we received was

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- mainly related to healthcare specialties and professions already on the shortage occupation list, although efforts were made to look for any obvious signs that additional occupations and/or job titles should be recommended for addition to the list. As with previous reviews, where we had queries we went back to the CfWI for clarification. In bringing together its evidence the CfWI contacted a range of partners, including royal colleges and relevant professional bodies.
- 3.7 The CfWI's modelling and information around social care is, so far, less developed. The CfWI told us that it will hold discussions with Skills for Care about mechanisms for incorporating social care professions into future CfWI evidence. We would very much welcome this. Social care job titles are covered in Chapter 5.

Skills for Health

- 3.8 SfH played a valuable role in ensuring all major parties had the opportunity to share evidence prior to submission to us. It consulted with the devolved administrations and the independent sector and provided a useful channel for us to receive that evidence. It also facilitated wider discussions and hosted two workshops for major parties to discuss possible recommendations for this review.
- 3.9 SfH also created a useful channel through which the devolved administrations and the independent sector could feed in their own evidence.
- 3.10 In the Skills for Health UK Sector Skills Assessment 2011 (Skills for Health, 2011) it states that *"Historically there has been reliance across the sector on international recruitment in order to fill skills-shortage vacancies and to create additional capacity within the sector. The need for this was created by the increased investment across the sector and the time lag for professionals to complete training."* It goes on to comment that *"More recently this reliance on international recruitment has subsided."*

NHS Employers

- 3.11 NHSE provided input from the employers' perspective. This included results of a survey of employers conducted in May 2010, plus a more recent request for views on shortages via a questionnaire.
- 3.12 NHSE told us that it had found it challenging to collect the necessary evidence during a period when the NHS is going through such fundamental changes. It said that there is a possibility that the current shortage picture is distorted due to the timing of our review and hoped that there would be opportunities for employers to submit details of emerging shortage issues in the future.

Other evidence received

3.13 In addition, we also received evidence including from royal colleges, speciality bodies and NHS trusts. Where evidence related only to Scotland we include it in Chapter 6. Where it mirrored the position in the UK we include it in this chapter.

The NHS Information Centre census

3.14 In many cases we detail vacancy rates from the NHS Information Centre (IC) census. This annual census details, amongst other data, posts that have been vacant for over three months and which NHS trusts are actively trying to fill. The average three-month vacancy rate for consultants across all specialities was 1.0 per cent in March 2010 (down from 1.1 per cent in March 2009). For other doctors and dentists (excluding training grades) the average was 2.6 per cent, down from 3.0 per cent the previous year.

3.3 Key issues and policies in the healthcare sector

The healthcare labour market

3.15 The healthcare employment market does not operate freely: NHS wage levels are determined according to a national pay scale (Agenda for Change and medical and dental pay). This means that in determining whether there is a shortage in healthcare occupations pay may well be of limited use.

3.16 The CfWI's evidence to us, therefore, emphasised other quantitative indicators of imbalance, i.e. supply forecast modelling, vacancy surveys and levels of applications for these vacancies. Where quantitative data appeared to signal a potential shortage, other indirect indicators were then used to supplement the evidence of shortage. For example, use of agency staff; any shifts in skill mix (a proxy for changes in mode of production); workforce age profiling; retirement patterns; and geographical distribution of vacancies.

3.17 A further consequence of the market not operating freely is that the level of 'optimal' supply of a service may not match funded supply. Where this has been a factor in our considerations we discuss it in the relevant sub-section of this chapter when summarising evidence by occupation or job title.

3.18 The Recruitment and Employment Confederation together with KPMG publish a monthly Report on Jobs showing demand for staff, as reported by recruitment consultants (REC/KPMG, 2011). It is clear that the recession reduced demand in a number of sectors, although this has broadly recovered. It is notable that demand for nursing, medical and care staff remained largely resilient to the recession. Nevertheless, recently there appears to have been a small decline in demand for staff in

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these sectors which may be as a result of pressures on public sector funding.

Training

3.19 We appreciate that length of training for the majority of healthcare occupations means that it is not possible to make rapid changes to the domestic workforce to respond to changes in demand. For example, if demand for consultants increases due to more emphasis on preventative care, or if technological advances imply that conditions which were previously untreatable can now be treated, it may not be possible to train the domestic workforce quickly enough to meet new or increased demand.

3.20 Equally, as the British Medical Association (BMA) told us, it is important to be aware of where bulges in training have been created and how these may be dealt with. It may be the case that, as trainees approach consultant level, there are not enough consultant posts for all of them.

“The BMA would like to see careful consideration of workforce planning to ensure that services can continue to run safely. We must avoid ‘bulges’ being created in the training grades to fill rota gaps that then cannot be absorbed further up the career ladder.”

British Medical Association response to MAC call for evidence

3.21 The BMA also told us that the jobs to which international doctors are recruited often contain little or no provision for training and development. They come to the UK to fill vacancies and find that they are unable to progress in their training and they end up in a ‘career cul-de-sac’. They suggest that any doctor coming to the UK to work in non-training posts should be covered by a national contract and have a structured job plan and continuing professional development.

Innovation

3.22 Technological advancement can have major impacts on the health sector including a real impact on the desired composition of the workforce.

3.23 In the Skills for Health UK Sector Skills Assessment 2011 (Skills for Health, 2011) it is noted that the use of robotics in surgery has been widespread for many years. However, this is also now beginning to extend to other areas. New and emerging ways to improve efficiency have been identified. An example is the use of robots in ‘domestic duties’ (collection and delivery of laundry) and for the dispensing and stock control of drugs within hospital pharmacies.

3.24 Skills for Health note in relation to future developments in this area that *“...there could be significant implications on the skills needs of the workforce that would need to be planned and*

managed. Some sections of the workforce will require additional training and development in order to fully utilise the technology available whilst other skills that they are currently utilising may no longer be required.”

Government policy

- 3.25 Government policy can contribute to changes in both supply of labour within the health sector and demand for services. We mention a few policies here which have had, or continue to have, impacts, but these are by no means exhaustive. These policies relate to England only.
- 3.26 **18-week wait:** In June 2010 the Government published Revision to the Operating Framework for the NHS in England 2010/11 (Department of Health, 2011). In it the Government stated that *“Performance management of the 18 weeks waiting times target by the Department of Health will cease with immediate effect.”* Although the performance management of the target no longer exists the need to keep waiting times reasonable is still evident in the evidence we received for this review.
- 3.27 **National Stroke Strategy:** This strategy was launched in 2007 and sets a framework to secure improvements to stroke services. It therefore has an impact on a wide group of services and the jobs required to deliver them.

- 3.28 **Cancer Reform Strategy:** This strategy was launched in 2007 and is focused on delivering improved survival rates. The strategy has an impact on the structure and direction of cancer services, which, importantly for our purposes, affects those who provide services.

3.4 Occupations we considered

- 3.29 In the sections that follow we discuss in more detail the medical occupations for which we received evidence.
- 3.30 We have linked each occupation and job title with the most appropriate Standard Occupational Classification (SOC) 2000 code. Unless otherwise stated, all of the occupations and job titles covered pass our criteria for skilled. We therefore focus mainly on the evidence in relation to shortage and sensible.

3.5 Medical practitioners

- 3.31 The occupation medical practitioners pass 3 out of 12 top-down shortage indicators, indicating little overall shortage in this occupation. However, this occupation covers a wide range of medical job titles and, therefore, is not highly relevant to any one in particular.
- 3.32 For each of the consultant specialities that we considered for the shortage occupation list, we received evidence relating to each of

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our criteria. This included information on, where available, headcount numbers, vacancy rates, retirement predictions, drivers for increased capacity, and levels of trainees.

3.33 A full list of consultant posts included on our recommended list is provided in Box 3.1. Some issues in relation to particular consultant roles are discussed below.

Box 3.1: Medical practitioners

Occupation(s) and SOC code(s): Medical practitioners - 2211

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Consultants within the following specialities: clinical neurophysiology, emergency medicine, genitourinary medicine, haematology, neurology and occupational medicine.

Consultants within the following specialities of psychiatry: forensic psychiatry, general psychiatry, learning disabilities psychiatry and old age psychiatry.

Non-consultant, non-training, medical staff posts in the following specialities: anaesthetics, paediatrics and general medicine specialities delivering acute care services (intensive care medicine, general internal medicine (acute), emergency medicine, general surgery, obstetrics and gynaecology and trauma and orthopaedic surgery).

ST4 trainees in paediatrics.

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£32.03		
% employees with NQF4+	92.8						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	3.1	3.1	-1.6	V2: Percentage change of employment level (over 1 year)	8.9	-3.4	9.1
P2: Percentage change of median real pay (over 3 years)	-4.2	-4.2	1.7	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	0.18	0.45	0.39	V4: Change in new hires (over 1 year)	-0.018	-0.015	-0.010
I1: Change in median vacancy duration (over 1 year)	6.5	2.6	-3.7	E1: Skill-shortage vacancies / total vacancies	7.8	7.8	7.8
I2: Vacancies / claimant count	1.18	1.16	2.66	E2: Skill-shortage vacancies / hard-to-fill vacancies	57.2	57.2	57.2
V1: Percentage change of claimant count (over 1 year)	12.9	7.4	10.7	E3: Skill-shortage vacancies / employment	0.04	0.04	0.03
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	28	29	27	Percentage of workforce trained in past 13 weeks	61	63	64

Total employment in this 4-digit occupation is approximately 238000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Centre for Workforce Intelligence, the Royal College of Anaesthetists, NHS Greater Glasgow and Clyde, the South Tees Hospitals NHS Foundation Trust and the University Hospitals Birmingham NHS Foundation Trust.

Consultant posts that the CfWI recommend that we include on the shortage occupation list and where we agree

- 3.34 Consultants in the specialities discussed below were recommended by the CfWI for inclusion on the shortage occupation list, and we agree.
- 3.35 Clinical neurophysiology: This consultant speciality is not currently on the UK shortage occupation list. The NHS IC census in March 2010 recorded a three-month vacancy rate of 2.3 per cent. This represented two vacancies. The CfWI told us that there was still pressure on consultants in this speciality to keep waiting times low. The workforce has expanded by 24 per cent in the past five years. Although vacancy numbers are low, for the time being we recommend consultants in clinical neurophysiology are added to the UK shortage occupation list.
- 3.36 Despite the expanding workforce the number of trainees has remained relatively constant. This may create increased shortages later if the number of trainees does not match increased consultant numbers. We recommend that this issue is examined.
- 3.37 Emergency medicine: This consultant speciality is not currently on the UK shortage occupation list. The three-month vacancy rate reported in the NHS IC census in March 2010 was 3.3 per cent.

The CfWI told us that this was the highest vacancy rate for any consultant speciality. There are around 1,000 consultants within the speciality overall, which has expanded by 10 per cent in the past five years. Demand is increasing, but the supply of trainees is also increasing. These positions are vital to maintain frontline services and, for the time being, we agree with the CfWI that consultants in emergency medicine should be added to the UK shortage occupation list.

- 3.38 Forensic, general, old age and learning disabilities psychiatry: These consultant posts are all on the current shortage occupation list. CfWI told us that in all but one case (old age) vacancy rates remained above the average for consultant specialities. Workloads appear to be continuing to rise and the attractiveness of the career is an issue amongst domestic trainees. The CfWI reports that in 2011 the recruitment to core training in psychiatry has been poorer than in the previous two years. Of the four speciality areas, old age psychiatry appears to be less of an issue in terms of the vacancy rate (0.6 per cent), however, we note the increasing demands due to an ageing population.
- 3.39 In addition, NHSE told us that issues in recruiting to these psychiatry posts remained a dominant theme in their survey. Employers were

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- increasingly looking at different ways to deliver services as well as reviewing role and skill mix in teams and using agency staff when available (although we were told that the latter was an expensive option that was not sustainable). In addition to these consultant posts, NHSE also asked that we look to extend the shortage occupation list to include middle grade positions. However, there was not sufficient evidence to support this extension.
- 3.40 We recommend that consultants in forensic psychiatry, general psychiatry, old age psychiatry and learning disabilities psychiatry remain on the UK shortage occupation list. In the case of old age psychiatry we will look closely at this job title in any future review to see whether there is any trend towards increased shortage or whether the job title could be removed from the shortage occupation list.
- 3.41 Genitourinary medicine: This consultant speciality is currently on the UK shortage occupation list. The NHS IC census recorded a three-month vacancy rate in March 2010 of 2 per cent. The speciality estimates that there are currently about 17 vacant posts. The CfWI told us that there were regional difficulties due to a geographical imbalance of training posts. Fifteen posts were available nationally at ST3 training level in 2010. All of these positions were filled. This indicates that there appears to be no difficulty in attracting trainees to the speciality. The fact that trainees choose to only work in certain areas of the country is not a reason for the job to be on the shortage occupation list. We agree with the CfWI that as competition increases it is likely that trainees will have to move to smaller units in less popular regions.
- 3.42 However, we accept that there appears to be a number of vacancies at consultant level and therefore for the time being recommend this speciality remains on the shortage occupation list.
- 3.43 Haematology: This consultant speciality is currently on the UK shortage occupation list. The NHS IC census in September 2010 recorded a three-month vacancy rate of 2.1 per cent. Discussions the CfWI held with haematology leads at the Royal College of Physicians and the Royal College of Pathologists indicated that there were around 70 consultant vacancies within haematology, the majority of which are long standing and not being advertised due to trusts knowing there would be no suitable candidates. There is also a peak in retirement predicted for 2014 for current consultants. We agree that it is, therefore, sensible to retain consultants in haematology on the UK shortage occupation list for the time being.

- 3.44 Neurology: This consultant speciality is currently on the UK shortage occupation list. The NHS IC census three-month vacancy rate for this speciality was 1.3 per cent in September 2010. This represents seven vacancies. The current focus on improving stroke care represents a major driver for neurological input. The CfWI told us that there is currently an aim within the NHS to achieve 24 hours a day, seven days a week thrombolysis cover. We understand patients are increasingly likely to be triaged to a specialist rather than remain under the care of a generalist. Increasing numbers of older patients with neurological disease are being referred to, and seen by, neurologists where previously they would have been seen by a geriatrician.
- 3.45 An ageing population is therefore creating significant demand pressures on neurology. The CfWI told us that if current training levels are maintained, the supply of consultants will be broadly in line with the estimated requirement by 2020. Given the current shortages and demand we agree with the CfWI that consultants in neurology should remain on the UK shortage occupation list.
- 3.46 Occupational medicine: This consultant speciality is currently on the UK shortage occupation list. The NHS IC census three-month vacancy rate in March 2010 was 1.2 per cent. Approximately 80 employees work as consultants within the NHS. However, many more consultant equivalent physicians work outside the NHS, including being employed by private sector employers and the Ministry of Defence. The Faculty of Occupational Medicine reports that there is approximately a further 720 specialists (equivalent to consultant grade within the NHS) working in non-NHS positions and there is often movement between NHS and non-NHS positions.
- 3.47 The Faculty report a significant undersupply of occupational medicine physicians outside the NHS. In addition there is a reduction in private industry trainees, therefore reducing the overall supply. The Faculty suggest that there is also the possibility that NHS consultants could be attracted into these non-NHS areas.
- 3.48 The CfWI told us that in the most recent round of recruitment to speciality training level 3 (ST3) there was an uneven geographic distribution with some areas failing to fill any posts. While other areas were oversubscribed. This suggestion of a geographical imbalance does not in itself suggest a national shortage.
- 3.49 However, taking all of the evidence into account, for the time being we recommend

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consultants in occupational medicine should remain on the shortage occupation list.

Consultant posts that the CfWI recommend that we include on the shortage occupation list, but where we disagree

- 3.50 There were some consultant job titles which the CfWI recommended should be on the shortage occupation list but where we found insufficient evidence to agree. These are listed below with the reasons why we believe the evidence was not strong enough.
- 3.51 Audiological medicine: This consultant speciality is currently on the UK shortage occupation list. In March 2010 the NHS IC census three-month vacancy rate was zero. The speciality records five practicing locums as of April 2011. The CfWI told us that only one new consultant post had been established in the last year.
- 3.52 With a retirement bulge expected within the next two years there is uncertainty over there being sufficient numbers of trainees to replace retiring consultants. Most trainees are also based in and around London and many are showing an increased reluctance to leave the capital. Problems of attracting trainees into ST3 training posts are also reported by the CfWI, but efforts are being made to increase interest in the speciality.

- 3.53 Given that there appear to be no consultant vacancies we recommend consultants in audiological medicine are removed from the UK shortage occupation list because it is not currently sensible to retain them. Should the expected retirement bulge result in vacancies not being filled we could look at the position again in a future review.

Consultant posts that the CfWI recommend we exclude from the shortage occupation list and where we agree

- 3.54 The CfWI's evidence suggested that we recommend the exclusion of some consultant posts from the shortage occupation list, all of which are currently on it. These are listed below with reasons why they are recommended for removal. It is notable that since our first recommended shortage occupation list in 2008 (Migration Advisory Committee, 2008) the number of consultant posts on the list has shrunk considerably.
- 3.55 Medical microbiology and virology: The NHS IC census three-month vacancy rate is 0.7 per cent. The Royal College of Pathologists reports that the current number of trainees is sufficient to meet service demand. The job title can therefore be removed from the UK shortage occupation list.
- 3.56 Obstetrics and gynaecology: The CfWI told us that the Royal College of Obstetricians

and Gynaecologists reports that the current number of trainees is likely to be sufficient to fill the number of expected consultant posts over the next few years. We therefore recommend that consultants in obstetrics and gynaecology be removed from the UK shortage occupation list.

- 3.57 Paediatric surgery: The CfWI told us that there are more than enough trainees coming through to fill newly created and replacement consultant positions. We therefore recommend consultants in paediatric surgery are removed from the shortage occupation list.
- 3.58 Nuclear medicine: The NHS IC census three-month vacancy rate was zero in March 2010. However, the CfWI told us that there are reports of increasing difficulties in filling consultant posts. Demand for trained specialists in nuclear medicine is increasing as a result of an ageing population and the associated increasing prevalence of cancer. Although we were told by the CfWI that the Royal College of Physicians supports the suggestion that nuclear medicine consultants remain in shortage, as stated above there appears to be no apparent difficulty filling consultant roles when vacancies arise. This together with the zero per cent vacancy reported in the NHS IC census leads us to believe that consultants in nuclear

medicine should be removed from the UK shortage occupation list.

Non-consultant posts

- 3.59 In our spring 2009 report (Migration Advisory Committee, 2009a) we highlighted the problems faced by the health sector due to junior doctors needing to comply with the Working Time Directive (WTD) from August 2009. This was posing particular issues of shortage in areas where round-the-clock cover is required for non-consultant (non-training) staff. The affected areas tend to be around emergency care.
- 3.60 In spring 2009 the DH asked that these 24-hour immediate patient care jobs be placed on the shortage occupation list. The DH told us they expected this to be a short-term measure while those in training work their way through to fill posts. In our autumn review (Migration Advisory Committee, 2009b) we found that the need for these roles still existed.
- 3.61 For this review the CfWI told us that there were still considerable difficulties in filling these positions. Derogations from the WTD were obtained for many of the specialities allowing them to operate a 52 hour week (as opposed to 48 hours) until this year. These derogations have now expired.
- 3.62 NHSE told us that in their workforce survey in May 2010 they found that an average of

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- 44 per cent of unfilled posts in these areas were vacant for 12 months. In many cases NHSE told us that agency staff filled some gaps, but this was not a long-term solution.
- 3.63 The Royal College of Physicians reports a vacancy rate of 8.6 per cent for general medicine registrar posts across England. The Royal College of Paediatrics and Child Health reports that 24 per cent of middle-grade paediatrics rotas were not compliant with the WTD in February 2011. The College of Emergency Medicine is conducting a survey of emergency departments and at the time of writing a vacancy rate of 15 per cent was being reported.
- 3.64 In addition, we received evidence from the Royal College of Anaesthetists (RCoA). It told us that, according to their 2010 census, there were 281 vacancies in non-consultant, non-training, medical staff posts within anaesthesia. This is a rise of 25 per cent from a similar survey in 2007. However, the College did not know whether all of these vacancies were funded.
- 3.65 The NHS Greater Glasgow and Clyde told us that a number of non-consultant, medical staff posts should be retained on, or added to, the shortage occupation list, but that training grade doctors should also be included. This was to help fill gaps in workforce rotas. However, we
- did not receive sufficient evidence to justify recommending trading grade posts for inclusion on the UK shortage occupation list, other than ST4 posts in paediatrics as discussed below.
- 3.66 The University Hospitals Birmingham NHS Foundation Trust asked that we consider additional non-consultant, non-training posts in cardiac transplant retrieval and ophthalmology, but we did not receive sufficient evidence for us to fully consider them.
- 3.67 The South Tees Hospitals NHS Foundation Trust told us that it has approximately 20 non-consultant, non-training posts vacant, most of which have remained so for the past year. It has managed to fill some for a while with locums, but this has proved expensive.
- 3.68 Turning to sensible, the RCoA told us that there was a 5 per cent year-on-year cut in anaesthetic training posts from 2010. It told us that trainee numbers broadly match the requirements for new consultant posts but do not take account of current vacant posts. The use of European Economic Area (EEA) doctors is potentially problematic because of language barriers.
- 3.69 In the longer term, the CfWI told us that re-structuring the service remains a long-term route to addressing shortages in non-consultant, non-training posts in these 24/7 roles.

3.70 There was a clear message from the evidence we received that, at least anecdotally, there are still issues around filling posts at non-consultant, non-training level in 24/7 service areas. These are posts within areas of the health service that need to be manned 24/7 in order to deal with emergencies. We do not wish to impact on these very important service delivery areas. Therefore, for the time being, we recommend that non-consultant, non-training, medical staff posts in the following specialities should remain on the UK shortage occupation list: anaesthetics, paediatrics and general medicine specialities delivering acute care services (intensive care medicine, general internal medicine (acute), emergency medicine, general surgery, obstetrics and gynaecology and trauma and orthopaedic surgery).

Higher speciality training posts (ST4) in paediatrics

3.71 In our autumn 2009 report (Migration Advisory Committee, 2009b) we recommended ST4 trainees in paediatrics should be added to the UK shortage occupation list following evidence that there were difficulties filling posts. For this review we received evidence from the CfWI who told us that Royal College of Paediatrics and Child Health's (RCPCH)

monitoring of recruitment to specialist training posts in 2011 showed continuing difficulties in filling these posts. For example, for the most recent round of recruitment for posts starting in August/September 2011, 37 posts were available and only 21 were filled. Attrition rates in training are not helpful with a drop-out rate of around 17 per cent. In a RCPCH survey to assess compliance with the WTD in December 2010 a 20 per cent vacancy rate was found in a range of paediatric posts (which includes ST4), compared with 14 per cent in 2009.

3.72 The CfWI did note that in the longer term the number of trainees will need to be reduced as there are essentially too many working towards consultant level (above ST4). However, we were told that, in the short term, non-EEA trainees remain a useful way of filling important service gaps. Furthermore, we are assured that there are equivalent non-EEA workers who can be matched to ST4 level. We therefore recommend that ST4 trainees in paediatrics remain on the shortage occupation list for the time being, but we will continue to monitor the situation and consider this matter should we be asked to review the shortage occupation list again.

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3.6 Pharmacists/pharmacologists

Box 3.2: Pharmacists/pharmacologists

Occupation(s) and SOC code(s): Pharmacists/pharmacologists - 2213

Only the following job titles within this occupation are included on our recommended shortage occupation list:

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£19.70		
% employees with NQF4+	92.6						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	12.9	12.9	-7.1	V2: Percentage change of employment level (over 1 year)	-8.1	13.4	15.8
P2: Percentage change of median real pay (over 3 years)	4.5	4.5	2.9	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.05	0.27	0.19	V4: Change in new hires (over 1 year)	-0.026	-0.057	-0.020
I1: Change in median vacancy duration (over 1 year)	3.5	-0.6	-8.0	E1: Skill-shortage vacancies / total vacancies	10.7	10.7	10.7
I2: Vacancies / claimant count	0.79	1.23	0.78	E2: Skill-shortage vacancies / hard-to-fill vacancies	55.5	55.5	55.5
V1: Percentage change of claimant count (over 1 year)	52.6	7.7	14.8	E3: Skill-shortage vacancies / employment	0.07	0.07	0.05
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	20	20	18	Percentage of workforce trained in past 13 weeks	62	52	49

Total employment in this 4-digit occupation is approximately 47000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Centre for Workforce Intelligence, NHS Employers, the NHS Pharmacy Education and Development Committee, the General Healthcare Group, the South Tees Hospital NHS Foundation Trust and Pharmacy Voice (members are the Association of Independent Multiple pharmacies (AIMp), the Company Chemists' Association (CCA) and the National Pharmacy Association (NPA)).

- 3.73 In our autumn 2009 report (Migration Advisory Committee, 2009b) we included pharmacists (including pre-registration pharmacists) working in the NHS or hospitals on our recommended shortage occupation list. The Government accepted this recommendation, but asked us to look at the occupation again in spring 2010 in relation to community pharmacists.
- 3.74 In our spring 2010 report (Migration Advisory Committee, 2010c) we found
- 3.75 We start this review, therefore, from the position that all registered and pre-
- evidence to recommend that all registered pharmacists should be included on the shortage occupation list for a short time until those in training were available for work. This recommendation was largely based on the top-down evidence, particularly the rapid growth in pay in the year to autumn 2010. Following a delay because of the change of government the recommendation was adopted in April 2011.

- registration pharmacists, including those working in the community (i.e. pharmacists working in shops), are on the UK shortage occupation list.
- 3.76 Pharmacists in the UK are required to hold a Royal Pharmaceutical Society of Great Britain (RPSGB) accredited degree in pharmacy, then to undertake one year of pre-registration training, and pass the RPSGB's registration examination, before qualifying as a pharmacist. The length of training for pharmacists is five years (a four-year degree and one year's pre-registration training).
- 3.77 Non-EU overseas pharmacists register through a different route from UK-educated pharmacists. First, they must be approved by the RPSGB to be eligible to take a conversion course, the Overseas Pharmacists Assessment Programme (OSPAP). The OSPAP takes a year to complete and in essence the course deals with UK pharmacy practice, including law and ethics, and therapeutics. After taking an OSPAP, non-EU pharmacists take a year of pre-registration training. Pre-registration pharmacists are discussed further at the end of this section.
- 3.78 On the basis of the above, pharmacists are clearly skilled to NQF level 4 and above (NQF4+). This is confirmed by our top-down indicators of skill, of which the occupation passes all three.
- 3.79 The occupation pharmacists/ pharmacologists passes 3 out of 12 top-down shortage indicators, indicating little shortage in this occupation. These top-down indicators are highly relevant to the job titles under consideration. Crucially, the latest data shows a large decline in median pay in contrast to the substantial rise in the year to autumn 2010.
- 3.80 We looked at the situation both within the NHS and within the community. The NHS Pharmacy Education and Development Committee told us that there was a continuing shortage of hospital pharmacists in the NHS. In a survey in May 2010 they found a vacancy rate of 16 per cent for band 6 pharmacists in the NHS.
- 3.81 The CfWI told us that pharmacist demand was growing. However, they also told us that there is a high proportion of locum pharmacists. They attribute this to a lifestyle choice (i.e. a desire for more flexible working). They also suggest that heavy workloads are potentially causing pharmacists to leave permanent positions.
- 3.82 The high proportion of locum pharmacists affects the number of vacancies reported. Many employers will treat a post being filled by a locum as a vacancy. This is not necessarily a shortage. Indeed the NHS IC census for

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- March 2010 showed a three-month vacancy rate of 0.9 per cent for registered pharmacists within the NHS, the lowest level for some years and down from 1.5 per cent in March 2009. This is the number of vacant and funded posts.
- 3.83 The South Tees Hospitals NHS Foundation Trust told us that it had vacancies at band 6 and, although there were increasing numbers coming out of training, the schools tended to be more concentrated in the South of England. It also told us that it continues to see pharmacists turning to locum work for better pay and more flexible working patterns, although there were signs that this trend was reducing.
- 3.84 The CfWI reported that the NHS continues to lose pharmacists to the more highly paid community sector with some areas of the UK reporting retention rates as low as 49 per cent for pre-registration trainee pharmacists in the NHS. In our spring 2009 review (Migration Advisory Committee, 2009a) we noted that in 2009 the NHS Pay Review Body recommended the introduction of a recruitment and retention premium for pharmacists working in the NHS. This was not taken up at the time, but perhaps should be considered if there continues to be a problem. As we stated in (Migration Advisory Committee, 2009b) it cannot be right to allow immigration purely to keep pay down in the NHS.
- 3.85 In relation to community pharmacists we were told by Pharmacy Voice that workloads continue to increase in the community. Community pharmacies in England dispensed 813 million items in 2009/10, an increase of 42 million items on the previous year. Additional services also continue to be provided by community pharmacists and this trend looks set to continue in order, in part, to free up General Practitioner time.
- 3.86 In addition, the percentage of the population aged 65 and over is predicted to rise from 16 per cent in 2009 to 23 per cent by 2034. Pharmacy Voice also told us that there are trends towards longer opening hours. Pharmacy Voice reported that vacancies are still an issue in the community sector, although they have eased and are down by as much as a quarter in some companies.

“Our member companies continue to invest considerable energies in recruiting pharmacists to what are to them real vacancies – a real vacancy being one where there is no permanent pharmacist and the pharmacy operates on a series of locums – and continue to recruit and retain pharmacists whose initial registration was outside the UK.”

Pharmacy Voice response to MAC call for evidence

- 3.87 We were also approached in confidence by another body that said that it was of the opinion that there was not a shortage of available pharmacists in the UK and that bringing in pharmacists from outside the EEA may dilute the quality of the pharmacists in the UK.
- 3.88 The General Healthcare Group, an independent healthcare provider, told us that it sometimes had difficulties recruiting pharmacists.
- 3.89 Turning to sensible, there are an increasing number of trainees coming through a rising number of pharmacy colleges.
- 3.90 NHSE told us that employers from all regions have worked on different approaches to recruiting pharmacists for the NHS in addition to using international recruitment. This included enhanced relocation packages and promoting flexible working. Technological advances have helped some employers use their pharmacists in different ways to support service delivery. However, employers are still reporting shortages.

“There have also been advances in technology which some employers have been able to invest in which have enabled the employer to use their skilled pharmacists in different ways to support service delivery. Regardless of these developments, which have provided substantial gains over the last two years, employers still report that they need and use international recruitment to meet their requirements and that shortages of skilled professionals remain.”

NHS Employers response to MAC call for evidence

- 3.91 The CfWI told us that all pharmacists should remain on the shortage occupation list. It suggested to us that removing, for example, just community pharmacists could result in employers looking to recruit pharmacists trained by the NHS, which could put pressure on the NHS to increase financial rewards and benefits in an effort to improve retention. In the absence of clear evidence of a labour shortage in either sector that is not a sensible reason to retain community pharmacists on the shortage occupation list.
- 3.92 Pharmacy Voice concluded in its evidence that large pharmacy companies are reporting that long term vacancy pressures are easing and that the Resident Labour Market Test (RLMT) route was working well for areas where problems still existed. However, it advised that we should be cautious when considering pharmacists'

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place on the shortage occupation list.

removed from the UK shortage occupation list.

3.93 In conclusion, the degree of labour shortage in both the NHS and community appears to be negligible. Evidence of growing demand is not, in itself, proof of labour shortage. The number of trainees, and therefore new graduates, is rising as new colleges have opened and is set to continue to rise. The use of locums needs to be addressed. A locum filling a vacancy is not a shortage.

3.94 Finally, there is a statutory requirement that a pharmacy may only dispense prescriptions and sell pharmacy-only medicine when a pharmacist is on site. We received no evidence that pharmacies were temporarily or permanently closing as a result of a lack of pharmacists. We therefore believe that, given there is no compelling evidence of labour shortage, all pharmacist roles should be

Pre-registration pharmacists

3.95 Pre-registration pharmacists are currently included on the shortage occupation list. The NHS IC census for March 2010 showed a zero per cent three-month vacancy rate for pre-registration pharmacists within the NHS, the lowest level for some years and down from 1.6 per cent in March 2009.

3.96 As there is a zero per cent vacancy rate within the NHS, and any incoming non-EEA pharmacist joining the NHS would need to spend a year as a pre-registration pharmacist, it is not sensible to keep them on the shortage list. Indeed, more widely, given we are recommending pharmacists be removed from the shortage occupation list, it is also sensible to remove pre-registration pharmacists as a whole.

3.7 Dental practitioners

Box 3.3: Dental practitioners								
Occupation(s) and SOC code(s):		Dental practitioners - 2215						
Only the following job titles within this occupation are included on our recommended shortage occupation list:								
This occupation is not included on our recommended shortage occupation list								
Top-down data								
Skilled		Occupation passes 3 out of 3 indicators						
SOC skill level classification		4			Median hourly pay for all employees	£26.83		
% employees with NQF4+		94.0						
Shortage		Occupation passes 6 out of 12 available indicators						
		Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)		0.6	0.6	12.4	V2: Percentage change of employment level (over 1 year)	32.4	-5.7	-3.3
P2: Percentage change of median real pay (over 3 years)		-3.8	-3.8	10.5	V3: Percentage change of median paid hours worked (over 3 years)	1.4	1.4	0.0
P3: Return to occupation		0.24	0.49	0.44	V4: Change in new hires (over 1 year)	0.028	-0.053	0.002
I1: Change in median vacancy duration (over 1 year)		-2.9	-1.9	2.4	E1: Skill-shortage vacancies / total vacancies	14.0	14.0	14.0
I2: Vacancies / claimant count		7.05	8.33	0.99	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)		0.0	50.0	40.0	E3: Skill-shortage vacancies / employment	0.03	0.03	0.03
Sensible								
		Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA		24	20	29	Percentage of workforce trained in past 13 weeks	61	62	62
Total employment in this 4-digit occupation is approximately 34000 (LFS, 2010Q2-2011Q1)								
Partner evidence received from:								
We received evidence from the Centre for Workforce Intelligence.								

3.97 The occupation dental practitioners passes 6 out of 12 top-down shortage indicators suggesting that there is a shortage in the occupation as a whole. However, we did not receive bottom-up evidence in relation to the whole occupation and therefore cannot consider it for inclusion on our recommended shortage occupation lists.

3.98 Consultants in paediatric dentistry, which are currently on the shortage occupation list, represent a small sub-set of the occupation, so the top-down data presented in Box

3.3 is not necessarily particularly relevant to this job title.

3.99 The NHS IC census for 2010 recorded a vacancy rate of 3.3 per cent for consultants in paediatric dentistry, down from 9.4 per cent in March 2009. The CfWI told us that an improved balance between vacancy levels and the number of trainees meant that the job title could now be removed from the shortage occupation list. In the absence of any contradictory bottom-up evidence we support the CfWI position.

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3.8 Biological scientists and biochemists

Box 3.4: Biological scientists and biochemists

Occupation(s) and SOC code(s): Biological scientists and biochemists - 2112

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Cardiac physiologist, clinical neurophysiologist, clinical vascular scientist, respiratory physiologist and sleep physiologist.

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£18.62		
% employees with NQF4+	89.6						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	3.4	3.4	-0.2	V2: Percentage change of employment level (over 1 year)	1.4	0.1	2.0
P2: Percentage change of median real pay (over 3 years)	2.3	2.3	2.2	V3: Percentage change of median paid hours worked (over 3 years)	1.3	1.3	1.3
P3: Return to occupation	-0.22	0.04	-0.02	V4: Change in new hires (over 1 year)	-0.046	-0.002	0.018
I1: Change in median vacancy duration (over 1 year)	1.8	4.6	-1.2	E1: Skill-shortage vacancies / total vacancies	47.0	47.0	47.0
I2: Vacancies / claimant count	0.10	0.14	0.07	E2: Skill-shortage vacancies / hard-to-fill vacancies	87.0	87.0	87.0
V1: Percentage change of claimant count (over 1 year)	68.0	4.7	3.2	E3: Skill-shortage vacancies / employment	0.22	0.22	0.22
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	15	15	11	Percentage of workforce trained in past 13 weeks	39	39	38

Total employment in this 4-digit occupation is approximately 92000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Centre for Workforce Intelligence, the South Tees Hospitals NHS Foundation Trust and a large life science business.

3.100 The occupation biological scientists and biochemists pass 3 out of 12 top-down indicators of shortage. However, the evidence we received only relates to a small sub-set of job titles within this occupation. The top-down data are, therefore, of limited relevance.

Cardiac physiologists

3.101 This job title is currently on the shortage occupation list. The CfWI told us that the number of cardiac physiologists has increased at a rate of around 4 per cent per annum for the last five years. The NHS IC

census recorded a three-month vacancy rate of 1.3 per cent in cardiology as at March 2010. Using a wider definition of posts the Society for Cardiological Science and Technology (SCST) reports a vacancy rate of 11 per cent. High demand for services is reported and continues to be expected in the future. South Tees Hospitals NHS Foundation Trust told us that its average vacancy duration for this job title was two to six months. We understand that training is at, or near, capacity. We recommend cardiac physiologists remain

on the UK shortage occupation list.

Clinical neurophysiologist

3.102 This job title is currently on the shortage occupation list. The NHS IC census reported a three-month vacancy rate of 0.7 per cent in September 2010. This equates to three vacancies in England. The CfWI told us that if current training numbers are maintained the number of clinical physiologists is forecast to decline over the next ten years. There is also continued pressure to keep waiting lists low, despite the fact that the formal 18-week waiting targets are no longer in place.

3.103 The CfWI also told us that there is a shortfall of newly qualified clinical neurophysiologists relative to forecast retirement dates. We agree with the CfWI that clinical neurophysiologists should remain on the UK shortage occupation list for the time being.

Clinical vascular scientist

3.104 This job title is currently on the shortage occupation list. The CfWI told us that little information is available on the number of vascular scientists working in England. We were told that, although no complete figures are available for currently unfilled vacancies, the level of agency staff useage and difficulties in filling recent vacancies suggest an ongoing gap between supply of, and

demand for, vascular scientists.

3.105 The Society for Vascular Technology of Great Britain and Ireland report that, of 25 vacancies identified in 2009-2010, only six were filled by a qualified practitioner. Fourteen were filled by a trainee with the remainder not filled.

3.106 We were told by the CfWI that demand for the profession remains high, with the National Stroke Strategy requiring access to imaging services within 24 hours of a stroke. In addition there are new screening requirements for other conditions (e.g. all men over the age of 65 are being offered screening for abdominal aortic aneurism).

3.107 The CfWI told us that structured training routes were being developed across physiological measurement disciplines which will secure the future supply of domestic vascular scientists. We agree that for the short term vascular scientists should remain on the UK shortage occupation list.

Respiratory physiologist

3.108 This job title is currently on the shortage occupation list. In our autumn 2009 review (Migration Advisory Committee, 2009b) the WRT's analysis indicated a continued increase in demand for respiratory physiologists due to an anticipated future increase in the incidence of respiratory disease. The results of a survey conducted

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by the Association for Respiratory Technology and Physiology in 2009 suggest that only 66 per cent of advertisements are successful in appointing candidates to both sleep and respiratory posts. The NHS IC census showed a three-month vacancy rate of 0.8 per cent for this job title in March 2010. The CfWI told us that the demand for respiratory physiology investigations will continue to increase. The CfWI said that international recruitment is possible from Australia and America. In the longer term, development of more structured training routes for respiratory physiologists may increase domestic supply. However, overseas recruitment remains a sensible mitigating strategy for this workforce in the medium term.

- 3.109 We recommend that the job title respiratory physiologist should remain on the UK shortage occupation list.

Sleep physiologist

Sleep physiologist is a subset of respiratory physiologist. This job title is currently on the UK shortage occupation list. There is currently no nationally approved training programme for sleep physiology. Most practitioners enter from respiratory physiology or a nursing or research background.

- 3.110 The CfWI told us that there are limited data on the sleep physiology workforce. The key demand driver for this

workforce is the assessment of continuous positive airway pressure (CPAP) as a treatment for sleep apnoea. The National Institute of Clinical Excellence (NICE) guidelines recommend CPAP as a treatment option for adults with moderate to severe symptomatic obstructive sleep apnoea/hypopnoea syndrome (OSAHS). NICE recommends that treatment of OSAHS should be carried out by a specialist service with appropriately trained medical and support staff.

- 3.111 As with respiratory physiologists the CfWI told us that international recruitment is possible from Australasia and North America and that in the longer term structured training routes should help to increase domestic supply into sleep physiology.
- 3.112 We recommend that the job title sleep physiologist remains on the shortage occupation list.

Stem cell scientist

- 3.113 We received evidence from a large life science business relating to stem cell scientists. This is not a job title that is currently on the shortage occupation list. Qualifications required are at PhD level and pay is £30,000 to £50,000. The job role is therefore clearly skilled.

- 3.114 Turning to shortage, we were told that the business in question, preferring not to be named, had significant

difficulty in finding qualified scientists within the EEA. These are very highly specialist roles and with only 30 centres worldwide involved in stem cell research there was a limited talent pool. They told us that it was important that they are able to target the global pool of stem cell research talent. Moreover, they suggested that being able to recruit these scientists would help the UK to remain a world leader in the area of stem cell research.

3.115 They told us that it is difficult to predict the supply of qualified candidates as the area of research is so new. Their preference was to hire from within the resident labour pool. However, given the specialised nature of the research, the high level of qualifications required and the increasing competition for a limited pool of talent, it was necessary for them to look outside the EEA.

3.116 That said, their vacancy levels were just one per year and it

was taking six to nine months to fill vacancies. However, given that no evidence was received from elsewhere in relation to this job title we do not feel the level of demonstrated shortage is sufficient for us to sensibly recommend stem cell scientists for the shortage occupation list. In any event this job is at PhD level and therefore in a qualifying 4-digit SOC code eligible to receive a high priority under the Points Based System (PBS). As we set out in Chapter 1, when a monthly allocation of restricted CoS is oversubscribed with eligible applications, first priority is given to applications made under the shortage occupation route, second priority is given to PhD-level postings under the Resident Labour Market Test (RLMT), and then any remaining CoS are granted to the highest-scoring, non-PhD level postings under the RLMT route.

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3.9 Physicists, geologists and meteorologists

Box 3.5: Physicists, geologists and meteorologists

Occupation(s) and SOC code(s): Physicists, geologists and meteorologists - 2113

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Nuclear medicine scientist and radiotherapy physicist. Also staff working in diagnostic radiology (including magnetic resonance imaging).

Top-down data

Skilled		Occupation passes 3 out of 3 indicators						
SOC skill level classification	4	Median hourly pay for all employees		£21.41				
% employees with NQF4+	95.9							
Shortage		Occupation passes 4 out of 12 available indicators						
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11	
P1: Percentage change of median real pay (over 1 year)	5.5	5.5	-0.3	V2: Percentage change of employment level (over 1 year)	20.8	2.0	-19.2	
P2: Percentage change of median real pay (over 3 years)	1.2	1.2	6.6	V3: Percentage change of median paid hours worked (over 3 years)	0.8	0.8	-0.2	
P3: Return to occupation	-0.15	0.13	0.07	V4: Change in new hires (over 1 year)	-0.035	-0.059	-0.077	
I1: Change in median vacancy duration (over 1 year)	10.9	-8.6	17.4	E1: Skill-shortage vacancies / total vacancies	7.6	7.6	7.6	
I2: Vacancies / claimant count	0.06	0.11	0.12	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0	
V1: Percentage change of claimant count (over 1 year)	89.2	13.7	0.0	E3: Skill-shortage vacancies / employment	0.02	0.02	0.03	
Sensible								
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11	
Percentage of workforce born non-EEA	13	12	15	Percentage of workforce trained in past 13 weeks	33	36	42	

Total employment in this 4-digit occupation is approximately 21000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Centre for Workforce Intelligence.

3.117 The occupation physicists, geologists and meteorologists passes 4 out of 12 top-down indicators of shortage, providing little indication of shortage in the occupation. The job titles nuclear medicine scientist, radiotherapy physicist, and also staff working in diagnostic radiology (including magnetic resonance imaging), are currently on the UK shortage occupation list. They form a very small part of this very diverse occupation and therefore the top-down evidence is not highly relevant. We discuss some non-health job titles within this

occupation elsewhere in this report.

3.118 The CfWI told us that there remains a lack of detailed data regarding this workforce. However, the Institute of Physics and Engineering in Medicine (IPEM) reports significant numbers of vacancies at the middle/higher grades in radiotherapy, nuclear medicine and radiation protection (diagnostic radiology). Actual figures were not supplied.

3.119 The CfWI said that a lack of suitably trained clinical engineers means that

recruitment to senior posts remains a challenge. It also told us that a significant number of senior staff are approaching retirement age.

- 3.120 The CfWI told us that the radiotherapy workforce needs to increase to meet the demand created by new technologies, such as intensity modulated radiation therapy and proton therapy. Within nuclear medicine the CfWI reports that the expansion of Positron Emission Tomography (PET) services will cause an increase in demand for services. In diagnostic radiology, the expansion of imaging using ionising radiation has increased demand for suitably qualified and experienced staff.
- 3.121 The CfWI told us that efforts focused on increasing trainee commissions, as well as developing higher specialist training to address difficulties

in recruiting at senior levels, may improve the supply within the workforce in the longer term. We therefore agree that these job titles should remain on the UK shortage occupation list, however we will want to see better evidence of shortage next time.

3.10 Nurses

- 3.122 The last time we reviewed nurses was in autumn 2009. In Migration Advisory Committee (2009b) we found that there was not sufficiently strong evidence of shortage across the profession, but that there were shortages in certain nursing specialities. Nurses working in operating theatres, operating department practitioners (which fall under the nurse occupation) and specialist nurses working in neonatal intensive care are currently on the UK shortage occupation list.

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Box 3.6: Nurses

Occupation(s) and SOC code(s): Nurses - 3211

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Specialist nurse working in operating theatres, operating department practitioner and specialist nurse working in neonatal intensive care units.

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees			£15.81		
% employees with NQF4+	89.0						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	7.0	7.0	-2.1	V2: Percentage change of employment level (over 1 year)	-1.5	-2.4	1.3
P2: Percentage change of median real pay (over 3 years)	7.5	7.5	5.1	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.31	-0.03	-0.09	V4: Change in new hires (over 1 year)	0.008	-0.011	-0.010
I1: Change in median vacancy duration (over 1 year)	-6.5	-10.6	-1.5	E1: Skill-shortage vacancies / total vacancies	29.5	29.5	29.5
I2: Vacancies / claimant count	6.36	6.26	4.77	E2: Skill-shortage vacancies / hard-to-fill vacancies	71.2	71.2	71.2
V1: Percentage change of claimant count (over 1 year)	30.7	18.5	30.3	E3: Skill-shortage vacancies / employment	0.57	0.57	0.57
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	19	19	17	Percentage of workforce trained in past 13 weeks	58	57	57

Total employment in this 4-digit occupation is approximately 520000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Centre for Workforce Intelligence, Fresenius Medical Care, the General Healthcare Group, NHS Employers and Bupa.

3.123 This occupation passes 3 out of 12 top-down shortage indicators so there is again little indication of shortage in the occupation as a whole. We also did not receive any evidence suggesting the whole occupation should be on the shortage list and therefore, as previously, we look at evidence presented to us in relation to various nursing specialities.

Specialist nurses working in operating theatres

3.124 We were told last time that specialist nurses working in operating theatres are difficult to recruit due to the nature of

the work. We therefore recommended that these nurses remained on the shortage occupation list. Specialist nurses working in theatres cover roles such as theatre nurses, anaesthetic nurses and scrub nurses.

3.125 NHSE told us that there have been long standing problems around recruitment to these positions. However, employers have reported that they have filled many gaps in the theatre nurse workforce in recent years through a mixture of domestic and international recruitment as well as running local initiatives to attract current nurses into

this area of work. Despite this the NHSE workforce survey in May 2010 found that one third of all nursing shortages reported were in operating theatres.

- 3.126 NHSE said that employers were currently looking at configuring the workforce to support different ways of working, including the up-skilling of individuals and redeployment across different areas of nursing. It was too early to determine what impact this might achieve.
- 3.127 The General Healthcare Group, an independent healthcare provider, told us that on average it was taking 132 days to recruit theatre nurses. It suggested that the situation may have been exacerbated in recent years by the fact that it is no longer compulsory for student nurses to spend a semester in an operating theatre as part of their degree. Such modules are now only offered electively, which, they suggest, throws up long-term challenges to recruiting theatre nurses. They also told us that nursing roles are difficult to fill even from within the wider EEA labour market.
- 3.128 The CfWI told us that, although there was no hard data collected on the number of vacancies in the theatre nurse speciality, there were indications that recruitment to this workforce continues to be challenging.
- 3.129 We recommend specialist nurses working in operating

theatres remain on the UK shortage occupation list.

Operating Department Practitioners (ODPs)

- 3.130 ODPs fall under the 3211 SOC code for nurses, which is why we include them here. ODPs are currently on the UK shortage occupation list. The current qualification for this job is a diploma course coupled with on-the-job training. However, the job will become an all-graduate entry profession, with a new three-year degree starting in 2013.
- 3.131 There is considerable overlap between the ODP workforce, theatre nurses and potentially assistant practitioners who choose to work in a theatre, particularly in anaesthetic care and surgical care roles. As a result ODPs are not used by all employers in their operating theatres.
- 3.132 The NHS IC census in September 2010 recorded a three-month vacancy rate of 1.2 per cent. The CfWI told us that the NHS continues to report difficulties filling substantive vacancies. The College of Operating Department Practitioners reports that agency staff are still being used in many areas, but such use is on the decline.
- 3.133 Turning to sensible, the CfWI told us that the move to a graduate level entry may attract more domestic recruits. In addition the Independent Healthcare Advisory Service (IHAS) and Skills for Health, supported by independent

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healthcare sector employers, will be submitting an application for Growth and Innovation Fund funding. The Fund gives an opportunity for employers and government to invest jointly in making sure the country has the skills needed for long-term competitiveness in a modern economy. The UK Commission for Employment and Skills (UKCES) and the Skills Funding Agency are working in partnership to deliver the Fund.

- 3.134 The application from IHAS and SfH will be to develop a new ODP role (peri-operative support worker). Subject to funding approval, it is anticipated the programme could begin in autumn 2012. This role will provide support to the theatre workforce.
- 3.135 Given that shortages are still being experienced, and that this is clearly an important service provision area, we recommend that ODPs remain on the shortage occupation list.

Specialist nurses in neonatal intensive care units

- 3.136 We were told for the last review that neonatal nursing roles are difficult to recruit to. However, the evidence was not strong and we said we would need stronger evidence for any future review.
- 3.137 The CfWI told us that the NHS IC census does not collect data at the level of granularity required to quantify the shortage in this specialist staff

group. However, it reported that indications are that recruitment difficulties persist. Some data had been collected regionally and in London a 19 per cent vacancy rate had been reported. NHS London has seen an increase in the number of funded posts, but only a small increase in the actual number of staff in post.

- 3.138 The CfWI told us that the Neonatal Task Force Unit found neonatal nursing vacancies nationally in 2009 had an overall vacancy rate of 7.5 per cent. The CfWI also told us that another annual survey of neonatal units, carried out by the charity Bliss, found 76 per cent of units reported vacancies for nurses providing hands-on care in the hospital, estimating 620 vacancies in England.
- 3.139 Given the apparent recruitment problems appear to remain, we agree that specialist nurses working in neonatal intensive care units should remain on the UK shortage occupation list.

Specialist renal nurses

- 3.140 We received evidence from Fresenius Medical Care, a company who work in partnership with the NHS offering dialysis services. It told us that it runs clinics in the UK which provide dialysis treatment. It also told us that it is finding it increasingly hard to recruit renal qualified nurses and that this may restrict growth plans. Indeed at times it is unable to accept

all of the NHS patients being referred to them, which creates additional pressures within local NHS Trusts.

“...we typically have anything between 50 – 100 vacant nursing positions at any one time. This shortage of nurses at times means we are unable to accept the number of patients requested by the referring NHS hospitals, thus creating additional pressures on local NHS Trusts, with the risk of patients being unable to access life saving treatment.”

Fresenius Medical Care response to MAC call for evidence

3.141 However, we did not receive any other evidence relating to renal nurses and therefore do not recommend their inclusion on the UK shortage occupation list at this time.

Registered nurses working in the care sector

3.142 In our autumn 2009 report (Migration Advisory Committee, 2009b) we received evidence from a number of partners about shortages of registered nurses working in the care sector. At the time we noted that it was not clear that a lack of nurses available to work in care homes resulted from any national shortage of nurses. It appeared to be more to do with nurses finding the option unattractive. We therefore did not recommend nurses for care homes for the shortage occupation list. However, we said we would look closely at the area again in a future review.

3.143 Nursing homes differ from residential care homes in that they provide the kind of care which requires the specific skills of a qualified nurse. This may be the case where someone requires constant nursing care due to their poor health, where medication is more complex, or where wounds require dressing. There may be many other reasons why someone is cared for more appropriately in a nursing home rather than a residential care home. A nursing home requires a registered qualified nurse to be on duty at all times and, in the case of larger homes, more than one.

3.144 As part of this review we went to visit a care home provider in Wales who had nine nursing homes. We also visited another care home provider in the South West who was also Chairman of the local area Registered Nursing Home Association and therefore spoke on behalf of a number of service providers. Both said that many of the nurses working in the care sector in their respective areas were approaching retirement age and new nurses were not being recruited to the sector in sufficient numbers to replace them.

3.145 We were told that nurses did not see the care sector as being particularly attractive. Pay and benefits were often lower than the NHS could provide and a career in the NHS could offer more in terms

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of professional advancement. The care sector itself was constrained because of local authority funding. However, we were also told that there may well be regional variations.

3.146 We also received evidence from Bupa. They told us that they have 254 vacancies across 304 homes and a turnover rate of 25 per cent. They told us that for nurses the elderly residential care sector was rarely an area of employment choice.

3.147 However, given that there is not a shortage of nurses overall, and the issue here is one based on choice and may represent a regional problem rather than national one, we do not recommend nurses working in care homes for the UK shortage occupation list. We accept there may be funding constraints, but the issue could potentially be addressed through targetting funding more towards those areas where the greatest recruitment difficulties are being experienced.

3.11 Medical radiographers

Box 3.7: Medical radiographers

Occupation(s) and SOC code(s): Medical radiographers - 3214

Only the following job titles within this occupation are included on our recommended shortage occupation list:

HPC registered diagnostic radiographer, HPC registered therapeutic radiographer and sonographer.

Top-down data

Skilled	Occupation passes 2 out of 3 indicators						
SOC skill level classification	3		Median hourly pay for all employees		£18.64		
% employees with NQF4+	91.0						
Shortage	Occupation passes 5 out of 12 available indicators						
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	1.3	1.3	-5.2	V2: Percentage change of employment level (over 1 year)	-6.1	3.9	-8.0
P2: Percentage change of median real pay (over 3 years)	-1.0	-1.0	-1.8	V3: Percentage change of median paid hours worked (over 3 years)	7.0	7.0	4.8
P3: Return to occupation	-0.17	0.09	0.05	V4: Change in new hires (over 1 year)	-0.022	-0.002	0.032
I1: Change in median vacancy duration (over 1 year)	-1.1	2.4	3.9	E1: Skill-shortage vacancies / total vacancies	73.4	73.4	73.4
I2: Vacancies / claimant count	0.44	0.55	0.38	E2: Skill-shortage vacancies / hard-to-fill vacancies	83.8	83.8	83.8
V1: Percentage change of claimant count (over 1 year)	81.8	30.0	20.0	E3: Skill-shortage vacancies / employment	0.38	0.38	0.40
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	19	12	14	Percentage of workforce trained in past 13 weeks	54	49	48

Total employment in this 4-digit occupation is approximately 23000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Centre for Workforce Intelligence, the Society and College of Radiographers, the General Healthcare Group and the South Tees Hospitals NHS Foundation Trust.

- 3.148 The top-down data are highly relevant to the job titles listed in Box 3.7, which are currently on the shortage occupation list.
- 3.149 This occupation is skilled to NQF4+ according to top-down analysis, and this is corroborated by the evidence we received from the Society and College of Radiographers (SCoR). SCoR told us that diagnostic and therapeutic radiographers must be registered with the Health Professions Council (HPC) as radiographers to work in the UK. The main route to register with the HPC is via approved programmes which are all at BSc (Hons) or Pg Dip level. As of April 2011 there are 26,624 radiographers registered with the HPC. The SCoR estimates that approximately 3,100 of these are therapeutic radiographers with the remainder working as diagnostic radiographers.
- 3.150 The SCoR also told us that a large proportion of sonographers are also qualified diagnostic radiographers. The SCoR estimates that 2,500 sonographers currently work in the UK.
- 3.151 The occupation medical radiographers passes 5 out of 12 top-down indicators of shortage, providing potential but not strong indication of labour shortage. We note that two of the indicators passed are based on relatively out-of-date data from the National Employers Skills Survey (NESS).
- 3.152 The General Healthcare Group told us that it experienced shortages across diagnostic and therapeutic radiography, and sonography. These areas are discussed in turn below. We also discuss mammographers.
- ### HPC registered diagnostic radiographers
- 3.153 The SCoR told us that a survey of UK students in 2010 showed that fewer diagnostic radiography graduates had a job arranged than at the same stage the year before. 56 per cent of 2010 graduates had a job arranged as of July 2010 compared with 76 per cent of 2009 graduates in July 2009. The SCoR suggested that this may indicate that it has become slightly more difficult for diagnostic radiographer graduates to find jobs in the UK. Despite acknowledging that shortages were less severe in diagnostic radiography compared with therapeutic radiography and sonography, the SCoR suggested that diagnostic radiographers should remain on the shortage list so that employers continue to have the flexibility to employ staff from outside the EEA in order to maintain the current level of activity, and to ensure there is a pool of qualified staff available for future improvements in services.
- 3.154 The CfWI told us that demand for diagnostic radiography services continue to be high,

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driven by the Stroke Strategy and the Cancer Reform Strategy. We understand the latest Comprehensive Spending Review recommended increased use of radiography reporting. This involves radiographers taking increased responsibility for more basic X-rays and allowing consultant radiologists to concentrate on more complex images and scans.

- 3.155 The vacancy rate is low, with the NHS IC census in March 2010 recording a three-month vacancy rate of just 0.4 per cent. However, a SCoR survey in 2011 of breast screening centres suggests an 8 per cent vacancy rate. The CfWI told us that this could be exacerbated by a planned age extension of the NHS Breast Screening Programme. There are also high attrition rates in training of around 25 per cent.
- 3.156 We were told that efforts focussed on improving training courses, reducing in-course attrition and establishing a career pathway for the diagnostic radiographer will improve the supply situation within the workforce.
- 3.157 We are mindful of the pressures on this occupation, but nevertheless the evidence of current labour shortage is not entirely compelling. On balance, we recommend HPC registered diagnostic radiographers remain on the shortage occupation list for

the time being. However we are minded to remove them next time we review this occupation if the current situation with regard to limited evidence on labour shortage persists.

HPC registered therapeutic radiographers

- 3.158 This job title is on the current shortage occupation list. The therapeutic radiography group make up a small proportion of radiographers. The NHS IC census for March 2010 showed a three-month vacancy rate of 0.8 per cent for therapeutic radiographers. However, a SCoR survey of cancer centres across the UK in autumn 2010 showed total vacancy rates for therapeutic radiographers of 8.4 per cent. This survey included responses from 97 per cent of cancer centres providing radiotherapy in the UK at the time. The SCoR also told us that, within England, therapeutic radiographers are the NHS Agenda for Change job role (together with chaplains) with the highest proportion of staff receiving recruitment and retention premium payments greater than 3 per cent. In Scotland the SCoR reported a vacancy rate of 2.5 per cent in September 2010.
- 3.159 The South Tees Hospitals NHS Foundation trust told us that competition for staff in this job title continues between NHS Trusts due to labour shortages.

- 3.160 The CfWI told us that the number of therapeutic radiographer training commissions increased from 135 in 1997 to 339 in 2010, which demonstrates increasing demand. Attrition rates in training are high at around one third.
- 3.161 The CfWI told us that the Department of Health has undertaken work to lower in-course attrition and increase capacity. For example, £5 million has been invested in facilities for virtual learning, attracting mature students through the creation of innovative training routes and the development of existing staff.
- 3.162 As with diagnostic radiographers, we will maintain a watching brief on this job title. Nevertheless, we recommend therapeutic radiographers remain on the UK shortage occupation list for the time being.
- 3.165 For this review the SCoR told us that a recent survey of ultrasound departments showed that 42 per cent of the 54 departments who responded to the survey had vacancies. The average vacancy rate across these departments was 10.9 per cent.
- 3.166 The CfWI told us that significant numbers of sonographers are recruited from radiography and cardiac physiology and as both of these workforces have their own supply issues the potential pool of recruits are limited.
- 3.167 The demand for ultrasound examinations continues to increase as a result of early cancer diagnostic initiatives and the implementation of screening programmes in obstetrics and vascular pathologies. The CfWI told us that service pressures continue to cause training problems, with a lack of

Sonographers

- 3.163 This job title is on the current shortage occupation list. The sonographer workforce consists of people from a diverse range of professions. There is currently no requirement for an individual working as a sonographer to be solely registered as such. This means that robust workforce data are difficult to extract.
- 3.164 In Migration Advisory Committee (2009b) we were told that there was some reluctance in the service to

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capacity to arrange clinical placements for trainees. Workforce planning is also complicated by the lack of a professional structure for the job. As a result, there has apparently been a lack of progress in this area since our last review.

- 3.168 We note the lack of an obvious solution to this shortage, but we do not want to affect what is clearly a very important service area. We therefore recommend the job title of sonographer remains on the UK shortage occupation list.

Mammographers

- 3.169 This job title is not currently on the shortage occupation list.

The SCoR told us that there were around 1,000 mammographers in the UK. A joint SCoR and NHS breast screening programme survey of breast screening departments across the UK in September 2010 showed an average three month vacancy rate for mammographers of 8.1 per cent across the departments who responded to the survey. However, the SCoR did not specifically request that the job title be added to the shortage occupation list. If there continues to be an issue we would be happy to review the position of mammographers for the next review.

3.12 Medical and dental technicians

Box 3.8: Medical and dental technicians								
Occupation(s) and SOC code(s):		Medical and dental technicians - 3218						
Only the following job titles within this occupation are included on our recommended shortage occupation list:								
Nuclear medicine technologist and radiotherapy technologist.								
Top-down data								
Skilled		Occupation passes 2 out of 3 indicators						
SOC skill level classification	3	Median hourly pay for all employees				£14.05		
% employees with NQF4+	52.0							
Shortage		Occupation passes 3 out of 12 available indicators						
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11	
P1: Percentage change of median real pay (over 1 year)	8.0	8.0	-1.5	V2: Percentage change of employment level (over 1 year)	0.0	22.5	5.4	
P2: Percentage change of median real pay (over 3 years)	11.7	11.7	4.1	V3: Percentage change of median paid hours worked (over 3 years)	1.4	1.4	0.1	
P3: Return to occupation	-0.27	-0.03	-0.08	V4: Change in new hires (over 1 year)	0.008	-0.007	-0.015	
I1: Change in median vacancy duration (over 1 year)	1.2	-2.0	5.0	E1: Skill-shortage vacancies / total vacancies	27.0	27.0	27.0	
I2: Vacancies / claimant count	0.38	0.41	0.16	E2: Skill-shortage vacancies / hard-to-fill vacancies	55.5	55.5	55.5	
V1: Percentage change of claimant count (over 1 year)	59.4	14.0	-8.0	E3: Skill-shortage vacancies / employment	0.35	0.35	0.29	
Sensible								
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11	
Percentage of workforce born non-EEA	12	9	4	Percentage of workforce trained in past 13 weeks	45	45	47	
Total employment in this 4-digit occupation is approximately 42000 (LFS, 2010Q2-2011Q1)								
Partner evidence received from:								
We received evidence from the Centre for Workforce Intelligence.								

3.170 The occupation medical and dental technicians passes 2 out of 12 top-down indicators of shortage, providing little indication of labour shortage in the occupation. However, the job titles under consideration form a small subset of the occupation as a whole, so the top-down data are not highly relevant.

3.171 The evidence from the CfWI is very similar to that presented for the roles of nuclear medicine scientist and radiotherapy physicist, which are both discussed under 2113 (physicists, geologists and meteorologists). The technologist roles for each are

lower grade posts, but essentially the labour shortage arguments are the same.

3.172 The CfWI told us that there remains a lack of detailed data relating to this workforce. However, the Institute of Physics and Engineering in medicine (IPEM) reports significant numbers of vacancies at the middle and higher grades in radiotherapy and nuclear medicine, although we were not provided with actual numbers.

3.173 The CfWI said that a lack of suitably trained clinical engineers means that

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recruitment to senior posts remains a challenge. It also told us that a significant number of senior staff are approaching retirement age.

3.174 The CfWI told us that the radiotherapy workforce needs to increase to meet the demand that new technologies, such as intensity modulated radiation therapy and proton therapy, have created. Within nuclear medicine the CfWI reports that the expansion of PET services will cause an increase in demand for services. In diagnostic radiology expansion of diagnostic

imaging using ionising radiation has increased demand for suitably qualified and experienced staff.

3.175 The CfWI told us that efforts focused on increasing trainee commissions, as well as developing higher specialist training to address difficulties in recruiting at senior levels, may improve the supply within the workforce in the longer term. In the short term we recommend that these job titles should remain on the UK shortage occupation list, however we will want to see better evidence of shortage next time.

3.13 Speech and language therapists

Box 3.9: Speech and language therapists**Occupation(s) and SOC code(s):** Speech and language therapists - 3223**Only the following job titles within this occupation are included on our recommended shortage occupation list:**

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees			£16.21		
% employees with NQF4+	94.2						
Shortage		Occupation passes 7 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	11.9	11.9	1.9	V2: Percentage change of employment level (over 1 year)	-16.8	19.5	7.2
P2: Percentage change of median real pay (over 3 years)	3.8	3.8	12.0	V3: Percentage change of median paid hours worked (over 3 years)	7.0	7.0	7.0
P3: Return to occupation	-0.16	0.12	0.07	V4: Change in new hires (over 1 year)	0.036	-0.029	0.046
I1: Change in median vacancy duration (over 1 year)	-10.1	7.5	-7.0	E1: Skill-shortage vacancies / total vacancies	32.4	32.4	32.4
I2: Vacancies / claimant count	0.87	0.70	0.26	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	100.0	31.3	-4.8	E3: Skill-shortage vacancies / employment	0.43	0.43	0.36
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	6	3	2	Percentage of workforce trained in past 13 weeks	54	54	48

Total employment in this 4-digit occupation is approximately 14000 (LFS, 2010Q2-2011Q1)**Partner evidence received from:**

We received evidence from the Centre for Workforce Intelligence.

3.176 Speech and language therapists at Agenda for Change bands 7+ and their independent sector equivalents are currently on the shortage occupation list. The top-down data are highly relevant to the job titles under consideration here. The occupation is skilled to NQF4+ according to our top-down analysis and also requires qualifications at a level at or equivalent to NQF4+.

3.177 When we last reviewed the occupation in autumn 2009 (Migration Advisory Committee, 2009b) we were told shortages were at the more senior level with newly qualified and middle grade

therapists matching demand. At that time the Royal College of Speech and Language Therapists (RCSLT) suggested that the shortage was temporary and that it was developing mutual recognition agreements with other European countries which may help to alleviate shortages.

3.178 Top-down evidence shows this occupation passes 7 out of 12 shortage indicators, which on the face of it provides a strong indication of labour shortage. However, the occupation passes all three of the pay-based indicators of labour shortage which, as noted earlier in this chapter, can be less relevant when

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analysing healthcare occupations. Two more of the shortage indicators passed are based on relatively out of date NESS data on skill shortage vacancies.

therapists should be removed from the UK shortage occupation list.

3.179 The CfWI told us that the NHS Information Centre three-month Vacancy Survey for March 2010 showed a 0.5 per cent vacancy rate for speech and language therapists. The RCSLT suggests that the shortage of specialist speech and language therapists is temporary, resulting from significant recent expansion in the requirement for therapists with specialist skills.

3.180 The CfWI told us that the RCSLT suggests that it is still difficult to get UK applicants for therapists at band 7 and above. However, financial pressures have led to a reduction in vacancies at this level and therefore it may be more appropriate to develop the current junior workforce in preparation for senior vacancies becoming available in the future rather than seeking to recruit from abroad.

3.181 The top-down evidence on labour shortage is strong. Nevertheless, it would seem invalid to include this occupation on the shortage occupation list when the bodies of expertise in the sector have provided evidence that suggests it would not be sensible to do so. As such we accept with the CfWI's suggestion that speech and language

3.14 Therapists not elsewhere classified

Box 3.1: Therapists n.e.c.								
Occupation(s) and SOC code(s):		Therapists n.e.c. - 3229						
Only the following job titles within this occupation are included on our recommended shortage occupation list:								
This occupation is not included on our recommended shortage occupation list								
Top-down data								
Skilled		Occupation passes 2 out of 3 indicators						
SOC skill level classification		3			Median hourly pay for all employees		£16.32	
% employees with NQF4+		79.7						
Shortage		Occupation passes 3 out of 12 available indicators						
		Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)		4.8	4.8	-3.5	V2: Percentage change of employment level (over 1 year)	8.1	6.5	7.8
P2: Percentage change of median real pay (over 3 years)		2.8	2.8	-1.3	V3: Percentage change of median paid hours worked (over 3 years)	2.4	2.4	0.8
P3: Return to occupation		-0.25	-0.01	-0.07	V4: Change in new hires (over 1 year)	-0.003	0.024	0.023
I1: Change in median vacancy duration (over 1 year)		-2.2	-3.4	9.4	E1: Skill-shortage vacancies / total vacancies	10.4	10.4	10.4
I2: Vacancies / claimant count		0.12	0.10	0.14	E2: Skill-shortage vacancies / hard-to-fill vacancies	66.5	66.5	66.5
V1: Percentage change of claimant count (over 1 year)		66.7	23.3	2.1	E3: Skill-shortage vacancies / employment	0.16	0.16	0.14
Sensible								
		Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA		7	11	16	Percentage of workforce trained in past 13 weeks	45	48	51
Total employment in this 4-digit occupation is approximately 76000 (LFS, 2010Q2-2011Q1)								
Partner evidence received from:								
We received evidence from the Centre for Workforce Intelligence.								

3.182 An orthoptist investigates, diagnoses and treats sight-related problems and abnormalities of eye movement and positioning. We received evidence on HPC registered orthoptists, which make up a small subset of the occupation therapists not elsewhere classified. Therefore, the top-down data, which do not indicate labour shortage, are not highly relevant.

3.183 The CfWI told us that the British and Irish Orthoptist Society (BIOS) 2010 workforce survey reported a vacancy rate of qualified orthoptists in England of 6.6 per cent. The BIOS reported

that orthoptic teams were working additional hours to meet service demand. BIOS also reported that the number of students graduating from university was smaller than the number of vacancies.

3.184 However, the CfWI raised a number of issues around whether it was sensible for orthoptists to remain on the shortage occupation list. No funding is currently available for supervised clinical placements for trainee orthoptists. Indeed BIOS reported that orthoptic managers were finding it difficult to sustain training because of the impact it has on patient throughput. The

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2010 BIOS survey indicated no recruitment from outside the EEA. Previous years have also shown very limited use of non-EEA labour. As such we believe that, although a potential case can be made for labour shortage, it is no longer sensible to include orthoptists on the shortage occupation list. Another job title within this occupation is discussed in Chapter 5.

Other healthcare occupations.

- 3.185 We received limited evidence in relation to dosimetrists. These are specialist roles providing dosimetric data for patients undergoing radiotherapy, advising medical staff and other healthcare professionals, participating in research trials, and ensuring the provision of a high quality radiotherapy service. They can be trained from radiographers. However, there was insufficient evidence to consider them for the shortage occupation list on this occasion.
- 3.186 We also received evidence in relation to clinical psychologists and various other consultant roles (dermatology, orthodontics and stroke/elderly care), but again there was insufficient evidence for us to consider the job titles for inclusion on the shortage occupation list.

Chapter 4 Engineering occupations

4.1 Introduction

4.1 The engineering sector is highly diverse. There is a large number of specialisms and engineers are employed in a variety of roles. In this chapter we discuss engineering-related occupations.

4.2 Key issues in the engineering sector

4.2 In this review we saw from our top-down analysis that many occupations pass a relatively high number of shortage indicators. In particular, we saw that there were large year-on-year falls in claimant count and there was rapid employment growth for a number of occupations.

4.3 However, much of the evidence received suggested that shortages were not across the board, but in particular areas or niche jobs. For example, the ground engineering sector told us that their shortages are limited to experienced and/or senior staff.

4.4 The issue of the lack of appropriate university courses in specialist engineering subjects was a common

theme across the sector, which partners used to explain labour shortage. Nevertheless, shortages of experienced staff were also frequently cited. We were also told that an ageing workforce is helping to exacerbate such problems.

4.3 Our approach

4.5 During May and June, we held individual meetings with corporate partners to discuss our approach to this review. We also attended two nuclear-specific meetings organised by Cogent, which included representatives from EDF ENERGY, AREVA, Westinghouse Electric UK Holding Ltd, Doosan Babcock and the Department of Energy and Climate Change (DECC). We also met separately with DECC.

4.6 Our analytical approach to engineering occupations in this chapter is consistent with that taken in other chapters. Here, however, the material is ordered mostly around sectors rather than occupations. This is because many of the occupations we review cut across multiple sectors. Therefore top-down

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occupational evidence tables are provided at the end of the chapter. Nevertheless, the top-down evidence is discussed at appropriate points in the main text.

- 4.7 Below we discuss in detail the engineering-related occupations for which we received evidence that we recommend, either totally, or in part, or not at all, for inclusion on the shortage occupation list.

4.4 Chemical and process engineering

- 4.8 The occupation chemical engineers, SOC 2125, has been on our recommended shortage occupation list since 2008. Our analysis of the top-down data confirms that the occupation is skilled to National Qualification Framework level 4 or above (NQF4+). We understand that to fully train a chemical engineer is a lengthy process, typically requiring a four-year degree programme and five years or more of post-graduation professional experience.
- 4.9 Chemical engineers pass 5 out of our 10 valid shortage indicators, indicating that the occupation may be experiencing labour shortage. There was a large fall in the number of Jobseekers Allowance claimants seeking work as chemical engineers over the last 12 months, albeit following large percentage increases in the 12 months to spring 2010 and autumn 2010

respectively. Two of the five indicators passed are from the National Employers Skills Survey (NESS), the results from which are two years out of date, making it important that we corroborated the top-down evidence of apparent shortage using bottom-up information.

- 4.10 The IChemE argued that the occupation is still in short supply in the UK. We were told that the shortage of chemical engineers is becoming more pressing as a result of the economic recovery.
- 4.11 Unfortunately, due to the small size of this occupation, we cannot measure earnings using top-down data. However, the IChemE said that there continues to be a rise, albeit slow, in the median salaries for chartered chemical engineers. They presented data which showed a median salary for chartered chemical engineers of £61,100 for 2011, compared to £60,400 in 2010 and £57,500 in 2008. This, said IChemE, indicates a continued demand for individuals with the requisite skills.
- 4.12 We received evidence that graduate starting salaries have also continued to increase from £24,000 in 2008 to £27,500 in 2010 and £28,000 in 2011. We were told that because of the widespread difficulty for graduates in finding jobs in

- any sphere, the increase in starting salary is significant.
- 4.13 In addition we were told that economic recovery is taking place in the chemical and process engineering sectors much more rapidly than in some parts of the economy. The IChemE said the increase in hiring is partly due to the impact of increasingly challenging oil and gas exploration projects. The IChemE also argued that, in the longer term, the effect of increased activity in the nuclear industry, the development of renewable energy and the clean use of fossil fuels will all contribute to the increased need for chemical and process engineers
- 4.14 Turning to sensible, our top-down data suggest that the proportion of non-European Economic Area (EEA) migrants in the occupation has fallen significantly, suggesting no over-dependence on migrant labour, although the small size of this occupation means that precise trends are difficult to infer reliably. The IChemE pointed out the long training duration for chemical engineers and said they are working with the industry to attract more young people into the sector. In addition we saw that efforts to retain bright graduates in the industry have increased.
- 4.15 The IChemE also told us the industry competes globally for skilled engineering professionals. They explained that countries such as Australia are seeking to recruit heavily in the UK. This, IChemE suggests, illustrates that the UK is in a tough competitive market for engineering talent.
- 4.16 In conclusion, we believe that across the board we have been provided with sufficient evidence that labour shortage remains in this occupation and that non-EEA immigration can sensibly play a role in addressing that shortage. We therefore recommend that chemical engineers be retained on the shortage occupation list.
- ### 4.5 Ground engineering
- 4.17 Job titles relating to ground engineering have been on our recommended shortage occupation list since autumn 2008. We placed some of the job titles under the occupation physicists, geologists and meteorologists and others under the occupation civil engineers. The Ground Forum told us that ground engineering professionals provide advice, undertake design and supervise construction in a range of activities that involve the ground, including site investigation, design and construction of foundations, and flood control. They are required in almost every construction project and also in some projects where no construction is involved. For example, ground engineering professionals are involved in

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- contaminated land identification and remediation.
- 4.18 The Ground Forum explained that there is a number of specialist job titles in the construction-related ground engineering sector, which we list within the relevant SOC codes in Table 4.1 below.
- 4.19 With the exception of civil engineers, which passes 5 out of 12 shortage indicators, there is little top-down evidence of shortages in the relevant 4-digit SOC occupations as a whole. But the job titles we are reviewing are only a small subset of the occupations and are not truly representative of the occupation as a whole. Therefore, we place greater weight on the bottom-up evidence.

Table 4.1: Job titles argued to be in shortage within the ground engineering sector and all corresponding occupations

SOC title and code	Job title (s)
Civil engineers SOC 2121	tunnelling engineer; geotechnical design engineer; geotechnical specialist; reservoir panel engineer; rock mechanics engineer; soil mechanics engineer; geomechanics engineer
Physicists, geologists and meteorologists SOC 2113	hydrogeologist; geophysicist; geoscientist; geophysical specialist; engineering geophysicist; engineering geomorphologist
Engineering professionals n.e.c. SOC 2129	geoenvironmental specialist; geoenvironmental engineer; contaminated land engineer; landfill engineer

- 4.20 All of the above occupations are skilled to NQF4+. We were also told that ground engineering professionals have a first degree in a relevant subject, followed by a second degree (MSc or PhD) in soil mechanics, geotechnical engineering, or a similar ground-related subject. The job titles discussed here are therefore all skilled to NQF4+.
- 4.21 In terms of shortage, we were told that in April 2011 the Ground Forum conducted a survey among its members similar to that undertaken in 2008 and 2009, discussed in previous MAC reports (Migration Advisory Committee 2008 and Migration Advisory Committee 2009b). Respondents to the 2011 survey were asked about the number of ground engineering professionals they had employed at the start of 2008 and the number they employed in early 2011. The Ground Forum said that a total of 38 responses were received from companies that employ approximately 1,500 ground engineering professionals. The Ground Forum said that the results indicated that the employment level in the geo-professional

- workforce has seen a reduction of less than 5 per cent.
- 4.22 We were told that a number of ground engineering professionals have left the UK to take up employment in countries such as Australia and New Zealand which, according to the Ground Forum, is of concern because it may represent a permanent reduction in the supply of the most experienced ground engineering professionals.
- 4.23 The Ground Forum told us that vacancy rate within the sector is currently estimated to be 4 per cent. The Ground Forum explained that this represents an improvement from 2008, when it was estimated that the vacancy rate was between 13 and 15 per cent. We were also told that the length of time posts had been vacant in the 2011 survey varied from one week to more than two years, with one to five months being most common. Obviously, this is a wide range: one month would not represent an especially long period of time to take to fill a vacancy while five months would.
- 4.24 The Ground Forum said one large consultancy reported that they were seeking an additional 20 to 25 tunnelling engineers, which would be a 25 per cent increase in the number of tunnelling engineers they currently employ.
- 4.25 The Ground Forum confirmed that the recession has brought a temporary respite to the sector's shortage but argued that this is only because workload has become more erratic. They said the respite would not continue and future and ongoing infrastructure projects, such as crossrail, offshore windfarms and the building of new power stations, where ground engineering work usually begins at the feasibility stage and before an application is made for planning permission, would ensure that the sector's shortages would become acute again within the next 12 months. The Ground Forum said that shortages in some disciplines such as hydrology and tunnelling has never stopped being acute.
- 4.26 The Ground Forum also told us that there is a high need for ground engineering professionals to be proficient in English. Therefore, the majority of those recruited from outside Europe come from Australia, New Zealand and other English-speaking countries.
- 4.27 Turing to sensible, the Ground Forum said that it is a financial sponsor and a regular contributor to a magazine which stimulates interest in

"The acute shortage of ground engineering professionals that was evident in 2004, 2008 and 2009 has eased but not disappeared."

The Ground Forum response to MAC call for evidence

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- civil engineering. In addition, a number of members of the Ground Forum visit schools in order to promote the jobs within the ground engineering sector.
- 4.28 Whilst there has been improvement in the supply of suitably qualified graduates, we were told that changes in the degree structure and in the cost of university education may prevent the improvement from continuing. Nevertheless, we were told that for the foreseeable future employers in the ground engineering sector would not be seeking to recruit newly-qualified staff from outside the UK because the need is for senior and experienced ground engineering professionals.
- 4.29 We were told that ground engineering companies have introduced in-house training to give non-engineer employees sufficient knowledge to undertake some of the more routine jobs that would once have been done by ground engineering professionals. This, said the Ground Forum, allowed the professionals to do more specialist or technical works which reduces the number of ground engineering professionals required.
- 4.30 The Ground Forum also argued that although ground engineering companies are actively seeking to fill posts from the UK, it was essential for UK competitiveness for the ground engineering sector to be able to recruit employees with a high level of expertise and experience from abroad if necessary.
- 4.31 In conclusion, we believe that we have seen enough evidence to justify retaining the following job titles relating to the ground engineering sector on our recommended shortage list: tunnelling engineer; geotechnical design engineer; geotechnical specialist; reservoir panel engineer; rock mechanics engineer; soil mechanics engineer; geomechanics engineer; hydrogeologist; geophysicist; geoscientist; geophysical specialist; engineering geophysicist; engineering geomorphologist; geoenvironmental specialist; geoenvironmental engineer; contaminated land engineer; and landfill engineer.
- ### 4.6 Job titles in the oil and gas industry
- 4.32 We last reviewed job titles relating to the oil and gas industry in our autumn 2009 report. We placed some relevant job titles in SOC 2121 (civil engineers), others in SOC 2113 (physicists) and also in SOC 2125 (chemical engineers). Our top-down analysis confirms that all of these occupations are skilled to NQF4+. We therefore regard the jobs, which are listed in Table 4.2 below, as sufficiently skilled for the shortage occupation list.

Table 4.2: Job titles argued to be in shortage within the oil and gas industry and all corresponding occupations

SOC title and code	Job title (s)
Physicists, geologists and meteorologists, SOC 2113	geophysicist; geoscientist; geologist
Civil engineers, SOC 2121	petroleum engineer; drilling engineer; completions engineer; fluids engineer; reservoir engineer; offshore and subsea engineer; control and instrument engineer; process safety engineer; wells engineer
Electrical engineers, SOC 2123	All oil and gas industry electrical engineers
Chemical engineers, SOC 2125	All chemical engineers

- 4.33 Chemical engineers were discussed in section 4.3. The other three occupations all pass on between 4 out of 12 and 6 out of 14 shortage indicators. Nevertheless, the top-down data are not highly relevant because the job titles we are reviewing are only a small subset of each occupation.
- 4.34 For this review we received evidence from Oil & Gas UK, PricewaterhouseCoopers (PwC) on behalf of BP, Scottish Council for Development and Industry (SCDI), and KBR (UK). We were told that skill shortages within the oil and gas industry continue to be a key concern, particularly because of the increase in workload over recent years and also because of the industry's continued importance to the UK economy.
- 4.35 Oil & Gas UK told us that occupations in the oil and gas industry earn typically much higher than average salaries. They said wages for shortage occupations within the industry have increased over recent years because of the continuing pressures of increased activity and also a global shortage of skilled personnel. Oil & Gas UK said figures gathered from its member companies show that, despite the recent recession, salaries within some of the asserted shortage occupations have risen by between 6 and 20 per cent in two years.
- 4.36 Such strong earnings growth was not borne out in our top-down earnings data. But, as noted above, those data cover a wide variety of job titles outside, as well as inside, the oil and gas sector.
- 4.37 Evidence from Oil & Gas UK showed high vacancy levels have been reported across the oil and gas industry, with some individual companies reporting vacancy levels representing up to 65 per cent of the total number of personnel required in the occupations it believes to be in shortage. We were also told that it typically takes between 3 and 12 months to fill those vacancies.

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“... that demand for appropriately skilled or experienced staff continues to outstrip supply, with vacancies for graduate and chartered engineers and managers hardest to fill.”

SCDI response to MAC call for evidence

4.38 KBR (UK) told us that their vacancy rates can vary depending on the economic environment. They said that in the period 2006 to 2007 their shortage vacancies made up over 50 per cent of employment.

4.39 PwC told us about survey results released in March 2011 by OPITO, the UK oil and gas industry’s focal point for the skills and knowledge agenda, and a parallel study undertaken by the Engineering Construction Industry Training Board (ECITB). PwC said the results showed that 81 per cent of companies in the oil and gas industry expect to grow their businesses over the next five years, with 44 per cent anticipating significant growth in 2011. The study also found that demand for appropriately skilled or experienced staff continued to exceed supply, with vacancies for engineers and managers being the hardest to fill. We were also told that more than 50 per cent of companies said that attracting appropriately skilled staff would be their greatest challenge and would therefore

impact on their ability to deliver their projects.

4.40 PwC also told us that BP is currently advertising for a number of specialist petrochemical engineering positions in their subsea engineer discipline and has not been able to source the required number of individuals with the requisite skills and experience from within the UK labour market.

4.41 In terms of sensible, Oil & Gas UK argued that the very specialist skills required by the oil and gas industry are not easily transferable from other sectors and cannot be met through training or up-skilling of UK labour.

“...bringing in a worker from outside the EEA is not a ‘cheaper’ option for companies - it costs on average three times more to do so than to hire a UK-based worker.”

Oil & Gas UK response to MAC call for evidence

4.42 We were also told that the oil and gas industry carries out much work to support and develop the UK resident labour market and the up-skilling of domestic workers. For example, the industry has invested approximately £6 million to set up its own oil and gas skills body, OPITO. Oil & Gas UK explained that OPITO is working on identifying and tackling key oil and gas industry gaps and will provide cross-industry training

- programmes and safety standards. It will also work with schools and universities to ensure a constant feed of new entrants to the industry.
- 4.43 SCDI told us that the UK's oil and gas industry has invested much in trying to reduce skill shortages in the UK. This includes the active promotion of science, technology, engineering and mathematics (STEM) subjects in schools.
- 4.44 Oil & Gas UK also explained that companies within the oil and gas industry had invested financial and organisational effort into recruitment for the engineering and science and technology fields. We were told that these efforts include repeat advertisements in local, national and industry publications and the use of recruitment agencies that search for and recruit talent from overseas, including outside the EEA. They said that, in the last four decades, the UK oil and gas industry has provided £276 billion in tax revenues to the UK Exchequer.
- 4.45 Oil & Gas UK told us that the availability of skilled migrant workers is key to ensuring that UK employment is sustained. They said the employment of a relatively small number of skilled migrant workers, often localised in areas such as North East Scotland, North East England and East Anglia, has the net effect of improving overall UK employment figures.
- 4.46 KBR (UK) said they are committed to investing in the training and up-skilling of UK workers and this is reflected in the investment they have made in their trainee and apprenticeship scheme and their efforts to recruit skilled labour from the UK and the EEA, as well as globally.

"...the oil and gas industry is currently in a situation where failure to obtain the right skills could undermine the North East's plans to promote itself as a global hub of expertise and risk damaging the Scottish and UK energy sector at an important time for the economy."

Scottish Council for Development and Industry response to MAC call for evidence

"The UK has long been recognised as a centre of excellence for engineering skills. Its university programs are acknowledged as some of the best in the world. However, as mentioned above, there is a decline in the number of UK students graduating in engineering disciplines and combined with the fact that most of the Oil and Gas projects are overseas, there could well be a temptation for KBR (UK) to move its operations to countries (such as India) where skilled labour is readily available and where it is easier to bring in skilled labour. This would result in a significant loss in terms of foreign investment in the UK which we believe would be in the billions..."

KBR (UK) response to MAC call for evidence

- 4.47 In conclusion, we believe that the evidence we received

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demonstrates that there continues to be a labour shortage in certain job titles in the oil and gas industry. We therefore recommend that the following job titles be retained on the shortage occupation list: geologist; petroleum engineer; drilling engineer; completions engineer; fluids engineer; reservoir engineer; offshore and subsea engineer; control and instrument engineer; process safety engineer, and all oil and gas industry electrical engineers.

4.48 In addition, we are satisfied that the evidence we received is sufficient for us to justify recommending that the job title wells engineer be added to the shortage occupation list.

4.49 KBR (UK) provided us with a wide range of job titles but we did not receive sufficient evidence to consider any of them in detail.

4.7 The construction industry

4.50 Engineers in the construction industry are not currently included on the shortage occupation list.

4.51 For this review CITB-ConstructionSkills, the Sector Skills Council and Industry Training Board for the construction industry, told us that the industry has sufficient skilled workers to meet its demands and therefore there is not a shortage of engineers in the construction industry.

4.52 CITB-ConstructionSkills said that despite reports to the contrary, the construction industry was still struggling to achieve any kind of sustainable growth following the economic recession. We were also told that the demand for skilled workers in construction has lessened, partly because of the reduced demand for new builds in public housing, which, we were told, is estimated to fall significantly over the next few years in light of reduced public funding for the period 2011 to 2015.

4.53 We heard from CITB-ConstructionSkills that the construction industry is predicted to see a sharp slowdown in its growth rate this year as a number of sizeable projects reach completion. They said some previously planned projects have been cancelled, while others are slow to start.

4.54 We received evidence that work carried out in March 2011 by Experian's Construction Forecast Research team showed that in the last decade (pre-recession) industry growth was generally constrained by shortages of skilled labour, but during the recession and its aftermath it is a lack of demand that is the greatest constraint on growth. CITB-ConstructionSkills said that this suggests that there is currently surplus labour in the construction industry.

- 4.55 In light of the evidence received from CITB-ConstructionSkills, we do not include engineers in the construction industry on our recommended shortage occupation list.
- 4.8 The electricity generation industry**
- 4.56 We last reviewed job titles in the electricity transmission and distribution, and generation industries in our March 2009 report (Migration Advisory Committee, 2009a). We recommended that a number of job titles within a wide range of SOC codes be included on the shortage occupation list.
- 4.57 The electricity distribution and transmission industry is discussed below. Regarding the electricity generation industry, for this review EU Skills told us that there is no longer a need for the industry to fill its vacancies by recruiting from outside the EEA. They said this is because the requirement to decommission fossil-fuel power stations over a certain age by 2015 means employers' workforce priorities over the next couple of years will revolve around the redeployment of staff from these plants into other areas of the business, including into new power stations.
- 4.58 EU Skills argued that there are still skills shortages in the electricity generation industry, and therefore evidence it submitted in 2009 is still valid today. However, they said the recruitment of non-EEA workers is unlikely to be a significant element of the electricity generation industry's recruitment strategy over the next few years.
- 4.59 In light of the fact that EU Skills has told us that there is no longer a need for the electricity generation industry to fill its vacancies by recruiting from outside the EEA, we recommend that the following job titles in the electricity generation industry be removed from the shortage occupation list: project manager; project civil engineer; mechanical engineer; electrical engineer; project control engineer; control and instrumentation engineer; assistant engineer; plant process engineer; and production controller.
- 4.9 The electricity transmission and distribution industry**
- 4.60 Our top-down analysis of the SOC codes relevant to this sector confirms that most of the job titles for which we received evidence are within NQF4+ occupations.
- 4.61 Two occupations with SOC codes 3113 (engineering technicians) and 5243 (lines repairers and cable jointer) are not skilled to NQF4+. However, we reviewed certain job titles within those occupations in March 2011 (Migration Advisory Committee, 2011b) to determine their skill level. We

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- found both commissioning engineers and high voltage overhead linesworkers, who work on high voltage lines carrying at least 275,000 volts, to be skilled to NQF4+.
- 4.62 EU Skills and the National Skills Academy (the Skills Academy) put forward the job title substation electrical engineer, which also falls within SOC code 3113. We were told that a substation electrical engineer requires a Higher National Certificate (HNC) or equivalent in an engineering discipline (preferably electrical engineering), which, as we said in our March 2011 report (Migration Advisory Committee, 2011b) is well above NQF level 4. In light of this, we accept that substation electrical engineers are skilled to NQF4+.
- 4.63 Table 4.3 lists job titles relevant to this sector for which we received evidence and which are skilled to NQF4+.
- 4.64 With the exception of electrical engineers, which pass 6 out of 12 shortage indicators, overall there is little top-down evidence of shortage in the occupations listed in Table 4.3. However, the bottom-up evidence relates to small subsets of the occupations and we therefore place greater weight on that evidence, which is discussed below.

Table 4.3: Job titles argued to be in shortage within the electricity transmission and distribution industry and all corresponding occupations

SOC title and code	Job title (s)
Production, works and maintenance managers SOC 1121	project manager
Managers in mining SOC 1123	site manager
Electrical engineers SOC 2123	power system engineer; control engineer; protection engineer
Design and development engineers SOC 2126	design engineer
Planning and quality control engineers SOC 2128	planning/development engineer; quality, health, safety and environment (QHSE) engineer
Engineering professionals nec SOC 2129	project engineer; proposals engineer
Engineering technicians SOC 3113	commissioning engineer; substation electrical engineer
Lines repair and cable jointers SOC 5243	overhead linesworker (high voltage only)

- 4.65 We were also told that the Energy Network Strategy Group identified the availability of suitably skilled people as a major risk to work needed to reinforce and strengthen the current electricity transmission system, which is essential if the UK is to meet its 2020 renewable energy targets. Many of those with the necessary skills are approaching retirement. EU Skills told us of other limiting factors; including the time it takes for a skilled worker to reach full competency, and the limited capacity to train sufficient numbers.
- 4.66 We received evidence that Distribution Network Operators (DNOs), which have statutory duties to develop and maintain an efficient, co-ordinated and economical system of distribution and facilitate competition in generation and supply, have increased their expenditure on main activities from £7.5bn in the previous five-year cycle to £8.5bn in the current five-year cycle. We were also told that DNOs have invested an additional £174m, over the same period, in workforce costs, which include the costs of replacing staff that leave and increasing the size of the workforce to manage the additional forecasted workload.
- 4.67 National Grid told us that it has carried out robust workforce planning through to the end of March 2021, which has identified a resource gap of approximately 2445 employees across key business roles in the transmission side of the industry.
- 4.68 EU Skills and the Skills Academy presented joint evidence about the job titles listed in Table 4.3. They said that there are a number of factors which make it difficult, in the short-term, for the electricity transmission and distribution sector to attract UK skilled workers. These include the number of urban regeneration programmes taking place around the UK, for example the Thames Gateway and the Olympics. However, looking beyond the short term, we have to consider this alongside the evidence from CITB-ConstructionSkills discussed in section 4.6 that demand for new builds in public housing is declining and some major projects are close to reaching completion.
- 4.69 We also saw evidence that the global demand for power engineering is increasing. EU Skills and the Skills Academy said this is because the infrastructure in developed countries is of a similar age to that of the UK's.
- 4.70 We were told that employers in the electricity transmission and distribution industry continue to find recruiting skilled labour a difficult and lengthy process. EU Skills and the Skills Academy said that on average it takes about five months to hire.

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4.71 Balfour Beatty Utility Solutions (BBUS) said its projected workload with clients such as National Grid suggests a year-on-year increase in investment from £149m in 2010/11 to £320m in 2015/16. This, said BBUS, requires an increase in resource to deliver the projects.

“Previously National Grid would have looked to source a number of these vacancies through the recruitment of non-EEA migrants.

However, due to the imposition of the Interim Limit for Tier 2 (General) which saw National Grid allocated only 4 COS for the period 19 July 10 – 5 April 11 and the impact of the limit applied to and subsequent closure of Tier 1 (General) for applicants overseas during 2010, the recruitment to roles that were already known to be in shortage was significantly impacted.”

National Grid response to MAC call for evidence

4.72 In terms of sensible, National Grid told us that because the skilled labour they require is not available, they have recruited inexperienced graduates, through direct entry into key roles in the business with a view to developing and training the individuals for the role ultimately required. This, said National Grid, has led to an increase in the lead times for appointees to reach full competence in their role.

4.73 EU Skills and the Skills Academy told us that the current recession is not

having a significant impact on the electricity transmission and distribution industry. They said the industry is not benefitting from the increase in unemployment because the skills the electricity transmission and distribution industry require are not generally available. They also presented evidence that, in the short-term, there is no alternative to using human labour to install and repair power infrastructure.

4.74 We believe that we have received sufficient evidence of a continuing shortage of labour for certain job titles within the electricity transmission and distribution industry that it is sensible to address using non-EEA migrant labour. We therefore recommend that the following job titles remain on the shortage occupation list: project manager; site manager; power system engineer; control engineer and protection engineer; design engineer; planning/development engineer; quality, health, safety and environment engineer (QHSE); project engineer; proposals engineer; commissioning engineer; and overhead linesworker (high voltage only).

4.75 We also believe that we have received sufficient evidence from the electricity transmission and distribution industry to justify recommending that the job title substation electrical

engineer be included on the shortage occupation list.

4.10 The international mineral extraction consulting industry

4.76 There are no specific job titles relating to the mining industry on the current shortage occupation list. The job titles

we have been asked to consider for this review, listed in Table 4.4 below, fall within a number of SOC codes, which our top-down analysis confirm are all skilled to NQF4+. We therefore regard the jobs as sufficiently skilled.

Table 4.4: Job titles argued to be in shortage within the international mineral extraction consulting industry and all corresponding occupations

SOC title and code	Job title (s)
Civil engineers SOC 2121	mining and coal engineer; mining geotechnical engineer
Physicists, geologists and meteorologists SOC 2113	hydrogeologist; geochemist; geologist; environmental scientist
Chemical engineer SOC 2125	All chemical engineers
Engineering professionals n.e.c. SOC 2129	metallurgical/mineral process engineer
Social science researchers SOC 2322	social scientist

4.77 Overall, there is some top-down evidence of shortages in the 4-digit SOC occupations (listed in Table 4.4), with the exceptions of SOC 2113, physicists, geologists and meteorologists, which passes 4 out of 12 shortage indicators and engineering professional n.e.c., which only passes 2 of 12 shortage indicators. We place greater weight on the bottom-up evidence, because it relates to job titles which represent a small subset of these occupations.

mainly in the mineral and water resource industries. They told us that the global mining and metals sector comprises both mining companies and mining consultancies, which both employ mining engineers. They explained that there are less than five mining consultancies in the UK, which are solely focused on providing consultancy services to the global mining industry.

4.78 We received evidence from SRK (UK), an independent international consulting practice, which provides advice and solutions to clients

4.79 SRK (UK) told us that they are currently looking for skilled and experienced professionals in the specialist field of mining engineering

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- and mining geotechnical engineering.
- 4.80 We understand that mining engineers ensure the safe and economically sound development of mines and other surface and underground operations. The role combines an understanding of the effects of these structures on their surrounding environment, technical knowledge and management skills. We also understand that before a new site is developed, mining engineers assess its viability and assist with planning the mine's structure. They also manage and oversee mining production processes. Therefore, a mining engineer needs the knowledge and understanding of a number of disciplines, such as geology, rock mechanics, engineering design, and economics.
- 4.81 However, we were told that a mining engineer employed by consultancies in the mining industry undertakes tasks such as the strategic evaluation of potential mining projects, open pit mine design, underground mine design and layout, equipment selection for mining project design and feasibility study planning and management.
- 4.82 SRK (UK) explained that it takes up to six months to fill a vacancy. They said that in 2011 the average pay rise for job titles it believes to be in shortage was between 10 and 20 per cent.

- 4.83 SRK (UK) explained that the decline in universities offering relevant courses has made it difficult for the mining industry to recruit experienced EEA nationals with the required level of practical mining skills and experience.

"It is ... essential to the continued success and growth of our business that we can be flexible and recruit high calibre individuals in order that we can compete on an international basis."

SRK (UK) response to MAC call for evidence

"As President of the Institute of Material Minerals and Mining I confirm that the number one issue for our Members working in the natural resource sector (both consultants and mining companies) is recruitment. There is an international shortage of people with the necessary skills."

Institute of Material Minerals and Mining response to MAC call for evidence

- 4.84 SRK (UK) also said there is a global shortage of highly trained mining engineers with relevant practical experience and exposure to the international mining industry. We were told that the pool of available candidates from within the UK labour market has declined. SRK (UK) said that global mining companies are offering higher salaries, thereby reducing the pool of labour available in Europe. It

- said that it is unable to compete with such salaries. They explained that this is because, although they offer higher than average salaries in the UK and pay good bonuses, they are a consulting company and cannot match the salary packages offered by the global mining operational companies. SRK (UK) said they therefore compete globally with other mining consultancies which also operate at lower salary levels to operating mining companies, which further narrows the labour market to recruit from.
- 4.85 SRK (UK) pointed out that appropriate qualifications are required. For example, as a minimum, individuals must have gained a bachelors degree in the relevant subject. Nevertheless, what is crucial to them is operational experience. As such, SRK (UK) said it is essential that they attract and recruit individuals from places such as Australia, South and North America, Russia, Kazakhstan and Africa, where they will have gained practical and operational experience in the mining industry.
- 4.86 In terms of sensible, SRK (UK) told us that they actively support UK and European mining education with the sponsorship of the Federation of European Masters Programme and have implemented an annual scholarship for two students to gain an MSc in engineering geology. They also said that they regularly employ student interns.
- 4.87 SRK (UK) explained that the closure of the UK mining industries impacted on the decline of universities offering courses in mining and mineral resource subjects. They said there are only three universities in the UK offering relevant courses, which has resulted in a lack of available graduates.
- 4.88 In addition SRK (UK) told us that because there is effectively no mining industry in the UK, it is necessary for all mining engineers to have gained practical experience overseas. As such, in order to progress their careers, when individuals do graduate from relevant courses, they seek to secure a job overseas to obtain operational experience which they are unable to benefit from in the UK.
- 4.89 We received written statements of support for the evidence presented by SRK (UK) from Wardell Armstrong LLP and the Institute of Material, Minerals and Mining.
- 4.90 We believe that the evidence we received demonstrates that there is a labour shortage within certain engineering job titles in the international mineral extraction consulting industry and that it is sensible to partially address these shortages using non-EEA labour. We therefore recommend that the following job titles in the UK's mining industry be included on the

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shortage occupation list:
mining and coal engineer;
environmental scientist;
mining geotechnical engineer;
and metallurgical/mineral
processing engineer.

- 4.91 The evidence we received from SRK (UK) related solely to a shortage of engineers and, as such, we do not include the job title social scientist on our recommended shortage occupation list.

4.11 The aerospace sector

- 4.92 The job titles we have been asked to review are listed in Table 4.5. With one exception, they all fall within Standard Occupational Classification (SOC) 2000 codes which our top-down analysis confirms are all skilled to NQF4+. We therefore regard those jobs as sufficiently skilled.

Table 4.5: Job titles argued to be in shortage within the aerospace sector and all corresponding occupations

SOC title and code	Job title (s)
Mechanical engineers SOC 2122	mechanical engineer in the aerospace sector
Design and development engineers SOC 2126	simulation development engineer
Production and process engineers SOC 2127	manufacturing engineer (process planning)
Engineering professionals n.e.c. SOC 2129	chief of engineering; advanced tool and fixturing engineer; stress engineer; aerothermal engineer
Buyers and purchasing officers SOC 3541	manufacturing engineer (purchasing)
Metal working production and maintenance fitters SOC 5223	licensed and military certifying engineer / inspector technician

- 4.93 The exception is the job title licensed and military certifying engineer/inspection technicians (a subset of the occupation 5233, metal working production and maintenance fitters). However, when we reviewed the skill level of this job title in March 2011 (Migration Advisory Committee, 2011b) we viewed it as sufficiently skilled for the shortage occupation list. This was on the basis of the high degree of

on-the-job training and experience required and the level of pay. The Government accepted this view.

- 4.94 We understand from the aerospace sector that in the new SOC 2010 classification, discussed in Chapter 2, the job title has been renamed as airframe technician and has also been re-categorised to SOC 3113, engineering technician. Nevertheless, for reasons set out in Chapter 2,

for the purposes of this review, we used SOC 2000. Therefore we retain the name and categorisation of licensed and military certifying engineer/inspection technician.

- 4.95 Overall, there is little top-down evidence of labour shortage in the occupations relevant to our consideration of the aerospace sector listed in Table 4.5. The bottom-up evidence relates to job titles that represent a small subset of these occupations. Therefore, we place greater weight on the bottom-up evidence.
- 4.96 ADS, the trade organisation responsible for advancing the UK's aerospace, defence and security industries, told us that because of the growth in aerospace workload the sector will need additional engineers.
- 4.97 We received evidence from Airbus that the ability to design, manufacture and assemble composite material is vital in the aerospace sector. They told us that they have in excess of 30 vacant positions within the materials, composite and stress disciplines of the aerospace sector. For the past three years they have carried out advertising campaigns, on both the European Aeronautic Defence and Space Company (EADS) website and via JobCentre Plus which, Airbus said, failed to adequately meet their needs.

“Airbus is also increasing production of its A320 family, which is the main rival to the 737 family. At the moment, Airbus is assembling A320s at a rate of 36 a month and the company plans to increase the rate to 42 aircraft a month in the fourth quarter of 2012.”

ADS response to MAC call for evidence

- 4.98 Marshall Aerospace and Aeropeople Ltd told us that licensed and military certifying engineer/inspection technicians work in the aerospace industry's modification, repair and overhaul (MRO) business.
- 4.99 We were told that shortages in the aerospace sector are partly due to fewer young people choosing engineering as a career and reduced numbers of RAF engineers in the market. Marshall Aerospace and Aeropeople Ltd state that these shortages have also been reported in Europe and the USA so there is both a national and global shortage. A predicted compound annual growth rate in the value of the global aerospace and defence market of 2.4 per cent for the period 2007 to 2012 is also likely to increase skills shortages in this area. We received a letter in support of Marshall Aerospace and Aeropeople Ltd's submission from James Paice MP.
- 4.100 Rolls-Royce told us that they have seen a large increase in major orders, which require them to recruit significant

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numbers of graduate and experienced manufacturing engineers in the UK and overseas. They explained that the demand is also due to the fact that the aerospace industry is responding to new designs, materials and configurations, including hybrids and complex metal composite structures, which, Rolls-Royce argues, are different to the products currently being used.

- 4.101 We received evidence from Rolls-Royce that the shortage of manufacturing engineers in the aerospace industry is partly because there has been a reduction in the number of available places on manufacturing engineering first degree courses. Rolls-Royce told us that Engineering UK (2011) demonstrated that a number of accepted applicants with first degree courses in production and manufacturing engineering fell by 54.8 per cent between 2001/2002 and 2008/2009, from 1,521 to 687. By way of comparison, Rolls-Royce explained that the Engineering UK report showed that the number of accepted applicants for a general engineering degree increased by 36 per cent; civil engineering increased by 87 per cent; and mechanical engineering increased by 58 per cent.
- 4.102 Rolls-Royce also told us that within the specialist area of Gas Turbine Supply Chain Design (GTSC), there is a shortage of aerothermal engineers and stress engineers. They explained that in April 2010 a vacancy for a stress engineer was posted. There were 115 applications for the role. Rolls-Royce said an individual from the domestic workforce was recruited. In comparison, said Rolls-Royce, in February 2011 ten vacancies for a stress engineer were posted. There were 33 applications and, although five candidates were short-listed, no appointment was made because, Rolls-Royce claimed, the candidates lacked the required skill set. Rolls-Royce told us of a similar outcome for their advertised vacancy for an aerothermal engineer.
- 4.103 We were told that on average it takes five months to hire a stress or aerothermal engineer, compared to two months for other engineering skill sets in GTSC. We were also told that in the past 12 months four of the aerothermal engineers hired were on the Tier 1 Post-Study Work route. This route is now closed to new entrants but the Tier 2 shortage occupation route is a potential alternative for companies like Rolls-Royce.
- 4.104 Rolls-Royce said others are from the EU on an average salary of £29,500. This salary, they said, is not higher due to the lack of relevant experience these candidates possess.

“Aircraft maintenance employers need to have an elevated skill set to comply with the numerous regulations for safety, repair, testing and certification.”

Marshall Aerospace and Aeropeople Ltd response to MAC call for evidence

“The reality is that Rolls-Royce will find it extremely difficult to recruit engineers in the UK market in the next few years and will need to recruit from overseas. If Rolls-Royce is not able to recruit migrant workers, there is a potential risk that they will need to increase their overseas production capacity to meet demand.”

ADS response to MAC call for evidence

- 4.105 Marshall Aerospace and Aeropeople Ltd said that to become a licensed and military certifying engineer/inspection technician the level of skill required, the amount of practical on-the-job training needed and the requirement for recency on aircraft type, as well as the Civil Aviation Authority prerequisite to be at least 21 years of age, all contribute to shortages in this job title.
- 4.106 We were told that Marshall Aerospace and Aeropeople Ltd had been advertising for a licensed and military certifying engineer/inspection technician (using the title airframe technician) since November 2010 and have only had one applicant from the EEA, who was not suitable. They have been using contract staff from
- outside the EEA to fill the skills gaps temporarily and to cope with increases in demand.
- 4.107 Marshall Aerospace and Aeropeople Ltd explained that skilled staff need to be recruited from countries which have English as their first language or use English in their education system in order to maintain the high personal and aircraft safety standards required by the industry. For this reason the capacity to recruit from other countries within the EEA is limited.
- 4.108 We were told that from 2009 to date the average salary of licensed and military certifying engineer/inspection technician increased by 9.2 per cent, compared with general pay inflation of 2.1 per cent (ASHE 2010). In addition, since 2008 individuals in this job title have consistently worked over their contracted 37 hours a week.
- 4.109 Tecosim Technical Simulation Ltd (Tecosim) told us that the shortage of simulation development engineers, whose role includes leading development projects using simulation to assess performance of a product in its operating environment, is currently estimated to be over 50 across the UK. They said it takes between one and two years to fill their vacancies and that average earnings for a simulation development engineer have increased by 20 per cent in the past two years.

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4.110 We also received evidence from Tecosim that they are not recruiting newly qualified simulation development engineers because they claim that good engineering graduates are going to work in areas such as finance and that those who do decide to work as an engineer do not have the required level of experience.

4.111 We received evidence that there is an ageing workforce and that projections over the next three or four years indicate that the industry will not be able to replace those who leave either through retirement or due to the physical demands of the job.

“Nationally the CAA have shown that only 1,200 MRO licensed engineers are aged 20-30; compared with 3,500 aged over 50.”

Marshall Aerospace and Aeropeople Ltd response to MAC call for evidence

4.112 Turning to sensible, Marshall Aerospace and Aeropeople Ltd told us that the contract workers they bring in through the PBS are only ever contracted for a maximum of three years, or less if the contract runs for a shorter period. They also maintain that the majority of these workers do not want to settle permanently in this country, do not bring dependants and, rather than deprive members of the resident labour market of jobs, they help support them by ensuring the

aerospace industry is flexible enough to respond quickly to increases in demand and win contracts in a global market. Marshall Aerospace and Aeropeople Ltd stated that failure to secure this work, due to a lack of appropriately skilled workers, would lead to a decline in the industry in the UK and consequently fewer opportunities for work and training and up-skilling opportunities for the resident workforce.

4.113 Marshall Aerospace said they continue to take steps to up-skill the resident workforce. They told us that they run a foundation degree in aircraft maintenance in conjunction with Kingston University which currently has 75 undergraduates. We were told that since 2008 Marshall Aerospace have recruited, on average, ten apprentices a year despite the fact that the cost of delivering this training has increased by roughly 10 per cent to ensure the standard meets regulatory requirements. There has been further investment in training through the employment of eleven full-time technical training instructors who support Marshall Aerospace’s in-house training. However, it can take up to 10 years to become a fully licensed and military certifying engineer/inspection technician from apprenticeship to the requirement for recency on aircraft type and not all those who start the training complete it.

- 4.114 Rolls-Royce told us that they invest in diverse internship programmes, which range from providing term-time work experience opportunities for 14 to 19 year olds to longer-term internships for university students in their second or subsequent year of study. Rolls-Royce also told us about the apprenticeship and graduate programmes they run. They explained that the Government has pledged £45 million to support new partnerships between Rolls-Royce and universities around the UK that will develop more fuel efficient, lower carbon aero engines.
- 4.115 Airbus explained that they work with schools to raise awareness about the aerospace sector, and their business specifically. They also told us that they offer over 400 apprenticeships each year.
- 4.116 Tecosim said that if they cannot recruit outside the EEA work will be transferred from the UK to overseas. They also said that they cannot invest in training inexperienced engineers, as to do so would cost in excess of £42,000 per person. However, we do not accept this as a sensible reason for recruiting non-EEA staff in preference to recruiting UK staff who have the potential to do the job and training them.
- 4.117 In conclusion, we believe that we have sufficient evidence to justify recommending that the job title licensed and military certifying engineer/inspection technician be retained on the shortage occupation list. We believe that this will provide the aerospace industry with the flexibility it needs to respond to urgent requests from the defence industry and allow them the latitude they need to maintain their competitiveness in the global market.
- 4.118 We also recommend that the following job titles in the aerospace industry be included on the shortage occupation list: chief of engineering; manufacturing engineer (process planning); manufacturing engineer (purchasing); advanced tooling and fixturing engineer; stress engineer; aerothermal engineer and mechanical engineer in the aerospace sector.
- 4.119 In addition, we include the job title simulation development engineer on our recommended shortage occupation list.
- 4.120 This was not an entirely straightforward decision. Although some convincing evidence against our shortage and sensible criteria was presented, some of the arguments made in relation to the aerospace sector were of concern to us. Some employers may be resorting too easily to recruitment from abroad rather than being prepared to attract and train UK workers in sufficient numbers, with the financial commitment that involves. We

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recognise the cost pressures that arise from global competition in this sector, and so have recommended these job titles for the shortage occupation list for the time being. Nevertheless, in any future review we will want to look very closely at what actions are being taken to attract UK workers into the sector.

4.12 The nuclear industry

- 4.121 There are currently no nuclear-related job titles on the shortage occupation list.
- 4.122 For this review we received evidence from Cogent, the Sector Skills Council for Chemicals, Nuclear, Oil and Gas, Petroleum, Polymers, and Life Sciences industries, EDF Energy, Westinghouse Electric UK Holding Ltd, and EnergySolutions EU Ltd in response to our call for evidence. We also met with the Department for Energy and Climate Change (DECC) and visited Hinckley Point B power station.
- 4.123 We were asked to review a large number of job titles within a wide range of NQF4+ occupations. Top-down data for the occupations are not highly relevant as we are reviewing a small subset of each. Nevertheless, there is little evidence of shortage in the 4-digit SOC occupations as a whole.
- 4.124 The evidence we received concerned two areas of suggested labour shortage, which we discuss below.

Nuclear new build programme

- 4.125 We were told that there will be up to 30,000 new jobs created by the nuclear new build programme, and that many of the necessary skills that the industry requires are not currently available in the UK. This is because no new build has taken place in the UK for over 20 years.
- 4.126 We received evidence from Cogent, and Westinghouse Electric UK Holding Ltd that the existing pool of skilled and experienced nuclear industry labour is diminishing in the UK due to the combination of an ageing engineering and construction workforce and a limited number of newly skilled staff entering those industries.
- 4.127 Cogent explained that the work the industry plans to undertake is extensive and will be essential to meeting the Government's energy and climate change objectives to cut the UK's carbon dioxide emissions, the main contributor to global warming, by approximately 60 per cent by about 2050, with real progress by 2020.
- 4.128 When we visited the Hinckley Point B, it was explained to us that the new build programme will require large amounts of labour from around 12 to 18 months from now. We were also told that Germany's decision to abandon its nuclear programme was unlikely to provide a supply of labour to this industry in the short to medium term,

- because the lag between this decision being made and the labour becoming available is long.
- 4.129 EDF Energy, which is planning to undertake a £20 billion investment programme in new, low carbon nuclear generation in the UK over the next fifteen years, also told us that up to 70 per cent of the current workforce in the nuclear industry is likely to be retired by 2025.
- 4.130 With regard to sensible, EDF Energy said that they have expanded their £3.5 million nuclear academy in Gloucestershire which trains 2,500 people annually. They also explained that they provide opportunities to over 80 apprentices each year through two apprenticeship schemes, one of which is a four year advanced nuclear apprentice scheme for maintenance technicians. EDF Energy told us that 80 per cent of the 300 trained technicians needed for the operation of Hinckley Point C will be sourced through their apprenticeship programme.
- 4.131 Cogent said they are working closely with DECC, the National Skills Academy for Nuclear, the Department of Business Innovation and Skills, the industry and other Skills Bodies to ensure that all have a clear, shared understanding of the key skills priorities for the nuclear industry, and how skills demand can be met.
- 4.132 Neither the evidence received, nor our meeting with DECC, suggested that, in terms of its new build programme, the nuclear industry has any immediate shortages. Therefore, with the exception of the job title high integrity pipe welders, discussed in Chapter 5 of this report, we do not, at this time, include on our recommended shortage occupation list any of the job titles Cogent and Westinghouse Electric UK Holding Ltd asked us to consider.
- 4.133 We recognised that the industry may face shortages once the new build programme commences. We will therefore continue to work with it and DECC to ensure that, when the need arises, and when we are next asked to review the shortage occupation list, it presents us with evidence of its labour shortage. To allow the industry the appropriate lead in time, we would be content to review its anticipated labour shortages before these specialists are required.

The decommissioning and radioactive waste management areas of the nuclear industry

- 4.134 We received evidence from EnergySolutions EU Ltd (ES EU), an international nuclear services company whose headquarters is in the USA, about a number of decommissioning and waste management job titles that fall within SOC codes listed in Table 4.6, which are skilled to

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NQF4+. We therefore regard the jobs as skilled.

4.135 We were told by ES EU that it has been awarded a contract to manage a fleet of 22 reactors, 4 of which still generate and 18 of which are

in various stages of decommissioning. They said they have also secured contracts on a range of activities including liquid waste processing and waste conditioning.

Table 4.6: Job titles argued to be in shortage within the decommissioning and waste management areas of the nuclear industry and all corresponding occupations

SOC title and code	Job title (s)
Director/Chief Executives of major organisations SOC 1112	managing director; programme director; site director
Physicists, geologists and meteorologists SOC 2113	technical services manager
Production and process engineers SOC 2127	technical services representative
Engineering professionals n.e.c. SOC 2129	operations manager; decommissioning specialist manager; project/planning engineer; radioactive waste manager; radiological protection advisor

4.136 ES EU explained that their contracts will be delivering US technological solutions and, therefore, they will be reliant on their US colleagues to support project delivery in the UK and also to transfer specialist knowledge to the UK workforce. They said they need to access the US labour market, both via the Tier 2 intra company transfer route and via limited targeted recruitment of US nationals using Tier 2 (General) of the PBS.

4.137 In addition, ES EU argued that in the absence of a confirmed nuclear new build programme, the

decommissioning sector will be the main source of jobs for a number of years. ES EU said that the age profile of the qualified and experienced workforce demonstrates that the current workforce is ageing, and the next 5 to 10 years will see the loss of a high proportion of skilled nuclear experience from the UK nuclear industry.

4.138 ES EU told us that they are actively seeking to recruit project engineers and project managers to deliver their UK work programme. They said in the longer term they will have to look to the US where the technical and scientific

knowledge and experience is based. They also explained that the limited response to recruitment campaigns demonstrates that radioactive waste management knowledge at all levels of posts is a scarce commodity.

- 4.139 In terms of sensible, we received evidence that for the recruitment of senior manager or director posts, ES EU has engaged the services of a number of experienced recruitment consultancies with knowledge of the sector, but their efforts have been unsuccessful. ES EU argued that this is because the pool of qualified and experienced senior managerial candidates with board level responsibility and with the appropriate experience of nuclear decommissioning or nuclear services and safety culture is very small. In addition, ES EU said the competition within this market forces employers to extend persuasive remuneration packages and retention arrangements to avoid labour turnover.

We were also told about ES EU's development of a future leaders programme, which involves recruiting newly qualified applied science subject graduates and offering them opportunities, such as secondment to the US and supporting professional chartered institute membership as necessary. We were also told about efforts to up-skill ES EU's UK-based workforce, including the transfer of knowledge by shadowing US

technical support workers over a number of different projects.

- 4.140 In conclusion, we accept there is an immediate shortage of certain specialist roles in the decommissioning and radioactive waste management area of the nuclear industry, and believe that it is sensible for these to be recruited from outside the EEA. We therefore recommend that the following roles be included on the shortage occupation list: managing director; programme director; site director; operations manager; decommissioning specialist manager; project/planning engineer; radioactive waste manager; technical services manager; technical services representative; and radiological protection advisor.

Skilled, Shortage, Sensible

4.13 Engineering top-down tables

Box 4.1: Directors and chief executives of major organisations

Occupation(s) and SOC code(s): Directors and chief executives of major organisations - 1112

Only the following job titles within this occupation are included on our recommended shortage occupation list:

The following job titles within the decommissioning and waste management areas of the nuclear industry: managing director; programme director and site director

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£49.13		
% employees with NQF4+	69.6						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	2.1	2.1	-6.8	V2: Percentage change of employment level (over 1 year)	13.5	-1.2	1.9
P2: Percentage change of median real pay (over 3 years)	-0.2	-0.2	-11.0	V3: Percentage change of median paid hours worked (over 3 years)	-1.3	-1.3	-6.2
P3: Return to occupation	0.43	0.72	0.67	V4: Change in new hires (over 1 year)	-0.047	0.039	0.036
I1: Change in median vacancy duration (over 1 year)	-2.2	-2.9	2.3	E1: Skill-shortage vacancies / total vacancies	26.7	26.7	26.7
I2: Vacancies / claimant count	0.01	0.02	0.01	E2: Skill-shortage vacancies / hard-to-fill vacancies	31.4	31.4	31.4
V1: Percentage change of claimant count (over 1 year)	94.0	-1.9	-8.2	E3: Skill-shortage vacancies / employment	0.02	0.02	0.02
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	10	9	7	Percentage of workforce trained in past 13 weeks	20	18	22

Total employment in this 4-digit occupation is approximately 60000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Energy Solutions UK Ltd.

Box 4.2: Production, works and maintenance managers

Occupation(s) and SOC code(s): Production, works and maintenance managers - 1121

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Project manager within the electricity transmission and distribution industry

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees				£19.70	
% employees with NQF4+	48.2						
Shortage		Occupation passes 4 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	4.3	4.3	-4.6	V2: Percentage change of employment level (over 1 year)	0.8	5.6	2.1
P2: Percentage change of median real pay (over 3 years)	2.2	2.2	-2.8	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.3
P3: Return to occupation	-0.01	0.24	0.16	V4: Change in new hires (over 1 year)	-0.003	-0.011	-0.012
I1: Change in median vacancy duration (over 1 year)	-2.2	-4.3	2.9	E1: Skill-shortage vacancies / total vacancies	22.3	22.3	22.3
I2: Vacancies / claimant count	0.08	0.07	0.14	E2: Skill-shortage vacancies / hard-to-fill vacancies	95.3	95.3	95.3
V1: Percentage change of claimant count (over 1 year)	110.5	-14.4	-37.1	E3: Skill-shortage vacancies / employment	0.09	0.09	0.09
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	5	5	6	Percentage of workforce trained in past 13 weeks	20	18	17

Total employment in this 4-digit occupation is approximately 399000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Energy & Utility Skills, the National Skills Academy, Balfour Beatty Utility Solutions and National Grid.

Skilled, Shortage, Sensible

Box 4.3: Managers in mining and energy

Occupation(s) and SOC code(s): Managers in mining and energy - 1123

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Site manager within the electricity transmission and distribution industry

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£23.30		
% employees with NQF4+	61.9						
Shortage		Occupation passes 4 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	-11.5	-11.5	-5.3	V2: Percentage change of employment level (over 1 year)	-8.2	2.9	18.9
P2: Percentage change of median real pay (over 3 years)	-2.7	-2.7	1.4	V3: Percentage change of median paid hours worked (over 3 years)	0.1	0.1	0.0
P3: Return to occupation	0.13	0.39	0.31	V4: Change in new hires (over 1 year)	0.007	0.081	0.019
I1: Change in median vacancy duration (over 1 year)	-22.0	-26.2	6.5	E1: Skill-shortage vacancies / total vacancies	30.3	30.3	30.3
I2: Vacancies / claimant count	0.07	0.04	0.09	E2: Skill-shortage vacancies / hard-to-fill vacancies	63.1	63.1	63.1
V1: Percentage change of claimant count (over 1 year)	131.3	16.1	-31.4	E3: Skill-shortage vacancies / employment	0.14	0.14	0.11
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	8	3	5	Percentage of workforce trained in past 13 weeks	26	30	26

Total employment in this 4-digit occupation is approximately 19000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Energy & Utility Skills, the National Skills Academy, Balfour Beatty Utility Solutions and National Grid.

Box 4.4: Physicists, geologists and meteorologists**Occupation(s) and SOC code(s):** Physicists, geologists and meteorologists - 2113**Only the following job titles within this occupation are included on our recommended shortage occupation list:**

Hydrogeologist; geophysicist; geoscientist; geophysical specialist; engineering geophysicist; engineering geomorphologist; geologist; geochemist; environmental scientist

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£21.41		
% employees with NQF4+	95.9						
Shortage		Occupation passes 4 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	5.5	5.5	-0.3	V2: Percentage change of employment level (over 1 year)	20.8	2.0	-19.2
P2: Percentage change of median real pay (over 3 years)	1.2	1.2	6.6	V3: Percentage change of median paid hours worked (over 3 years)	0.8	0.8	-0.2
P3: Return to occupation	-0.15	0.13	0.07	V4: Change in new hires (over 1 year)	-0.035	-0.059	-0.077
I1: Change in median vacancy duration (over 1 year)	10.9	-8.6	17.4	E1: Skill-shortage vacancies / total vacancies	7.6	7.6	7.6
I2: Vacancies / claimant count	0.06	0.11	0.12	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	89.2	13.7	0.0	E3: Skill-shortage vacancies / employment	0.02	0.02	0.03
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	13	12	15	Percentage of workforce trained in past 13 weeks	33	36	42

Total employment in this 4-digit occupation is approximately 21000 (LFS, 2010Q2-2011Q1)**Partner evidence received from:**

We received evidence from the Ground Forum, Oil & Gas UK, Scottish Council for Development and Industry, SRK Consulting (UK) Ltd, and PricewaterhouseCoopers, on behalf of BP.

Skilled, Shortage, Sensible

Box 4.5: Civil engineers

Occupation(s) and SOC code(s): Civil engineers - 2121

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Geotechnical engineers; geotechnical design engineer; geotechnical specialist; reservoir panel engineer; rock mechanics engineer; soil mechanics engineer; geomechanics engineer; tunnelling engineer; petroleum engineers; drilling engineer; completions engineer; fluids engineer; offshore and subsea engineer; control and instrument engineer; process safety engineer; wells engineer; mining geotechnical engineer; mining and coal engineer

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees				£16.84	
% employees with NQF4+	76.2						
Shortage		Occupation passes 5 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	1.5	1.5	-5.9	V2: Percentage change of employment level (over 1 year)	0.5	-18.9	-10.4
P2: Percentage change of median real pay (over 3 years)	4.1	4.1	-2.5	V3: Percentage change of median paid hours worked (over 3 years)	-1.6	-1.6	3.0
P3: Return to occupation	-0.14	0.13	0.06	V4: Change in new hires (over 1 year)	-0.054	-0.048	-0.011
I1: Change in median vacancy duration (over 1 year)	0.5	-3.3	-0.7	E1: Skill-shortage vacancies / total vacancies	44.5	44.5	44.5
I2: Vacancies / claimant count	0.09	0.04	0.07	E2: Skill-shortage vacancies / hard-to-fill vacancies	94.9	94.9	94.9
V1: Percentage change of claimant count (over 1 year)	210.5	22.5	-26.1	E3: Skill-shortage vacancies / employment	0.47	0.47	0.58
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	11	8	9	Percentage of workforce trained in past 13 weeks	33	30	28

Total employment in this 4-digit occupation is approximately 73000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from CITB-ConstructionSkills, the Ground Forum, SRK Consulting (UK) Ltd, Oil & Gas UK, PricewaterhouseCoopers on behalf of BP, and the Scottish Council for Development and Industry.

Box 4.6: Mechanical engineers									
Occupation(s) and SOC code(s): Mechanical engineers - 2122									
Only the following job titles within this occupation are included on our recommended shortage occupation list:									
Mechanical engineer within the aerospace sector									
Top-down data									
Skilled					Occupation passes 3 out of 3 indicators				
SOC skill level classification		4			Median hourly pay for all employees		£19.60		
% employees w with NQF4+		59.7							
Shortage					Occupation passes 4 out of 12 available indicators				
		Spr 10	Aut 10	Sum 11			Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)		0.7	0.7	0.7	V2: Percentage change of employment level (over 1 year)		-1.1	0.0	-5.1
P2: Percentage change of median real pay (over 3 years)		-0.6	-0.6	2.4	V3: Percentage change of median paid hours worked (over 3 years)		0.0	0.0	0.0
P3: Return to occupation		-0.09	0.17	0.08	V4: Change in new hires (over 1 year)		-0.009	-0.025	-0.023
I1: Change in median vacancy duration (over 1 year)		-4.6	3.4	-6.9	E1: Skill-shortage vacancies / total vacancies		27.4	27.4	27.4
I2: Vacancies / claimant count		0.17	0.11	0.14	E2: Skill-shortage vacancies / hard-to-fill vacancies		100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)		162.5	10.7	-35.5	E3: Skill-shortage vacancies / employment		0.82	0.82	0.85
Sensible									
		Spr 10	Aut 10	Sum 11			Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA		6	6	7	Percentage of workforce trained in past 13 weeks		25	27	31
Total employment in this 4-digit occupation is approximately 78000 (LFS, 2010Q2-2011Q1)									
Partner evidence received from:									
We received evidence from Rolls-Royce plc and ADS.									

Skilled, Shortage, Sensible

Box 4.7: Electrical engineers

Occupation(s) and SOC code(s): Electrical engineers - 2123

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Electrical engineer within the oil and gas industry

The following job titles within the electricity transmission and distribution industry: power system engineer, control engineer, and protection engineer

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees		£21.04			
% employees with NQF4+	51.9						
Shortage		Occupation passes 6 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	6.1	6.1	-2.7	V2: Percentage change of employment level (over 1 year)	-1.3	14.9	16.8
P2: Percentage change of median real pay (over 3 years)	5.8	5.8	5.7	V3: Percentage change of median paid hours worked (over 3 years)	-0.6	-0.6	0.0
P3: Return to occupation	-0.06	0.21	0.11	V4: Change in new hires (over 1 year)	-0.029	-0.030	0.032
I1: Change in median vacancy duration (over 1 year)	-5.6	-1.7	-2.3	E1: Skill-shortage vacancies / total vacancies	26.3	26.3	26.3
I2: Vacancies / claimant count	0.30	0.21	0.20	E2: Skill-shortage vacancies / hard-to-fill vacancies	84.5	84.5	84.5
V1: Percentage change of claimant count (over 1 year)	137.4	17.9	-27.8	E3: Skill-shortage vacancies / employment	0.13	0.13	0.11
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	8	8	7	Percentage of workforce trained in past 13 weeks	28	31	33

Total employment in this 4-digit occupation is approximately 65000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Energy & Utility Skills, the National Skills Academy, Balfour Beatty Utility Solutions, National Grid, Oil & Gas UK and Scottish Council for Development and Industry.

Box 4.8: Chemical engineers

Occupation(s) and SOC code(s): Chemical engineers - 2125

Only the following job titles within this occupation are included on our recommended shortage occupation list:

All job titles within this occupation are included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£17.66		
% employees with NQF4+	80.1						
Shortage		Occupation passes 5 out of 10 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	#N/A	#N/A	#N/A	V2: Percentage change of employment level (over 1 year)	-6.1	28.4	-14.3
P2: Percentage change of median real pay (over 3 years)	#N/A	#N/A	#N/A	V3: Percentage change of median paid hours worked (over 3 years)	0.1	0.1	-2.2
P3: Return to occupation	0.00	0.25	0.17	V4: Change in new hires (over 1 year)	-0.045	-0.003	-0.018
I1: Change in median vacancy duration (over 1 year)	-32.6	-16.6	-2.3	E1: Skill-shortage vacancies / total vacancies	25.9	25.9	25.9
I2: Vacancies / claimant count	0.12	0.05	0.06	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	188.2	40.0	-34.1	E3: Skill-shortage vacancies / employment	0.30	0.30	0.30
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	16	12	7	Percentage of workforce trained in past 13 weeks	17	19	32

Total employment in this 4-digit occupation is approximately 10000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Institute of Chemical Engineers, Oil & Gas UK, SRK Consulting (UK) Ltd and the Scottish Council for Development and Industry.

Skilled, Shortage, Sensible

Box 4.9: Design and development engineers

Occupation(s) and SOC code(s): Design and development engineers - 2126

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Design engineer within the electricity transmission and distribution industry

Simulation development engineer

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£17.37		
% employees with NQF4+	79.0						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	-2.4	-2.4	-4.1	V2: Percentage change of employment level (over 1 year)	-12.3	10.0	23.2
P2: Percentage change of median real pay (over 3 years)	-3.2	-3.2	-8.4	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.14	0.13	0.08	V4: Change in new hires (over 1 year)	0.071	-0.016	-0.068
I1: Change in median vacancy duration (over 1 year)	-1.4	3.7	-6.2	E1: Skill-shortage vacancies / total vacancies	35.0	35.0	35.0
I2: Vacancies / claimant count	0.22	0.16	0.28	E2: Skill-shortage vacancies / hard-to-fill vacancies	76.0	76.0	76.0
V1: Percentage change of claimant count (over 1 year)	199.0	-4.1	-36.5	E3: Skill-shortage vacancies / employment	0.23	0.23	0.18
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	10	11	12	Percentage of workforce trained in past 13 weeks	25	22	27

Total employment in this 4-digit occupation is approximately 68000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Energy & Utility Skills, the National Skills Academy, Balfour Beatty Utility Solutions, National Grid and Tecosim Technical Solutions Ltd.

Box 4.10: Production and process engineers

Occupation(s) and SOC code(s): Production and process engineers - 2127

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Manufacturing engineer (process planning) in the aerospace sector

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees				£16.33	
% employees with NQF4+	47.1						
Shortage		Occupation passes 4 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	3.0	3.0	-3.1	V2: Percentage change of employment level (over 1 year)	-16.6	-7.9	-0.5
P2: Percentage change of median real pay (over 3 years)	-9.8	-9.8	-3.2	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.2
P3: Return to occupation	-0.17	0.05	-0.04	V4: Change in new hires (over 1 year)	-0.016	-0.060	0.019
I1: Change in median vacancy duration (over 1 year)	-5.8	-8.9	3.1	E1: Skill-shortage vacancies / total vacancies	21.0	21.0	21.0
I2: Vacancies / claimant count	0.17	0.12	0.40	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	155.9	-7.8	-38.7	E3: Skill-shortage vacancies / employment	0.07	0.07	0.06
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	6	8	8	Percentage of workforce trained in past 13 weeks	20	31	31

Total employment in this 4-digit occupation is approximately 30000 (LFS, 2010Q2-2011Q1)**Partner evidence received from:**

We received evidence from Rolls-Royce plc and ADS.

Skilled, Shortage, Sensible

Box 4.11: Planning and quality control engineers

Occupation(s) and SOC code(s): Planning and quality control engineers - 2128

Only the following job titles within this occupation are included on our recommended shortage occupation list:

The following job titles within the electricity transmission and distribution industry: planning/development engineer; quality, health, safety and environment (QHSE) engineer

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£15.99		
% employees with NQF4+	45.0						
Shortage		Occupation passes 2 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	1.1	1.1	-1.1	V2: Percentage change of employment level (over 1 year)	-9.0	-17.3	-14.4
P2: Percentage change of median real pay (over 3 years)	-2.2	-2.2	1.3	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.19	0.05	0.02	V4: Change in new hires (over 1 year)	-0.058	-0.041	-0.016
I1: Change in median vacancy duration (over 1 year)	-3.0	-3.1	-1.2	E1: Skill-shortage vacancies / total vacancies	0.0	0.0	0.0
I2: Vacancies / claimant count	0.13	0.10	0.33	E2: Skill-shortage vacancies / hard-to-fill vacancies	0.0	0.0	0.0
V1: Percentage change of claimant count (over 1 year)	147.3	-17.3	-40.2	E3: Skill-shortage vacancies / employment	0.00	0.00	0.00
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	8	4	6	Percentage of workforce trained in past 13 weeks	22	30	28

Total employment in this 4-digit occupation is approximately 25000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Energy & Utility Skills, the National Skills Academy, Balfour Beatty Utility Solutions and National Grid.

Box 4.12: Engineering professionals n.e.c.

Occupation(s) and SOC code(s): Engineering professionals n.e.c. - 2129

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Geoenvironmental specialist; geoenvironmental engineer; contaminated land engineer; landfill engineer; metallurgical/mineral processing engineers

The following job titles within the electricity transmission and distribution industry: project engineer, proposals engineer

The following job titles within the aerospace industry: chief of engineering; advanced tool and fixturing engineer; stress engineer; aerothermal engineer

The following job titles within the decommissioning and waste management areas of the nuclear industry: operations manager; decommission specialist manager; radiological protection advisor

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees				£17.81	
% employees with NQF4+	59.9						
Shortage		Occupation passes 2 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	2.9	2.9	-3.9	V2: Percentage change of employment level (over 1 year)	-5.1	17.1	-1.3
P2: Percentage change of median real pay (over 3 years)	1.6	1.6	0.3	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.19	0.10	0.05	V4: Change in new hires (over 1 year)	-0.010	-0.014	-0.011
I1: Change in median vacancy duration (over 1 year)	-2.4	-3.3	1.2	E1: Skill-shortage vacancies / total vacancies	19.8	19.8	19.8
I2: Vacancies / claimant count	0.20	0.14	0.20	E2: Skill-shortage vacancies / hard-to-fill vacancies	75.5	75.5	75.5
V1: Percentage change of claimant count (over 1 year)	155.9	6.0	-30.7	E3: Skill-shortage vacancies / employment	0.17	0.17	0.16
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	8	8	9	Percentage of workforce trained in past 13 weeks	30	28	24

Total employment in this 4-digit occupation is approximately 90000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Ground Forum, Energy & Utility Skills, the National Skills Academy; Rolls-Royce plc, ADS and SRK Consulting (UK) Ltd.

Skilled, Shortage, Sensible

Box 4.13: Buyers and purchasing officers

Occupation(s) and SOC code(s): Buyers and purchasing officers - 3541

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Manufacturing engineer (purchasing) in the aerospace sector

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees				£14.80	
% employees with NQF4+	45.6						
Shortage		Occupation passes 4 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	4.4	4.4	-3.7	V2: Percentage change of employment level (over 1 year)	0.3	7.3	9.3
P2: Percentage change of median real pay (over 3 years)	-1.2	-1.2	-1.5	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.24	0.00	-0.03	V4: Change in new hires (over 1 year)	-0.016	-0.006	0.019
I1: Change in median vacancy duration (over 1 year)	6.3	3.9	-5.5	E1: Skill-shortage vacancies / total vacancies	29.1	29.1	29.1
I2: Vacancies / claimant count	0.13	0.12	0.16	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	102.3	-19.7	-32.1	E3: Skill-shortage vacancies / employment	0.30	0.30	0.27
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	6	7	8	Percentage of workforce trained in past 13 weeks	21	24	25

Total employment in this 4-digit occupation is approximately 69000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Rolls-Royce plc and ADS.

Box 4.14: Engineering technicians

Occupation(s) and SOC code(s): Engineering technicians - 3113

Only the following job titles within this occupation are included on our recommended shortage occupation list:

The following job titles within the electricity transmission and distribution industry: commissioning engineer and substation electrical engineer

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from Energy & Utility Skills, the National Skills Academy, Balfour Beatty Utility Solutions, and National Grid.

Box 4.15: Metal working production and maintenance fitters

Occupation(s) and SOC code(s): Metal working production and maintenance fitters - 5223

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Licensed and military certifying engineer/inspector technician

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from Marshall Aerospace and Aeropeople Ltd. We received a letter of support for the evidence presented by Marshall Aerospace and Aeropeople Ltd from James Paice MP.

Box 4.16: Lines repair and cable jointers

Occupation(s) and SOC code(s): Lines repair and cable jointers - 5243

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Overhead linesworker (high voltage only)

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from Energy & Utility Skills, the National Skills Academy, Balfour Beatty Utility Solutions, and National Grid.

Chapter 5 Other occupations

5.1 Introduction

5.1 This chapter summarises the evidence and our recommendations in relation to occupations outside the areas of healthcare and engineering. Most of these occupations are presently represented, in part, on the UK shortage occupation list, but we also consider some occupations here for the first time.

5.2 Residential and day care managers

5.2 The United Kingdom Homecare Association (UKHCA) provided evidence in relation to domiciliary care managers within this occupation. The occupation is not currently on the shortage occupation list.

5.3 Domiciliary care managers work in the domiciliary care

sector which provides care to people in their own home. The UKHCA told us that there are over 6,880 registered homecare providers across the UK, the majority of which (84 per cent) are in the independent and voluntary sectors.

5.4 Top-down data suggest the occupation is skilled to National Qualifications Framework level 4 or above (NQF4+). The UKHCA provided evidence that, in England, the Care Quality Commission requires registered domiciliary care managers to have, or be working towards, the appropriate qualification which is at NVQ level 4. Evidence was also provided in relation to the devolved administration areas which all have similar level 4 qualification requirements.

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Box 5.1: Residential and day care managers

Occupation(s) and SOC code(s): Residential and day care managers - 1185

Only the following job titles within this occupation are included on our recommended shortage occupation list:

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees				£15.26	
% employees with NQF4+	62.4						
Shortage		Occupation passes 4 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	3.3	3.3	-2.5	V2: Percentage change of employment level (over 1 year)	-4.2	4.9	-9.6
P2: Percentage change of median real pay (over 3 years)	4.5	4.5	2.9	V3: Percentage change of median paid hours worked (over 3 years)	0.1	0.1	0.1
P3: Return to occupation	-0.38	-0.10	-0.15	V4: Change in new hires (over 1 year)	0.054	0.001	0.020
I1: Change in median vacancy duration (over 1 year)	-0.6	-0.5	-1.8	E1: Skill-shortage vacancies / total vacancies	36.1	36.1	36.1
I2: Vacancies / claimant count	2.04	1.55	1.21	E2: Skill-shortage vacancies / hard-to-fill vacancies	96.6	96.6	96.6
V1: Percentage change of claimant count (over 1 year)	83.3	38.3	7.8	E3: Skill-shortage vacancies / employment	0.37	0.37	0.40
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	8	10	12	Percentage of workforce trained in past 13 weeks	48	46	48

Total employment in this 4-digit occupation is approximately 52000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the United Kingdom Homecare Association (UKHCA).

5.5 The UKHCA also reported that according to Skills for Care data managerial staff, including registered managers and senior managers in the domiciliary care sector, earn an average annual salary of around £27,000. This is slightly below our typical salary benchmark for NQF4+ occupations of £28,260 per annum, discussed in Chapter 2. On balance, however, we are prepared to accept that domiciliary care managers are skilled to NQF4+.

5.6 Turning to shortage, top-down data show the occupation passes 4 out of 12 indicators. Two of the indicators passed are based on the National

Employers Skills Survey (NESS), which was last conducted in 2009. Median real pay in this occupation, which has previously been increasing over one year, is now decreasing according to the most recent data. Overall, our top-down analysis provides little indication of shortage in the occupation as a whole.

5.7 The UKHCA told us that according to Skills for Care data, vacancy rates for managers in social care organisations range from 0.6 to 2.0 per cent with annual turnover rates of 4.6 to 10.7 per cent. On the face of it,

these figures do not look particularly high.

- 5.8 We were told that domiciliary care providers are facing a number of additional costs and negative impacts on their businesses as a result of staff and skills shortages facing them. Employers are turning to agency workers to fill shortages, which increases their costs. The UKHCA also argue that future demand for domiciliary care managers will be high due to increasing numbers of elderly people and also as a result of the shift in emphasis towards care in the community.
- 5.9 The UKHCA told us that their members struggle to employ resident workers not only because of skills shortages, but also because of a general lack of interest in working in

the care sector. They also told us that a lack of ability to recruit is hampering the ability of care businesses to grow and this could have a negative impact on the local economy with fewer jobs created.

- 5.10 We are not convinced by the arguments put to us. The evidence relating to shortage is not compelling and with such a large pool of care assistants and senior care workers working within the care sector we would expect there to be opportunities to train the best to become managers. We are not persuaded that domiciliary care managers are in shortage and we also do not think that it is sensible to include domiciliary care managers on the shortage occupation list.

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5.3 Veterinarians

Box 5.2: Veterinarians

Occupation(s) and SOC code(s): Veterinarians - 2216

Only the following job titles within this occupation are included on our recommended shortage occupation list:

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£15.77		
% employees with NQF4+	83.0						
Shortage		Occupation passes 6 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	6.0	6.0	-3.1	V2: Percentage change of employment level (over 1 year)	-20.0	30.4	33.4
P2: Percentage change of median real pay (over 3 years)	6.5	6.5	-3.3	V3: Percentage change of median paid hours worked (over 3 years)	0.6	0.6	4.2
P3: Return to occupation	-0.18	0.14	0.13	V4: Change in new hires (over 1 year)	-0.152	-0.095	0.014
I1: Change in median vacancy duration (over 1 year)	#N/A	#N/A	10.3	E1: Skill-shortage vacancies / total vacancies	48.3	48.3	48.3
I2: Vacancies / claimant count	0.03	0.08	0.10	E2: Skill-shortage vacancies / hard-to-fill vacancies	85.7	85.7	85.7
V1: Percentage change of claimant count (over 1 year)	133.3	-10.0	0.0	E3: Skill-shortage vacancies / employment	2.00	2.00	1.26
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	17	13	14	Percentage of workforce trained in past 13 weeks	66	54	63

Total employment in this 4-digit occupation is approximately 18000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Royal College of Veterinary Surgeons and the British Veterinary Association.

5.11 The job title veterinary surgeon within this occupation is currently on the shortage occupation list. The occupation is skilled to NQF4+ and therefore we focus on shortage and sensible for this review.

5.12 Our analysis of the top-down data shows that veterinarians pass 6 out of 12 shortage indicators, which suggests that the occupation is potentially in shortage. However, one third of the indicators passed are based on NESS data, which was gathered more than two years

ago. Furthermore, we note that median real pay in this occupation has fallen in the past year.

5.13 When we looked at this occupation in autumn 2009 (Migration Advisory Committee, 2009b) we said that for future reviews, we would want to see sufficient evidence of long-term supply availability and demand needs. For this review we received evidence from the Royal College of Veterinary Surgeons (RCVS) and the British Veterinary Association (BVA). Figures provided by

- the RCVS suggested that the number of UK graduates entering the profession in 2009 and 2010 was broadly in line with the number of retirements. However, the number of new trainees has not kept up with additional demand over and above that of replacement. The RCVS forecast a year-on-year expansion of 541 veterinary surgeons is required. However, the methodology for this forecast is based on past trends only and does not take into account, for example, what effects the recession has had or will have. It may well be that this will not become apparent for some time yet.
- 5.14 The RCVS told us that from July 2011 a new veterinary school in Nottingham will be increasing the supply of UK trained veterinary surgeons. This will boost UK graduate numbers to 750 per annum (an increase of approximately 150 per annum). Following this increase, the RCVS forecast a continuing, albeit lower, shortfall of around 400 per annum in order to match
- forecast expansion of 541 per annum.
- 5.15 A number of new veterinary surgeons have been recruited from within the EU (235 in 2011 so far) which suggests that there is an avenue that can help mitigate against any shortage of resident veterinary surgeons, although we understand that English language skills can be a problem.
- 5.16 The BVA told us that anecdotally they have heard of no problems filling vacancies and that it may be taking longer for graduates to find jobs.
- 5.17 Despite top-down evidence of potential labour shortage, given that the supply and demand gap has closed and there is a recruitment channel available within the European Economic Area (EEA), we believe there is not clear evidence that shortages will persist into the future. We recommend that veterinary surgeons are removed from the shortage occupation list.

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5.4 Secondary education teaching professionals

Box 5.3: Secondary education teaching professionals

Occupation(s) and SOC code(s): Secondary education teaching professionals - 2314

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Secondary education teachers in the subject of maths and science (chemistry and physics).

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£21.90		
% employees with NQF4+	97.8						
Shortage		Occupation passes 2 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	3.5	3.5	-1.5	V2: Percentage change of employment level (over 1 year)	5.5	11.9	2.4
P2: Percentage change of median real pay (over 3 years)	0.6	0.6	-1.1	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.13	0.13	0.07	V4: Change in new hires (over 1 year)	0.010	-0.020	-0.005
I1: Change in median vacancy duration (over 1 year)	-6.1	-6.1	3.3	E1: Skill-shortage vacancies / total vacancies	13.9	13.9	13.9
I2: Vacancies / claimant count	0.53	0.37	0.42	E2: Skill-shortage vacancies / hard-to-fill vacancies	44.9	44.9	44.9
V1: Percentage change of claimant count (over 1 year)	65.1	40.1	4.8	E3: Skill-shortage vacancies / employment	0.09	0.09	0.09
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	5	5	6	Percentage of workforce trained in past 13 weeks	46	47	46

Total employment in this 4-digit occupation is approximately 438000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Department for Education.

- 5.18 Secondary education teachers in the subjects of maths and science are currently on the shortage occupation list. Secondary education teachers are skilled to NQF4+ and therefore we focus on shortage and sensible for this review.
- 5.19 Our analysis of the top-down data indicates that secondary education teaching professionals only pass 2 out of 12 shortage indicators, which suggest that there is no overall shortage in this occupation. However, the evidence we received for this review related only to secondary education teachers of maths and science, which constitute only a subset of workers employed in this occupation: approximately 64,000 people are employed as maths and science secondary school teachers in the UK, compared to the 438,000 people estimated by the Labour Force Survey (LFS) to be employed as secondary education teaching professionals.
- 5.20 As we only considered a relatively small subset of this 4-digit Standard Occupational Classification (SOC) occupation in this review, the

- top-down data relating to the entire occupation is of limited use. Consequently, we gave greater weight to the bottom-up evidence we received from our corporate partners.
- 5.21 During the course of our review we met with a number of representatives from the education sector, including the Department for Education (DfE). We also received evidence from DfE. They told us that there is not an overall shortage of teachers, but that there remains a shortage of secondary school teachers in the subjects of maths and science. However, DfE said that, within the latter group, biology teachers were no longer in shortage. There are around 10,000 biology teachers in UK secondary schools.
- 5.22 DfE provided data that showed in November 2010 the number of reported vacancies had decreased. But DfE explained that this is because data on teacher vacancies are now collected through its School Workforce Census (SWF). This data was collected for the first time in November, when any vacancies that were available at the beginning of the school year will have been successfully or temporarily filled. We noted that, due to the change in data collection processes, the November 2010 figures are not directly comparable with those of previous years.
- 5.23 DfE told us that provisional figures for November 2010 showed that the full time vacancy rate in nursery and primary schools was 0.7 per cent. In secondary schools the rate was 0.4 per cent. In both cases the majority of vacancies were being filled by a teacher on a contract of at least a term, but less than one year.
- 5.24 DfE presented evidence of regional and localised higher vacancy rates in London and the West Midlands, but it is not within our remit to limit the shortage occupation list to particular regions.
- 5.25 We were told that vacancy rates for maths teachers remain above average for all secondary subjects, at 0.7 per cent. In addition, we were told that the shortage of qualified maths teachers is greater than the vacancy rates suggest because a number of posts are being filled by teachers who do not have a maths specialism.
- 5.26 We received evidence that in 2009/10 the maths initial teacher training (ITT) target was met for the first time. DfE argued that this was due to the recession and consequent

“It should be noted that looking at the vacancy rates alone does not give a complete picture of the shortage of qualified teachers. This is because some vacancies are filled by non-qualified teachers...”

DfE response to MAC call for evidence

Skilled, Shortage, Sensible

- lack of demand in the graduate labour market. However, DfE said they believe that, as the UK economy recovers, maintaining the level of recruitment will be a challenge.
- 5.27 The vacancy rate for science teachers in November 2010 was equal to the secondary school average at 0.4 per cent. We were also told the SWF in November 2010 showed that teachers of physics and chemistry were less likely to hold a relevant qualification than teachers of other science subjects: around one in five hours of physics and chemistry lessons were taught by teachers with no relevant qualifications.
- 5.28 DfE told us that projected future trends in the demand for and supply of teachers show that after falling this year and next the number of teachers leaving the profession is projected to increase from 2012 as the economic recovery strengthens. In addition, we received evidence that the current teaching workforce is aging and therefore there is a peak of teachers heading towards retirement age. DfE said the ability to recruit non-EEA teachers is a useful measure to counter the pressures.
- 5.29 Turning to sensible, we were told that if a school is unable to appoint a suitable qualified teacher, besides recruiting non-EEA teachers, the vacancy is filled either by using teachers without a specialism in the subject they teach or by using supply teachers to fill the post temporarily. DfE said these measures risk undermining the quality of the education pupils receive.
- 5.30 We also saw evidence that provisional figures show that classroom teachers pay had risen from £24,000 in March 2000 to £34,700 in November 2010. Nevertheless, we note that most teachers, like the majority of public sector workers, are currently subject to a pay freeze.
- 5.31 DfE told us that new programmes to attract talented graduates and high fliers from other professions into teaching have been introduced. We were also told of other initiatives such as financial incentives for newly qualified teachers and students who undertake ITT, with additional funding for teachers of shortage subjects.
- 5.32 In conclusion, we welcome DfE's advice that there is no problem with recruiting secondary biology teachers and we therefore recommend they are removed from the shortage occupation list.
- 5.33 We also recognise that DfE concentrated their evidence on maths and science (chemistry and physics) teachers rather than unrealistically arguing there are teaching shortages across the board. Nevertheless, evidence of a continuing

shortage of available staff in these areas is not strong. On the other hand, the labour shortage in these job titles appears to be primarily in terms of quality rather than quantity. Therefore, given the importance of having the right teachers available in secondary schools we are content that secondary education teachers in subjects of maths and science (chemistry and physics only) should remain on the shortage occupation list. However, we will look carefully at how the situation develops ahead of the next review and if vacancy rates remain low we will consider recommending the removal of these occupations from future shortage occupation lists.

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5.5 Special needs education teaching professionals

Box 5.4: Special needs education teaching professionals

Occupation(s) and SOC code(s): Special needs education teaching professionals - 2316

Only the following job titles within this occupation are included on our recommended shortage occupation list:

All teaching posts in special schools

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£21.24		
% employees with NQF4+	89.2						
Shortage		Occupation passes 1 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	6.0	6.0	-2.8	V2: Percentage change of employment level (over 1 year)	-1.7	20.1	6.3
P2: Percentage change of median real pay (over 3 years)	-1.2	-1.2	-2.4	V3: Percentage change of median paid hours worked (over 3 years)	-0.1	-0.1	-0.2
P3: Return to occupation	-0.18	0.09	0.04	V4: Change in new hires (over 1 year)	0.011	0.014	-0.020
I1: Change in median vacancy duration (over 1 year)	-5.8	1.0	3.1	E1: Skill-shortage vacancies / total vacancies	19.7	19.7	19.7
I2: Vacancies / claimant count	0.28	0.29	0.20	E2: Skill-shortage vacancies / hard-to-fill vacancies	83.0	83.0	83.0
V1: Percentage change of claimant count (over 1 year)	50.6	33.8	5.8	E3: Skill-shortage vacancies / employment	0.18	0.18	0.15
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	7	7	5	Percentage of workforce trained in past 13 weeks	53	51	51

Total employment in this 4-digit occupation is approximately 72000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from the Department for Education.

- 5.34 We reviewed this occupation in our autumn 2009 report (Migration Advisory Committee, 2009b) and found the evidence we received to be strong enough for us to recommend that all teaching posts in special schools be included on the shortage occupation list.
- 5.35 Teachers in special schools obtain Qualified Teacher Status in the same way as other teachers and may then obtain specialist qualifications. This occupation is skilled to NQF4+ and so for this review we focus on shortage and sensible.
- 5.36 Special needs education teaching professionals only pass 1 out of 12 shortage indicators, which suggest that there is no overall labour shortage in this occupation. Median real pay, which has previously been found to be increasing over the year, is now decreasing according to the latest top-down data. Furthermore, the employment level in the occupation is no longer rising at a rate that would indicate a labour shortage. However, we note from the top-down data that there has been a significant increase in median vacancy duration in this occupation.

- 5.37 We received evidence from DfE that there continues to be a shortage of teachers for posts in special schools. They said all teachers in state maintained schools can be expected to teach pupils with special educational needs (SEN) and disabilities, but one per cent of all pupils, the majority of whom have SEN statements, are educated in special schools.
- 5.38 Vacancy rates in special schools are higher than in nursery, primary and secondary schools. Provisional figures for November 2010 showed that the full time vacancy rate in special schools was 0.9 per cent, with the rate for nursery and primary schools being 0.7 per cent and the rate for secondary schools being 0.4 per cent.
- 5.39 In terms of sensible, we received evidence that a mandatory SEN allowance is paid to classroom teachers in special schools of at least £2,001 per annum. DfE told us that if these specialist teachers were removed from the shortage occupation list, schools may have to resort to using non-specialist teachers which may compromise improvement standards that the Government are seeking.
- 5.40 In conclusion, there was not a great deal of evidence provided demonstrating that our shortage and sensible criteria were met for this job title. However, we note that the vacancy rate in special schools is relatively high, despite the additional financial incentives available. We do not wish to impact on the important service provided by special schools and, therefore, we recommend all teaching posts in special schools remain on the shortage occupation list. However, we will want to see more comprehensive and compelling evidence in any future review.

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5.6 Scientific researchers

Box 5.5: Scientific researchers

Occupation(s) and SOC code(s): Scientific researchers - 2321

Only the following job titles within this occupation are included on our recommended shortage occupation list:

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees				£17.41	
% employees with NQF4+	89.0						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	3.0	3.0	-3.3	V2: Percentage change of employment level (over 1 year)	-27.7	-24.2	32.8
P2: Percentage change of median real pay (over 3 years)	1.2	1.2	-4.9	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.23	0.08	0.01	V4: Change in new hires (over 1 year)	0.097	0.047	-0.003
I1: Change in median vacancy duration (over 1 year)	-3.9	-4.2	2.7	E1: Skill-shortage vacancies / total vacancies	10.2	10.2	10.2
I2: Vacancies / claimant count	0.16	0.28	0.32	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	72.7	7.1	-1.5	E3: Skill-shortage vacancies / employment	0.13	0.13	0.12
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	14	8	19	Percentage of workforce trained in past 13 weeks	31	35	35

Total employment in this 4-digit occupation is approximately 15000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Purolite.

5.41 This occupation is not currently on the shortage occupation list. We received evidence from Purolite, a company researching in the field of ion exchange resins used in water purification. They told us that their particular field was complex and not mainstream chemical research. The particular chemistry is not currently taught in any UK degree. Therefore, they have to bring in foreign nationals who have the required skills and further train them for up to two years at their centre for excellence at which point they would normally move to one of the

company's worldwide plants. They told us that any restriction on their ability to continue this function would make their future in the UK uncertain.

5.42 Top-down data for this occupation provide little indication of labour shortage, with just 3 out of 12 indicators passing our shortage thresholds. The evidence we received from Purolite argued that there was a shortage of a very specific type of research scientists, which we would not necessarily expect to be evident in top-down data

relating to the entire occupation.

- 5.43 Overall, we did not receive sufficient evidence for us to be convinced that there is a national shortage. Therefore, we do not recommend that this occupation is added to the shortage occupation list. In any event, PhD-level postings within this SOC code do get some priority within the points system for allocating Tier 2 Certificates of Sponsorship (CoS) on a monthly basis. As we set out in Chapter 1, when a monthly allocation of restricted CoS is oversubscribed with eligible applications, first priority is given to applications made under the shortage occupation route, second priority is given to PhD-level postings under the Resident Labour Market Test (RLMT), and then any remaining CoS are granted to the highest-scoring, non-PhD level postings under the RLMT route.
- 5.44 We would be happy to work with Purolite when we conduct the next review to see if there is better evidence of labour shortage in this occupation.

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5.7 Management consultants, actuaries, economists and statisticians

Box 5.6: Management consultants, actuaries, economists and statisticians										
Occupation(s) and SOC code(s):		Management consultants, actuaries, economists and statisticians - 2423								
Only the following job titles within this occupation are included on our recommended shortage occupation list:										
Qualified actuaries working in the life assurance, general insurance, and health and care sectors										
Top-down data										
Skilled		Occupation passes 3 out of 3 indicators								
SOC skill level classification		4			Median hourly pay for all employees			£20.72		
% employees with NQF4+		77.4								
Shortage		Occupation passes 2 out of 12 available indicators								
		Spr 10	Aut 10	Sum 11			Spr 10	Aut 10	Sum 11	
P1: Percentage change of median real pay (over 1 year)		1.6	1.6	-4.7	V2: Percentage change of employment level (over 1 year)		4.2	10.3	-13.2	
P2: Percentage change of median real pay (over 3 years)		-5.0	-5.0	-4.4	V3: Percentage change of median paid hours worked (over 3 years)		0.0	0.0	0.0	
P3: Return to occupation		0.00	0.25	0.22	V4: Change in new hires (over 1 year)		0.000	-0.009	0.003	
I1: Change in median vacancy duration (over 1 year)		5.7	-7.5	14.3	E1: Skill-shortage vacancies / total vacancies		6.3	6.3	6.3	
I2: Vacancies / claimant count		0.07	0.06	0.17	E2: Skill-shortage vacancies / hard-to-fill vacancies		62.2	62.2	62.2	
V1: Percentage change of claimant count (over 1 year)		115.9	2.5	-18.7	E3: Skill-shortage vacancies / employment		0.04	0.04	0.04	
Sensible		Spr 10	Aut 10	Sum 11			Spr 10	Aut 10	Sum 11	
Percentage of workforce born non-EEA		14	15	13	Percentage of workforce trained in past 13 weeks		26	27	30	
Total employment in this 4-digit occupation is approximately 166000 (LFS, 2010Q2-2011Q1)										
Partner evidence received from:										
We received evidence from a large insurance company, Pricewaterhouse Coopers and the Institute and Faculty of Actuaries.										

5.45 During our review we received evidence relating to actuaries. Neither this occupation, nor any job titles within it are currently on the shortage occupation list. Actuaries measure the probability and risk of future events happening and the impacts on people. This information is used in various industries including pensions, insurance, banking and healthcare. The profession operates within the global finance and insurance sector and there are internationally recognised qualifications.

5.46 Actuaries are skilled to NQF4+. The job title falls within an NQF4+ occupation and there is a requirement for a degree. Most employers prefer candidates with degrees in actuarial science, maths, statistics, economics, engineering, chemistry or physics. Actuarial firms take on candidates who start off in trainee positions. After three to six years trainees will be ready to take the Institute and Faculty of Actuaries exam and become an Associate or Fellow. Within the profession there are many specialities.

- Some will specialise more in technical research and others more in commercial activities.
- 5.47 The Institute and Faculty of Actuaries (The Institute) told us that new EU legislation (EU Directive 2009/138/EC on the taking-up and pursuit of the business of insurance and reinsurance (solvency II)) is due to come into force at the end of 2012. In preparing for this, insurers are undertaking substantial and detailed planning and modelling in a range of capital adequacy and risk management areas. The Institute told us that actuaries have a vital role to play in the lead up and following the implementation of the legislation. Hence the reason why demand has risen recently.
- 5.48 A large insurance company also told us that there has been a 30 to 40 per cent rise in demand for actuaries as a result of the new EU legislation. The company in question have been running with 10 to 15 vacancies for around a year. Those posts most problematic to fill are for experienced qualified actuaries. They have been able to recruit trainees but they require a balance of experienced and less experienced staff. Contractor rates were increasing and they were beginning to see some staff move to take up more highly paid temporary roles.
- 5.49 The company expect the increase in demand to continue for another few years. Salaries are high with newly qualified actuaries earning between £45,000 and £55,000 and some senior actuaries earning over £100,000. Bonuses are being offered to help retain staff. Working hours, particularly for experienced staff, are also increasing.
- 5.50 The Institute told us that the skills shortage created affects qualified actuaries working in the life assurance, general insurance and health and care sectors. We understand that there are around 3,300 qualified actuaries working in these sectors.
- 5.51 We also received evidence from PricewaterhouseCoopers who told us that they believed the extra demand for actuaries is across all specialities within the profession. They also cited increased competition for candidates.
- 5.52 However, there is no indication of shortage in the occupation as a whole from the top-down data: only 2 out of 12 top-down indicators pass our thresholds for indicating labour shortage. Notably, the median vacancy duration has risen sharply over the last year. However, given that the job title in this occupation being considered in this review, actuaries, is only a small sub-set of the occupation, the top-down data are arguably of limited relevance.

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- 5.53 In terms of sensible, The Institute told us that as the legislation is being rolled out across the EU there are similar resource challenges being faced in other European countries. The most likely pool of potential candidates therefore lies outside of the EU.
- 5.54 The Institute told us that including actuaries on the shortage occupation list would help to address the resourcing pressures which are currently creating wage inflation that could lead to increased costs for UK consumers.
- 5.55 Given that some of the relevant partners were working with the MAC for the first time, the case for adding some actuaries to the shortage occupation list has been fairly well made. It is clear that the new EU legislation has created additional demand which is causing shortages amongst actuaries working in certain sectors. Given the same problems are being felt across the EU it is sensible that qualified actuaries working in the life assurance, general insurance, and health and care sectors are added to the shortage occupation list.

5.8 Social workers

Box 5.7: Social workers								
Occupation(s) and SOC code(s):		Social workers - 2442						
Only the following job titles within this occupation are included on our recommended shortage occupation list:								
Social workers working in children's and family services.								
Top-down data								
Skilled		Occupation passes 3 out of 3 indicators						
SOC skill level classification	4			Median hourly pay for all employees	£16.78			
% employees with NQF4+	80.6							
Shortage		Occupation passes 4 out of 12 available indicators						
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11	
P1: Percentage change of median real pay (over 1 year)	5.5	5.5	-2.2	V2: Percentage change of employment level (over 1 year)	7.2	9.3	-1.3	
P2: Percentage change of median real pay (over 3 years)	1.9	1.9	1.6	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0	
P3: Return to occupation	-0.26	0.01	-0.05	V4: Change in new hires (over 1 year)	0.033	-0.020	0.023	
I1: Change in median vacancy duration (over 1 year)	-1.7	-1.7	-1.4	E1: Skill-shortage vacancies / total vacancies	64.2	64.2	64.2	
I2: Vacancies / claimant count	0.81	0.60	0.27	E2: Skill-shortage vacancies / hard-to-fill vacancies	95.5	95.5	95.5	
V1: Percentage change of claimant count (over 1 year)	67.1	38.1	28.6	E3: Skill-shortage vacancies / employment	1.74	1.74	1.69	
Sensible								
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11	
Percentage of workforce born non-EEA	10	12	11	Percentage of workforce trained in past 13 weeks	60	59	58	
Total employment in this 4-digit occupation is approximately 115000 (LFS, 2010Q2-2011Q1)								
Partner evidence received from:								
We received evidence from the Department for Education, Skills for Care and Development, COSLA and the Scottish Social Services Council.								

5.56 In our autumn 2009 report (Migration Advisory Committee, 2009b) we said that there was not a compelling case made for shortages across the social work occupation as a whole. Indeed, there appeared to be sufficient numbers entering training. However, we recognised that there were shortages of workers in children and family services and recommended they be added to the shortage occupation list for as long as it took for those being recruited at the time to gain knowledge and experience of the job.

5.57 During the course of this review we met with representatives from the social work sector and we received evidence from a number of partners.

5.58 From top-down analysis we found that this occupation is skilled to NQF4+. A social worker is a qualified and registered professional who provides social work services for statutory, independent or voluntary organisations. Social work has been a graduate profession since 2003 and is also a protected title under Section 61 of the Care Standards Act 2000. It is, therefore, an offence for an

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- individual to describe him or herself as a social worker if not registered with the General Social Care Council (GSCC) which regulates the profession in England. Other regulatory bodies in the UK are: the Northern Ireland Social Care Council, the Scottish Social Services Council; and the Care Council for Wales.
- 5.59 Skills for Care and Development (SfC&D) is the relevant sector skills council for social work and they told us that there are around 120,000 social workers in the UK, 83,000 of whom are in England. Local authorities employ around 70 per cent of them, with the others employed by the independent and voluntary sector. Some also choose to work in temporary positions for agencies.
- 5.60 SfC&D told us that there are limited data collected in respect of the profession which makes assessing the degree of shortage within the occupation difficult. The occupation passes 4 out of 12 of our top-down indicators, which provides little indication of labour shortage. Furthermore, two of the indicators that would indicate shortage are based on NESS data, which was last collected in 2009. Consequently, we looked closely at the bottom-up evidence we received.
- 5.61 We received no evidence in relation to adult social workers and therefore what follows
- relates only to children and family social workers.
- 5.62 The Scottish Social Services Council (SSSC) told us that in October 2009 5.8 per cent of social worker posts were vacant in local authorities in Scotland. What was clear in all of the evidence we received was that demand has risen. The Department for Education (DfE) told us that the referrals to children's social care have been rising steadily. 547,000 children were referred to children's social care in 2008/9. There was a more than 10 per cent rise in 2009/10 to 603,500. DfE told us that this has significantly increased pressures in children's services.
- 5.63 DfE also told us that the demographic of the social work profession means that nearly a third of the workforce is over 50 and therefore many will retire in the next decade. SfC&D told us that during 2010 local authorities continued to report difficulties recruiting and retaining experienced children and family social workers in parts of the UK. The Local Government Workforce Survey in 2010 found that, as in 2009, the most frequently identified occupation for recruitment difficulties was children's social workers (78 per cent of local authorities reported recruitment problems in 2009 and 2010). This was replicated for retention issues, where 85 per cent of authorities reported having

difficulties retaining children's social workers.

- 5.64 DfE told us that anecdotal feedback from local authorities in autumn 2010 indicated that vacancy rates for children and family social workers may be 10 per cent or under in most authorities. This potentially represents a slight fall on 2008 levels. DfE reported that supply and demand models were being developed, but it would take several years before these are fully populated and can generate reliable data.
- 5.65 SfC&D also told us that there have been some redundancies in adult social work and some of these workers have moved into children's services.
- 5.66 Turning to sensible, DfE told us that much work is being done to increase the skills and capacity of the children and family social work workforce. The number of applications to degree courses is growing. Employers, particularly local authority employers, are also sponsoring the social work training of employees. There is part time training for those who want to progress into social work and bursaries to contribute towards the training of social workers. However, DfE told us that more time is needed.

"The objective of such initiatives over time is to reduce the need for migrant workers from outside the EEA. However, more time is needed to enable us to consolidate the developments made, to give more time for students to enter the workforce and gain experience."

DfE response to MAC call for evidence

- 5.67 SfC&D reported that conversations with Directors of Children's Services in England over the past six months had shown an increasing confidence on the part of the Directors in measures to improve the quality and retention of social workers; to encourage qualified social workers to return to the profession and to attract able graduates to train for social work. However, SfC&D also found that there was a need to have an appropriate balance between new and experienced workers. This was a point echoed by DfE.
- 5.68 DfE told us that recruiting within the EEA was problematic due to equivalence of the occupation. Many countries in the EEA have an unregulated and developing social work profession. In addition, where the profession is more developed, there are often language issues which are critical in a profession where listening is so important.
- 5.69 Key sources of qualified social workers outside the EEA are the United States, South Africa, Australia and New

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Zealand. DfE told us that these countries have (in addition to a shared language and cultural ties with the UK) similar training programmes and social work systems.

- 5.70 The SSSC told us that the implications of not filling crucial posts quickly enough can be significant.

“Some employers have noted that a substantial delay in filling even one post can have a considerable impact as it can increase other social workers’ caseloads and create immediate implications for service delivery.”

SSSC response to MAC call for evidence

- 5.71 DfE told us that a recent report commissioned by the Government from Professor Munro, *The Munro Review of Child Protection: Final Report – A child-centred system*, has raised the bar in terms of the quality of supply of social workers. The Munro Report

recommendations have an expectation of greater social worker accountability and better use of professional judgment. DfE suggest that continued recruitment flexibility will be needed to build up the expertise of existing social workers still further.

- 5.72 We are encouraged by the progress made in this sector and the efforts to improve recruitment and retention. We are mindful that the good progress made so far should be allowed to continue so that the aim of reducing the reliance on migrant workers from outside the EEA can be achieved and sustained without adverse implications for service quality. We therefore recommend social workers working in children’s and family services should remain on the UK shortage occupation list.

5.9 Therapists not elsewhere classified

Box 5.8: Therapists n.e.c.

Occupation(s) and SOC code(s): Therapists n.e.c. - 3229

Only the following job titles within this occupation are included on our recommended shortage occupation list:

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees				£16.32	
% employees with NQF4+	79.7						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	4.8	4.8	-3.5	V2: Percentage change of employment level (over 1 year)	8.1	6.5	7.8
P2: Percentage change of median real pay (over 3 years)	2.8	2.8	-1.3	V3: Percentage change of median paid hours worked (over 3 years)	2.4	2.4	0.8
P3: Return to occupation	-0.25	-0.01	-0.07	V4: Change in new hires (over 1 year)	-0.003	0.024	0.023
I1: Change in median vacancy duration (over 1 year)	-2.2	-3.4	9.4	E1: Skill-shortage vacancies / total vacancies	10.4	10.4	10.4
I2: Vacancies / claimant count	0.12	0.10	0.14	E2: Skill-shortage vacancies / hard-to-fill vacancies	66.5	66.5	66.5
V1: Percentage change of claimant count (over 1 year)	66.7	23.3	2.1	E3: Skill-shortage vacancies / employment	0.16	0.16	0.14
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	7	11	16	Percentage of workforce trained in past 13 weeks	45	48	51

Total employment in this 4-digit occupation is approximately 76000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Senspa.

5.73 Health Professions Council (HPC) registered orthoptists, within this occupation, are considered in Chapter 3 under healthcare occupations.

Thai therapists

5.74 We received evidence on Thai therapists, a job title within this occupation, from Senspa. Although the occupation is skilled to NQF4+, Thai therapists are a small sub-set of the occupation. Senspa told us that there are no formally recognised qualifications in Thai massage within the EU. They provided us with information around skill. They said that they were working with Eastleigh College to

develop a recognised qualification in Thai Traditional Massage to up-skill resident workers.

5.75 We saw a letter addressed to the MAC from Eastleigh College which supports this. However, the letter states that they are unsure at what level the qualification will be accredited (level 3 or 4 is mentioned). Senspa also included a letter from the Spa Business Association stating that Thai Spa Therapists work at NVQ level 4.

5.76 Pay levels quoted by Senspa are very low for an NQF4+ occupation at around £16,500 per annum in comparison to

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our usual benchmark for an NQF4+ occupation, discussed in Chapter 2, of £28,260.

- 5.77 We are mindful that if a job title falls within an NQF4+ occupation, we typically regard this as strong evidence that the job title is qualified to NQF4+. However, the level of pay and the lack of clarity around the required qualification make this job title an exception. We are not satisfied that it meets the recently raised required skill level for Tier 2.
- 5.78 Turning to shortage and sensible, Senspa provided evidence that unsuccessful efforts were being made to recruit locally. It is also fair to say that given the ongoing work with Eastleigh College there are active efforts to try and train the resident population in order to solve the recruitment problem for the medium to long term and we welcome this approach.
- 5.79 However, given that we have insufficient evidence that this job title is at NQF4+ we do not recommend Thai spa therapists for the shortage occupation list.

5.10 Dancers and choreographers

Box 5.9: Dancers and choreographers							
Occupation(s) and SOC code(s): Dancers and choreographers - 3414							
Only the following job titles within this occupation are included on our recommended shortage occupation list:							
Skilled classical ballet dancer and skilled contemporary dancer							
Top-down data							
Skilled				Occupation passes 2 out of 3 indicators			
SOC skill level classification	3			Median hourly pay for all employees	£15.66		
% employees with NQF4+	33.0						
Shortage				Occupation passes 7 out of 12 available indicators			
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	-6.4	-6.4	-15.9	V2: Percentage change of employment level (over 1 year)	-6.9	-31.5	19.3
P2: Percentage change of median real pay (over 3 years)	#NA	#NA	-24.6	V3: Percentage change of median paid hours worked (over 3 years)	10.3	10.3	2.0
P3: Return to occupation	-0.10	0.11	0.15	V4: Change in new hires (over 1 year)	0.246	-0.140	0.110
I1: Change in median vacancy duration (over 1 year)	-32.1	-16.2	-9.9	E1: Skill-shortage vacancies / total vacancies	50.1	50.1	50.1
I2: Vacancies / claimant count	0.26	0.16	0.09	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	97.6	7.2	-9.0	E3: Skill-shortage vacancies / employment	0.51	0.51	0.64
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	9	0	2	Percentage of workforce trained in past 13 weeks	19	17	24
Total employment in this 4-digit occupation is approximately 5000 (LFS, 2010Q2-2011Q1)							
Partner evidence received from:							
We received evidence made jointly by Dance UK, the Independent Theatre Council (ITC), the National Campaign for the Arts (NCA), the Society of London Theatre (SOLT) and the Theatrical Management Association (TMA).							

5.80 Skilled classical ballet and skilled contemporary dancers are currently on the shortage occupation list. The occupation is skilled to NQF4+ and so for this review we focus on shortage and sensible. The top-down data shows that this occupation passes 7 out of 12 indicators. However, 3 of the 7 passes are for indicators based on NESS data, which was collected over two years ago. We also note that pay appears to be declining sharply, although this may be a reflection of volatile data in what is a small occupation.

On the whole, in this case, the top-down data is probably of limited use for our purposes.

5.81 We were told that there is a worldwide shortage of highly skilled dancers. The dance industry argued that Britain is a leader in relation to world-class dance and choreography, but that our dance schools do not supply enough world-class performers to meet requirements. We were told that dance companies must have access to the global talent pool in order to remain competitive.

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- 5.82 We received evidence that there is a constant search for talent to supply the sector which has a fast turnover due to the short career highly skilled dancers have. In most cases they are likely to retire before the age of forty.
- 5.83 In respect of ballet, we were told that there is a shortage of male dancers at every level and that there is a shortage of skilled and professionally trained classical ballet dancers, regardless of gender.
- 5.84 In the case of contemporary dance, we saw that often innovative choreographers are looking for a set of talents unique to their own choreography. As such, the wider the catchment area for recruiting dancers, the more likely they are to find those that can really do justice to their work. In addition, we were told that leading companies using disabled dancers find that there is a shortage of both disabled dancers and of able-bodied dancers trained to work with disabled dancers.
- 5.85 We received evidence that vacancy rates are variable and influenced, for example, by the number of dancers retiring at the end of their career, and recovering from injury. We noted that the sector promotes internally, but that not all positions (particularly some of the most senior ones) can be filled in this way. We also saw that there is no typical duration for vacancies. The sector said a company's artistic standards are paramount and if suitable candidates are not available the posts remain unfilled.
- 5.86 In terms of earnings we were told that although pay may be low this is rarely something that prevents skilled dancers from applying to work with UK companies. The sector argued that working with leading UK dance companies will advance a dancer's profile and career and compensates for low pay. The sector claimed that although demand for high quality dancers exceeds supply, increasing salary will not increase the pool of skilled labour, which is, in any case, a global pool. This may be true in the short-term, but in the longer term it seems likely to us that substantially higher pay would play a role in attracting new talent into almost any occupation. The sector should reflect on this issue.

“There is no doubt among the UK’s leading dance companies that there is a world shortage of dancers of the appropriate calibre. It is therefore essential that they are able to cast the net as widely as possible when recruiting.”

Dance UK, the Independent Theatre Council, the National Campaign for the Arts the Society of London Theatre and the Theatrical Management Association response to MAC call for evidence

- 5.87 We received evidence that the number of dancers coming

- into the UK under Tier 2 is small. We were told that only a handful of contemporary dance companies issue long-term contracts to their dancers and, in ballet, only five leading companies use long-term contracts.
- 5.88 We were told that in both ballet and contemporary dance, there are only a few dancers worldwide that meet the rigorous standards of leading companies and only a few have jobs for them.
- 5.89 The sector told us that there is no alternative to recruiting some non-EEA migrants. This is, of course, not strictly true but we recognise that the alternatives (fewer dance companies or fewer performances) may be viewed as unpalatable from the sector's perspective and undesirable from the perspective of promoting UK culture. We were told that leading companies use every effort to find suitable dancers within the EEA labour market, by both keeping a very close eye on young talent being nurtured in British dance schools and through the auditioning process.
- 5.90 With regard to training and upskilling the domestic workforce, we saw that ballet companies work closely with ballet schools which train new entrants. We also heard that as specialist areas of dance genres become more mainstream, those dance forms will be taught more commonly and to higher levels, thereby attracting more students.
- 5.91 The sector also said that displacement of domestic dancers is not an issue, because companies only look to recruit from outside of the EEA when they have failed to find dancers demonstrating the required level of skill in the domestic workforce.
- 5.92 In conclusion, we believe that the evidence we have received is sufficient to suggest that there is still a shortage of skilled classical ballet and skilled contemporary dancers. This is based primarily on our belief that in order to remain competitive dance companies need access to the very top global talent. We therefore recommend that ballet dancers who meet the standard required by internationally recognised UK ballet companies (e.g. Birmingham Royal Ballet, English National Ballet, Northern Ballet Theatre, The Royal Ballet and Scottish Ballet) remain on the shortage occupation list.
- 5.93 We also recommend that those who meet the standard required by internationally recognised UK contemporary dance companies (e.g. Shobana Jeyasingh Dance Company, Scottish Dance Theatre and Rambert Dance Company) remain on the shortage occupation list.

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5.11 Ship and hovercraft officers

Box 5.10: Ship and hovercraft officers

Occupation(s) and SOC code(s): Ship and hovercraft officers - 3513

Only the following job titles within this occupation are included on our recommended shortage occupation list:

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees			£22.30		
% employees with NQF4+	43.9						
Shortage		Occupation passes 0 out of 9 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	#N/A	#N/A	#N/A	V2: Percentage change of employment level (over 1 year)	-5.2	-12.2	1.3
P2: Percentage change of median real pay (over 3 years)	#N/A	#N/A	#N/A	V3: Percentage change of median paid hours worked (over 3 years)	-1.0	-1.0	-1.0
P3: Return to occupation	-0.29	0.08	0.06	V4: Change in new hires (over 1 year)	0.028	-0.043	-0.044
I1: Change in median vacancy duration (over 1 year)	-9.1	#N/A	#N/A	E1: Skill-shortage vacancies / total vacancies	0.0	0.0	0.0
I2: Vacancies / claimant count	0.07	0.05	0.05	E2: Skill-shortage vacancies / hard-to-fill vacancies	0.0	0.0	0.0
V1: Percentage change of claimant count (over 1 year)	88.9	10.5	-5.0	E3: Skill-shortage vacancies / employment	0.00	0.00	0.00
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	8	5	7	Percentage of workforce trained in past 13 weeks	31	31	38

Total employment in this 4-digit occupation is approximately 16000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Skills for Justice, The Chamber of Shipping and Nautilus International.

5.94 In our autumn 2009 report (Migration Advisory Committee, 2009b) we recommended ship and hovercraft officers be removed from the UK shortage occupation list. The bottom-up evidence we received at the time was anecdotal. Although we were keen not to put the UK shipping industry at a disadvantage, equally we did not wish to damage what appeared to be a revival in officer training. We noted that our decision was finely balanced and we encouraged the two main partners in the sector - Nautilus and the Chamber of Shipping - to

continue discussions and work towards developing a mutually agreeable position.

5.95 For this review we received evidence from The Chamber of Shipping setting out their position. We also met with The Chamber, which is the trade association for the UK shipping industry. In addition we received evidence from Nautilus which is the relevant trade union. Despite our request that both parties should work towards agreeing a mutually agreeable position, the Chamber told us that the occupation should be added once again to the shortage occupation list and Nautilus told us it should remain off.

5.96 The occupation is on our NQF4+ list and therefore is skilled. The top-down data this time round show no sign of labour shortage: the occupation passes none out of 9 available indicators for shortage. Indeed, the absolute number of new hires, which is the only top-down indicator of shortage that this occupation passed at the time of our last review, has fallen in the most recent data.

5.97 Nautilus told us that there is no labour shortage within the occupation. They told us that they believe there is an over-supply of UK officers wishing to work within the UK. In addition, since we last looked at the occupation in 2009, there has been further rationalisation within the UK ferry sector. In particular, Nautilus told us, there have been reductions in routes between the UK and Ireland and some members have been made redundant. Nautilus argues that this has increased the number of officers looking for work close to home.

5.98 Nautilus concludes that although there may be a shortage of qualified seagoing officers there is no shortage of those wishing to work in UK waters.

“...whilst generally there may be a shortage of qualified seagoing Officers there are few opportunities to work from home but a great demand amongst our members to be able to work closer to their families. We would therefore again stress that companies working within UK waters report no shortage to us and rarely use our journal to advertise vacancies. We therefore do not believe that in the trades covered by work permit arrangements that there is a shortage of qualified Officers seeking work in these trades.”

Nautilus International response to MAC call for evidence

5.99 The issue seems to turn on whether there are shortages within non-ferry operations that fall within the Points Based System (PBS) for immigration. The Chamber of Shipping told us that the PBS applies to domestic ferries, scheduled domestic cargo services, dredgers operating in domestic waters and other vessels in non-international trade which spend more than 30 per cent of their time at sea in UK waters. The Chamber told us that it is the towage sector that has been most seriously affected by the removal of this occupation from the shortage occupation list in 2009. The Chamber provided evidence from one towage company to support this, which is not sufficient to allow a full assessment across the sector.

5.100 When we reviewed the occupation in 2009 (Migration

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Advisory Committee, 2009b) we heard that the number of trainees had risen. However, the Chamber told us that UK officers were often attracted to work outside the UK because of tax benefits. When an officer works more than 183 days in a year outside the UK they qualify for lower tax liability.

- 5.101 The Chamber told us that if employers are not able to fill vacancies they would need to take ships affected out of service as they would not be able to meet minimum crew numbers.

“This could mean that some essential services would be unable to operate, which in turn could have serious knock-on effects for other sectors of the economy...”

Chamber of Shipping response to MAC call for evidence

- 5.102 In conclusion, although we accept that this is a NQF4+ occupation the argument for shortage is insufficiently strong. The top-down data shows no sign of shortage and bottom-up evidence either suggests no shortage or is insufficiently comprehensive. We therefore do not recommend this occupation be added to the shortage occupation list.

5.12 Musicians

Box 5.11: Musicians									
Occupation(s) and SOC code(s): Musicians - 3415									
Only the following job titles within this occupation are included on our recommended shortage occupation list:									
Skilled orchestral musicians who are leaders and principals									
Top-down data									
Skilled					Occupation passes 2 out of 3 indicators				
SOC skill level classification		3			Median hourly pay for all employees		£17.03		
% employees with NQF4+		54.7							
Shortage					Occupation passes 5 out of 12 available indicators				
		Spr 10	Aut 10	Sum 11			Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)		28.2	28.2	-4.5	V2: Percentage change of employment level (over 1 year)		8.3	3.0	13.5
P2: Percentage change of median real pay (over 3 years)		33.3	33.3	25.5	V3: Percentage change of median paid hours worked (over 3 years)		-0.9	-0.9	-1.7
P3: Return to occupation		-0.20	0.05	-0.37	V4: Change in new hires (over 1 year)		-0.068	-0.047	-0.040
I1: Change in median vacancy duration (over 1 year)		-35.2	-24.7	6.3	E1: Skill-shortage vacancies / total vacancies		43.4	43.4	43.4
I2: Vacancies / claimant count		0.01	0.01	0.01	E2: Skill-shortage vacancies / hard-to-fill vacancies		100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)		41.9	16.2	-14.0	E3: Skill-shortage vacancies / employment		0.13	0.13	0.12
Sensible									
		Spr 10	Aut 10	Sum 11			Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA		8	11	8	Percentage of workforce trained in past 13 weeks		10	10	13
Total employment in this 4-digit occupation is approximately 38000 (LFS, 2010Q2-2011Q1)									
Partner evidence received from:									
We received evidence from Incorporated Society of Musicians, Musicians Union and the Association of British Orchestras.									

5.103 In our spring 2009 report (Migration Advisory Committee, 2009a), where we first reviewed this occupation, we recommended that orchestral musicians be included on the shortage occupation list. We considered the occupation again in March 2010, and concluded that the evidence supplied by the Association of British Orchestras (ABO) and the Musicians' Union (MU) pointed to there being a shortage of orchestral musicians who are leaders or principals only and not a shortage of the tutti (also known as the rank and file).

We therefore recommended that only orchestral musicians who are leaders or principals be included on the list.

5.104 We also acknowledged that, because the recruitment processes for musicians did not map across to the Resident Labour Market Test (RLMT) route, the removal of the tutti from the shortage list could have presented the industry with difficulties. Therefore, we also recommended that the industry work with the UK Border Agency to explore the possibility of extending the period for which an unfilled

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- advertised vacancy remains valid for the purposes of satisfying the RLMT from the usual 6 months to 12 or 18 months for orchestral musicians.
- 5.105 We understand that discussions between the UK Border Agency and the industry on the above issue are still ongoing. The Government has not implemented the recommendations we made in our March 2010 (Migration Advisory Committee, 2010c) report about the removal of the tutti from the list.
- 5.106 Turning to this review, our analysis of the top-down data indicates that this occupation is skilled to NQF4+. Leaders and principals, which are the subset considered below, are also at the top end of the skill distribution for this occupation. Therefore, we focus on our tests of shortage and sensible.
- 5.107 The occupation passes 5 out of 12 of our top-down indicators of shortage, which provides some evidence of partial labour shortage, although two of these passes are for indicators based on NESS data that was collected more than two years ago. Top-down data suggest a considerable increase in employment levels in this occupation over the last 12 months. Although median real pay has decreased over the last 12 months, it remains significantly higher than it was three years ago.
- 5.108 The ABO and the MU have provided evidence which confirms that the position now remains the same as in 2010. There is a shortage of orchestral musicians who are leaders or principals. However, rank and file and tutti positions could be filled from within the EEA. Therefore these are not in shortage.
- 5.109 We were told that the evidence the ABO and the MU presented for the spring 2010 review (Migration Advisory Committee, 2010c) of the shortage occupation list remains largely valid. However, the ABO said that, for this review, it re-surveyed its members and counselled them on various aspects of recruitment. We saw that they received responses from 18 respondents that between them employ approximately 1,200 orchestral musicians. We were told that these respondents currently employ 44 migrants from outside the EEA and that as of 7 June 2011, excluding rank and file positions, they were carrying 91 vacancies.
- 5.110 In addition, the MU told us that the job market for positions in UK orchestras has worsened with many suffering cuts in Arts Council and Local Authority funding.

“... [W]e maintain our original position that there is no shortage of musicians in the UK, but that – in the case of leaders and principals – there can always justifiably be a shortage for our world-class orchestras and ensembles ...”

Incorporated Society of Musicians
response to MAC call for evidence

- 5.111 We continue to believe that there is a need to ensure that UK orchestras are able to compete in the global market place for the very best orchestral musicians. We are also satisfied that, as in 2010, there is still a shortage of skilled orchestral musicians at the highest level. We therefore restate our recommendation made in (Migration Advisory Committee, 2010c) that those orchestral musicians who are leaders and principals and who meet the standards required by internationally recognised UK orchestras (including London Symphony Orchestra, London Philharmonic Orchestra, Philharmonic Orchestra, Royal Philharmonic Orchestra) be included on the shortage occupation list. We also recommend again that the tutti (also known as the rank and file) be removed from the list.
- 5.112 The ABO also said that there is a contractual requirement for a player to ‘sit-up’ and lead the section when required. They said regardless of whether the seat is titled or not, it should be inferred that

principal status would apply. As such, they argued, all subdivisions of principals and leaders and numbered string positions, which are not currently on the shortage occupation list, should also be considered for inclusion on the list.

- 5.113 The argument is often put to us that less senior employees in an occupation sometimes have to deputise for more senior ones, and therefore should be treated equally in terms of the shortage occupation list. We do not accept this argument across the board and, in this case, are mindful of the evidence suggesting there are not labour shortages at all levels of this occupation. On the basis that we did not receive sufficient evidence of there being a shortage of them, we do not include all subdivisions of principals and leaders and numbered string positions on our recommended shortage occupation list.

5.13 Job titles within the visual effects and 2D/3D computer animation for film, television and the video games sectors

- 5.114 We first reviewed roles within visual effects (VFX) and 2D/3D computer animation for film, television or video games for the shortage occupation list in our spring 2009 report (Migration Advisory Committee, 2009a). We recommended that a number of specific job titles relating to

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the VFX and video games industry be included on the shortage occupation list.

5.115 We considered the skill level of these job titles again in our March 2011 report (Migration Advisory Committee, 2011b). We concluded that all of these job titles are skilled to NQF4+ and therefore satisfied the new higher skill requirement for Tier 2. We also said that when we next carried out a full shortage occupation review, we would address the issue of these job titles

appearing under the occupation of photographers and audio-visual equipment operators, SOC code 3434.

5.116 After receiving advice from the Office for National Statistics (ONS) and e-skills UK, and following consultation with Skillset and the UK Screen Association (UK Screen), it has been agreed that the SOC codes listed in Table 5.1 reflect the skills required for each role more accurately.

Table 5.1: Job titles argued to be in shortage within the visual effects and 2D/3D computer animation for film, television and the video games sectors and all corresponding occupations

SOC title and code	Job title (s)
Software professionals SOC 2132	software developer, systems engineer and shader writer
Artists SOC 3411	animator
Arts officers, producers and directors SOC 3416	2D supervisor, 3D supervisor, computer graphics supervisor, producer, production manager, technical director and visual effects supervisor
Graphic designers SOC 3421	compositing artist, matte painter, modeller, rigger, stereo artist and texture artist

5.117 For this review we received evidence from Skillset, the responsible Sector Skills Council, and the UK Screen Association (UK Screen) in a joint submission. They requested that twelve of the job titles currently on the shortage occupation list be retained. In addition, they asked for the removal of six of the job titles on the current list and requested that five new job titles be included.

5.118 The occupation graphic designers 3421 is not, as a

whole, skilled to NQF4+, but in Migration Advisory Committee (2011a) we assessed all of the job titles, listed against it in Table 5.1 as being skilled to NQF4+. The exception to this is the job title stereo artist which is a new title put forward for inclusion in this review. We received evidence that the annual salary range for the job title is £45,000 to £70,000. This is well above our standard annual pay benchmark for NQF4+ occupations of £28,260. We were also told

that the role requires a high degree of technical and specialist knowledge. We are therefore satisfied that the role of stereo artist is skilled to NQF4+.

however, that vacancy durations appear to be increasing, while the number of new hires in this occupation has increased over the previous year.

- 5.119 All the other new job titles put forward for inclusion in this review fall within 4-digit SOC occupations that are skilled to NQF4+. We are therefore satisfied that they are skilled to NQF4+.
- 5.120 Job titles in relation to the VFX and video games industries are discussed below. We begin the discussion of labour shortage by presenting the top-down evidence for the 4-digit occupation that the job titles fall under.
- 5.121 The 4-digit SOC occupation 2132, software professionals passes 3 out of 12 of our top-down indicators, which provides relatively little indication of labour shortage. However, the most recent data indicate a notable rise in the median vacancy duration and fall in the claimant count in this occupation compared to a year before.
- 5.122 The occupation 3411, artists passes only 2 out of 12 top-down indicators of shortage according to the most recent data
- 5.123 The occupation 3416, arts officers, producers and directors passes 3 out of 12 of our top-down indicators, providing little evidence of labour shortage in this 4-digit occupation. We note,

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5.124 Full top-down evidence summaries for the above occupations are provided in Boxes 5.12, 5.13 and 5.14. As discussed above the occupation 3241, graphic designers, is not, as a whole,

skilled to NQF4+. Therefore we do not provide top-down evidence summaries for this occupation because it would not be relevant for our purposes.

Box 5.12: Software professionals

Occupation(s) and SOC code(s): Software professionals - 2132

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Roles within visual effects and 2D/3D computer animation for film, television or video games including: software developer, systems engineer and shader writer

Top-down data

Skilled		Occupation passes 3 out of 3 indicators					
SOC skill level classification	4	Median hourly pay for all employees			£18.54		
% employees with NQF4+	70.6						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	3.3	3.3	-4.0	V2: Percentage change of employment level (over 1 year)	8.3	-1.1	2.5
P2: Percentage change of median real pay (over 3 years)	0.4	0.4	-1.5	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.12	0.14	0.09	V4: Change in new hires (over 1 year)	-0.009	-0.038	-0.007
I1: Change in median vacancy duration (over 1 year)	-1.2	-2.8	2.3	E1: Skill-shortage vacancies / total vacancies	21.6	21.6	21.6
I2: Vacancies / claimant count	0.08	0.09	0.16	E2: Skill-shortage vacancies / hard-to-fill vacancies	80.9	80.9	80.9
V1: Percentage change of claimant count (over 1 year)	92.5	4.9	-27.3	E3: Skill-shortage vacancies / employment	0.22	0.22	0.21
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	16	14	15	Percentage of workforce trained in past 13 weeks	25	23	23

Total employment in this 4-digit occupation is approximately 342000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Skillset and the UK Screen Association.

Box 5.13: Artists**Occupation(s) and SOC code(s):** Artists - 3411**Only the following job titles within this occupation are included on our recommended shortage occupation list:**

Animator within visual effects and 2D/3D computer animation for film, television and video games

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees			£14.73		
% employees with NQF4+	58.5						
Shortage		Occupation passes 2 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	-8.7	-8.7	7.3	V2: Percentage change of employment level (over 1 year)	10.3	9.7	-1.8
P2: Percentage change of median real pay (over 3 years)	#N/A	#N/A	-6.1	V3: Percentage change of median paid hours worked (over 3 years)	4.3	4.3	-0.1
P3: Return to occupation	-0.46	-0.23	-0.18	V4: Change in new hires (over 1 year)	-0.062	0.022	-0.004
I1: Change in median vacancy duration (over 1 year)	12.2	21.8	-7.8	E1: Skill-shortage vacancies / total vacancies	8.1	8.1	8.1
I2: Vacancies / claimant count	0.01	0.01	0.01	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	50.6	9.5	-17.7	E3: Skill-shortage vacancies / employment	0.04	0.04	0.03
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	13	20	10	Percentage of workforce trained in past 13 weeks	12	11	11

Total employment in this 4-digit occupation is approximately 38000 (LFS, 2010Q2-2011Q1)**Partner evidence received from:**

We received evidence from Skillset and the UK Screen Association.

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Box 5.14: Arts officers, producers and directors

Occupation(s) and SOC code(s): Arts officers, producers and directors - 3416

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Roles within visual effects and 2D/3D computer animation for film, television or video games including: 2D supervisor, 3D supervisor, computer graphics supervisor, producer, production manager, technical director and visual effects supervisor

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees				£16.47	
% employees with NQF4+	71.2						
Shortage		Occupation passes 3 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	-0.4	-0.4	-5.6	V2: Percentage change of employment level (over 1 year)	8.9	-17.3	3.8
P2: Percentage change of median real pay (over 3 years)	1.8	1.8	5.0	V3: Percentage change of median paid hours worked (over 3 years)	-2.0	-2.0	0.0
P3: Return to occupation	-0.34	-0.07	-0.05	V4: Change in new hires (over 1 year)	0.046	-0.033	0.098
I1: Change in median vacancy duration (over 1 year)	-6.1	-0.1	2.3	E1: Skill-shortage vacancies / total vacancies	6.0	6.0	6.0
I2: Vacancies / claimant count	0.01	0.01	0.02	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	89.2	14.6	-19.7	E3: Skill-shortage vacancies / employment	0.02	0.02	0.02
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	10	9	7	Percentage of workforce trained in past 13 weeks	14	17	14

Total employment in this 4-digit occupation is approximately 38000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Skillset and the UK Screen Association.

Box 5.15: Graphic designers

Occupation(s) and SOC code(s): Graphic designers - 3421

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Roles within visual effects and 2D/3D computer animation for film, television or video games including: compositing artist, matte painter, modeller, rigger, stereo artist and texture artist

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from Skillset, the UK Screen Association and Pact.

5.125 The job titles we are reviewing in this section represent only a small proportion of all employment in the respective occupations. As a result, our top-down indicators of shortage are probably of limited relevance, and it is therefore appropriate to focus our consideration on the evidence that we receive from our corporate partners in relation to these job titles when assessing the extent of any labour shortages.

5.126 We received evidence from Skillset and UK Screen that VFX is the fastest growing part of the UK film and television industries and that the UK is a global centre of excellence for high end film, TV and commercials work. The most recent figures available show that visual effects experienced a growth rate of 16.8 per cent between 2006 and 2008. In 2008 it generated revenues of £376 million and employed 5,060 full-time equivalent workers.

“...three of the five nominations at this year’s Academy Awards were for films where the visual effects were executed in the UK with a British company scooping the Oscar for its outstanding work on Inception.”

Skillset and the UK Screen Association response to MAC call for evidence

5.127 Skillset and UK Screen stated that visual effects are now involved in every stage of the film production process, from planning and visualisation before and during the film shoot rather than just at the end of the process, as was traditionally the case. We were told that this has contributed to a shortfall in the number of sufficiently skilled and experienced workers required.

5.128 Skillset explained that the UK VFX industry has to compete with rival production centres around the world (USA, Canada, Australia, New Zealand, South Africa, South East Asia and the rest of Europe) for high volumes of inward investment work,

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mainly from the USA. The industry also has to compete globally for the best talent to work on these contracts, meaning the shortage of skilled labour in this sector is a global one.

5.129 Evidence received stated that university courses in Britain do not equip graduates with the necessary skills to be immediately effective in the VFX industry. This has exacerbated shortages of skilled labour and will impact on future, anticipated shortages. The *Next Generation report* (Livingstone and Hope, 2011) commissioned by the Department for Culture, Media and Sport (DCMS), working with the National Endowment for Science Technology and the Arts (NESTA) in collaboration with Skillset and with support from e-skills UK, was published in February 2011. This report highlights the deficiencies in the current UK education and higher education systems which, it says, do not adequately equip graduates for careers in the video games and VFX industries.

5.130 Skillset and UK Screen explained that the majority of graduates begin their careers as 'runners' for a company and then progress into roles such as matchmove or roto artist. We were told that recent graduates make up less than 10 per cent of the workforce and that VFX recruiters tend to recruit

candidates of between one and four years experience.

"Typically it takes a year to transition between a runner and an entry level visual effects position, a further 2.5 years to progress from a junior role into mid-level role and 5+ years to progress into a senior level role."

Skillset and the UK Screen Association response to MAC call for evidence

5.131 We were told that the VFX industry is a cyclical business with unpredictable peaks and troughs. Skilled workers are taken on to work on specific projects, and therefore, the industry does not have a high level of permanent staff. The majority of workers are employed on a fixed term contract basis linked to the length of time of the project production schedule. The ability to source the appropriately skilled staff quickly is vital to ensure the client's deadlines are met and projects are completed on time and to the very highest standards.

5.132 Skillset and UK Screen explained that because of the shortage of appropriately skilled and experienced workers, VFX companies are always looking to employ additional highly experienced workers and that recruitment is an on-going process. We were provided with evidence of the number of individuals that had applied for specific roles and the number that had been successful for four of the

leading UK VFX companies based in London from 2009 to 2011. Out of a pool of approximately 16,000 applicants only around 1,700 staff were actually taken on. The reasons the VFX companies gave for not hiring included: skills and experience did not match those needed for the project; lack of technical knowledge and software proficiency; and insufficient artistic flare. This bears out what we were told, that the calibre of applicants does not always match the high standards and the level of industry experience required for these roles.

- 5.133 Evidence from Skillset and UK Screen shows increased levels of expenditure both on recruitment and on training by four of the major VFX companies over the last 3 years. We also saw evidence of high levels of overtime worked, especially at the weekends, in three of these VFX companies.
- 5.134 We were told that many VFX companies have set up new subsidiaries overseas in places such the USA, Canada, Hungary, Iceland and Singapore to increase operational capacity to cope with increased demand.
- 5.135 Skillset and UK Screen also told us that over the last twelve to eighteen months there has been an increase in demand for stereoscopic 3D work. This has led to an increase in demand for workers from outside the EEA

who have more experience in this field.

- 5.136 The *Next Generation* report highlights the skills shortages in the UK's video games and VFX industries. The report said that 57 per cent of computer games companies had problems filling vacancies and almost three-quarters of those with more than 100 employees found it difficult to fill vacancies.

“Interviews conducted with visual effects and computer games recruitment agencies undertaken for the Next Generation review found that 57% of recruiters found it difficult to fill roles across the video games and visual effects sectors. Recruiters in the visual effects industry specifically noted a shortage of applicants with the right skills and experience especially in areas such as compositing, audio and programming languages such as Python or C++”

Skillset and the UK Screen Association response to MAC call for evidence

- 5.137 Skillset's (2010) Creative Media Employer Survey found that almost a third of VFX employers and 33 per cent of computer games employers reported vacancies, with around half of those employers reporting hard to fill vacancies and skills shortages.
- 5.138 We received evidence that the industry anticipates future specialist skills shortages and that, of the visual effects

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recruiters interviewed for the *Next Generation report*, 33 per cent predicted an increase in demand for skills over the next 3 to 5 years. Skillset's *Creative Media Employer Workforce Survey* (Skillset, 2010) found that 34 per cent of VFX employers and 29 per cent of computer games employers expected to take on more short-term staff in the next year, compared to 24 per cent of creative media employers more widely. In addition Skillset and UK Screen told us that based on business booked and in the pipeline for 2010-12 they expect a 20 to 25 per cent shortfall in the UK/EEA talent pool.

5.139 We also received evidence from the Broadcasting, Entertainment, Cinematograph and Theatre Union (BECTU), the union for workers in the audiovisual and live entertainment sectors. They argued that no new occupations, most specifically SOC 3432, broadcasting associate professionals and SOC 5244 TV, radio and audio engineers should be added to the shortage occupation list due to the high level of redundancies, unemployment and under-employment within the audiovisual and live entertainment sectors. None of the job titles put forward by Skillset and UK Screen fall within these SOC codes and are therefore not being considered for inclusion in this review.

5.140 The Producers Alliance for Cinema and Television (Pact), the trade association that represents the commercial interests of the independent production sector, put forward a large number of occupations and job titles including production accountants, actors, and hair and make-up artists. Pact say these roles are needed to support the appointment of high-profile foreign directors or leading Hollywood animators to UK films. Pact told us that certain directors will often make employment of a specific cameraman a condition of their appointment. We understand the argument but the shortage occupation list is not the route for such workers, many of whom are in occupations not skilled to NQF4+. In addition, Pact suggested that the job title of modeller, which Skillset and UK Screen have put forward, and project managers, be included on the shortage occupation list. However, they did not provide supporting evidence in terms of shortage or sensible for either of these job titles.

5.141 Under sensible, Skillset and UK Screen told us that technology is not an alternative to employing non-EEA migrants. Whilst the visual effects industry is dependant on fast-paced technological innovation it still needs the highly-skilled, creative individuals to operate the software.

“Creative artists are needed to operate and manipulate the software to enable seamless integration between live action and computer generated effects or characters; production pipelines are extremely sophisticated and complex.”

Skillset and the UK Screen Association response to MAC call for evidence

5.142 Evidence received in the form of recruitment websites used and number and location of recruitment fairs attended, shows that VFX companies make efforts to recruit from the UK and wider EEA labour markets in addition to recruiting from countries outside the EEA. Skillset and UK Screen maintain that just over 75 per cent of recruitment is from the UK and the EEA. The *Next Generation report* states that around a third of placements in both the video games and visual effects sectors come from outside the UK. Our top-down data confirms that the proportion of non-EEA migrants employed in the relevant occupations is generally above the average for the NQF4+ labour market as a whole, but nevertheless the large majority of employees in these occupations is UK-born.

5.143 Skillset and UK Screen explained that migrant workers are not displacing resident workers as the companies employing them are only doing so because they have a unique set of skills that cannot be sourced

from the resident labour market. They point out that through training these skills can then be passed on to the existing workforce.

“Employing migrant workers who previously worked for high profile visual effects companies in rival territories means they refresh our own skills base, bringing innovative practice. This makes the UK a more attractive place for overseas production companies to partner with.”

Skillset and the UK Screen Association response to MAC call for evidence

5.144 We were also told that there is no cost saving involved in employing a worker from outside the UK and that, due to cost of relocation packages and the administration involved, it is actually more expensive to hire such workers.

5.145 We were told that 'without exception' the UK visual effects companies have their own in-house training programmes to develop their existing staff and keep them up-to-date with the constantly changing technology. Examples we were given include regular lunchtime workshops, 3D 'boot camps', company-specific on-line training packages and mentoring programmes. We were told that companies are also expending large amounts of time and money to increase the awareness of visual effects as a career and to improve the calibre of

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- graduates. Examples given include visits to universities, guest lectures, assessing graduate year end projects, mentoring, advising on curriculum content and links to internships. We were told that one company had established a highly successful internship programme called 'Inspire' which last year led to all three of the interns securing a permanent position in the company.
- 5.146 Skillset told us that they are working together with the Government to try and address skills shortages in the VFX industry. We were told that Skillset, e-skills UK and UK Screen were all contributors to the *Next Generation report* which provides a practical blueprint for schools and universities to adopt to ensure future graduates are better equipped with the necessary skills to fill jobs in the visual effects and computer games industries.
- 5.147 We were told that the above organisations are also all members of an on-going steering group which will ensure the twenty key recommendations included in the *Next Generation* report are implemented. Recommendation twenty in the report is that the Government “*Continue to treat the 18 visual effects occupations on the Government’s shortages list as shortage occupations*”.
- 5.148 We received evidence that Skillset had allocated
- £205,000 towards visual effects training through funding from the UK Film Council in the last financial year. This funding has led to a variety of initiatives aimed at improving the quality of VFX teaching in universities and raising the profile of the VFX industry.
- 5.149 We were told that it will take approximately four years for these measures to impact on increasing the calibre of new entrants into the industry. Skillset and UK Screen explained that the measures will not address the issue of current shortages or the need for companies to compete globally for the most experienced workers in order to maintain Britain’s reputation as a centre of excellence.
- 5.150 The evidence received from the sector on skilled, shortage and sensible was strong in respect of the visual effects industry. However, we would want to see much better evidence from the video games industry in future if they wish to remain on the shortage occupation list.
- 5.151 We recommend that the following job titles within visual effects and 2D/3D computer animation for film, television or video games be retained on the shortage occupation list: animator; compositing artist; computer graphics supervisor; matte painter; modeller; producer; production manager; rigger; systems engineer; technical director;

texture artist; and visual effects supervisor.

- 5.152 We also believe that we have received sufficient evidence to justify recommending that the following job titles within visual effects and 2D/3D computer animation for film, television and video games be included on the shortage occupation list: 2D supervisor; 3D supervisor; software developer, shader writer and stereo artist.
- 5.153 Finally, we recommend that the following job titles be removed from the shortage occupation list: animation supervisor; editor; R&D tools; R&D software; rigging supervisor and software engineer.

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5.14 Farmers

Box 5.16: Farmers

Occupation(s) and SOC code(s): Farmers - 5111

This occupation is not included on our recommended shortage occupation list.

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from the National Farmers Union, Lantra and IEP Management Ltd.

5.154 We received evidence relating to dairy herdsmen and dairy herd managers. We also received evidence on a number of other agriculture, horticulture and farming-associated job titles which we deal with at the end of this chapter as there was insufficient evidence to review them in detail.

5.155 The job titles dairy herdsman and dairy herd manager are not currently on the shortage occupation list. They fall under the 5111 SOC code for farmers. This is not a sufficiently skilled occupation according to top-down data. However, we recognise that the job titles are a small subset of the occupation and we therefore looked closely at bottom-up evidence provided on skill.

5.156 The National Farmers Union (NFU) told us that a wide range of skills are needed to manage a herd of dairy cows.

“To keep the dairy unit successful the cows will have to be fed suitable rations designed to fulfil dietary needs within budgetary constraints, the cows fertility must be carefully managed to keep them in milk, the milking parlour must be maintained to demanding food safety standards of hygiene whilst simultaneously safely handling large animals. To achieve this task requires education and training to NVQ4+ standard and also many years of practical experience to reach full competence in all aspects of dairy herd management.”

NFU response to MAC call for evidence

5.157 Lantra told us that the whole land-based sector is currently facing recruitment difficulties. The sector is seeing an increase in the skills required, both technical and also combined with business and management acumen. Lantra provided some evidence relating to skill, but it was insufficient for us to determine if the two job titles in question are skilled to NQF4+. IEP Management provided evidence relating to the dairy herd manager role and suggested that some of the

skills required are at level 4. Sufficient evidence was not provided to allow us to conclude that either the roles of dairy herd manager or diary herdsman are skilled to NQF4+.

- 5.158 Neither Lantra nor the NFU provided evidence in relation to shortage. IEP Management provided anecdotal evidence of shortage. Turning to sensible, no evidence was provided, for example, about how the sector was looking to up-skill the resident workforce, nor what medium to long term

solutions were being looked at.

- 5.159 In conclusion, no convincing evidence was received for either job title concerning any of our criteria of skilled, shortage or sensible. Therefore, we do not recommend them for inclusion on the shortage occupation list. The MAC adopts a rigorous approach to its shortage occupation list and it expects partners to provide comprehensive evidence that meets its criteria. Alas, this was not the case.

5.15 Welding trades and pipe fitters

Box 5.17: Welding trades

Occupation(s) and SOC code(s): Welding trades - 5215

Only the following job title within this occupation are included on our recommended shortage occupation list:

High integrity pipe welder skilled to NQF level 4+. This means three or more years of documented evidence of related on-the-job experience.

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from Doosan Babcock.

Box 5.18: Pipe fitters

Occupation(s) and SOC code(s): Pipe fitters - 5216

This occupation is not included on our recommended shortage occupation list.

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from Doosan Babcock.

- 5.160 The job title high integrity pipe fitter is a specialist sub-set of the occupation pipe fitters (SOC code 5216), which is not skilled to NQF4+. This job

title is not on the current shortage occupation list.

- 5.161 The job title high integrity pipe welder is a specialist sub-set

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- of the occupation welding trades (SOC code 5215), which is not skilled to NQF4+. High integrity pipe welders are required to be competent in welding various 'high alloy' and other materials, which have specific welding characteristics. They work within specified safety standards in sometimes hazardous environments, where they must take account of the high pressure or high temperature of the pipe's content.
- 5.162 We first considered high integrity pipe welders in our autumn 2008 report (Migration Advisory Committee, 2008) and recommended that it be included on the shortage occupation list. When we reviewed the job title again in autumn 2009 (Migration Advisory Committee, 2009b), we recommended that high integrity pipe welders with at least three years' experience be retained on the shortage occupation list.
- 5.163 In our March 2011 report (Migration Advisory Committee, 2011b), we reviewed high integrity pipe welders to determine the skill level. We received information from the Engineering Construction Industry Training Board (ECITB) suggesting that overall high integrity pipe welders are not qualified to NQF4+. We did not receive any evidence to the contrary and so we recommended that the job title be removed from the shortage occupation list.
- 5.164 We did not intend on re-opening the skill issue for this review but we, belatedly, received evidence from Doosan Babcock on the skill level of high integrity pipe welders. They also provided information on the skill level of high integrity pipe fitters. They told us that both job titles attract a basic rate of pay of £14.95 per hour, which is above our standard top-down hourly salary threshold for NQF4+ occupations of £13.40. Furthermore, shift allowances and overtime rates can raise this sum to £25 per hour on average over the year.
- 5.165 Doosan Babcock told us that high integrity pipe welders must be qualified to NQF level 3, plus have a minimum of 36 months experience working as a welder volumetrically testing components and also a minimum of 24 months experience of working within the engineering construction industry on large capital plant, such as power stations, oil refineries and nuclear reactors.
- 5.166 We were also told that high integrity pipe fitters must be qualified to NQF level 3, plus have a minimum of 36 months experience that will include the fabrication, installation and testing of safety critical pipe work installations and also a minimum of 24 months experience of working within the engineering construction industry on large capital plant, such as, power stations, oil

- refineries, and nuclear reactors.
- 5.167 In light of the above evidence, we accept that both high integrity pipe welders and high integrity pipe fitters are skilled to NQF4+.
- 5.168 Turning to shortage, Doosan Babcock explained that high integrity pipe welders and high integrity pipe fitters are involved in seasonal repair and maintenance shutdowns, outages and plant upgrade activities. Most of the specific information provided was in relation to high integrity pipe welders. Doosan Babcock said that there are skilled individuals within the UK labour market that could carry out the required work, but due to the short duration of employment during seasonal peaks, they choose not to leave other employment. Doosan Babcock told us this means that they have to recruit from outside of the EEA at short notice (less than one week lead time) and for short durations (currently between 2 and 14 weeks).
- 5.169 Doosan Babcock also said that each year they train over 130 new entrants to their apprenticeship program at a net cost of over £25,000 per trainee.
- 5.170 The evidence provided by Doosan Babcock was comprehensive, but it was not explicitly structured around our skilled, shortage and sensible criteria, and we had difficulty in extracting the relevant information. This ran the risk of potentially weakening the case being made. Nevertheless, we were on this occasion able to elicit sufficient evidence to conclude that high integrity pipe welders are skilled to NQF4+. Due to the seasonality and unpredictability of the workload there is a potential shortage of workers to fulfil short-term contracts, and we believe it would be sensible for the time being to fill these short-term shortages using non-EEA migrant labour. We also note that, because the overall occupation welding trades is not skilled to NQF4+, were this occupation not to be included on the shortage occupation route, it would not be possible to use the Resident Labour Market Test route as an alternative.
- 5.171 As such, we recommend high integrity pipe welders, with at least three years experience, for inclusion on the shortage occupation list. Nevertheless, our expectation is that the majority of non-EEA migrants coming through this route will be in the UK for only a limited period working on short-term contracts and, as such, will not displace UK workers or contribute to long-term net migration. At any future review of this occupation we will want to check that this remains correct.
- 5.172 Due to a lack of specific evidence, we do not include high integrity pipe fitters on our recommended shortage occupation list. If Doosan

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Babcock wish to submit further evidence on this job title to a future review we will be happy to receive it, but we will need to see specific evidence of labour shortage in the relevant job title, in addition to clearly identified evidence in relation to our skilled and sensible criteria.

5.16 Chefs

5.173 We reviewed chefs earlier this year for skill as part of the move from skill level NQF3 to NQF4+ for Tier 2 of the PBS (Migration Advisory Committee, 2011b). We recommended an NQF4+ chef should be paid £28,260 per annum, should have at least five years relevant experience and the job should not be in either a fast food or standard fare outlet. In addition, the Government, in accepting our recommendation, went further by adding various other criteria as outlined in Box 5.19. Therefore, for this review we are only concerned with shortage and sensible.

Box 5.19: Chefs

Occupation(s) and SOC code(s): Chefs, cooks - 5434

Only the following job titles within this occupation are included on our recommended shortage occupation list:

Skilled chef where:

- the pay is at least £28,260 per year after deductions for accommodation, meals etc;
- the job requires five or more years relevant experience in a role of at least equivalent status to the one they are entering; and
- the job is not in either a fast food or standard fare outlet.

The UK Border Agency also require that the job is not in an establishment which provides a take-away service; and

- the job is in one of the following roles:
 - executive chef – limited to one per establishment
 - head chef – limited to one per establishment
 - sous chef – limited to one for every four kitchen staff per establishment
 - specialist chef – limited to one per speciality per establishment.

A fast food outlet is one where food is prepared in bulk for speed of service, rather than to individual order.

A standard fare outlet is one where the menu is designed centrally for outlets in a chain / franchise, rather than by a chef or chefs in the individual restaurant. Standard fare outlets also include those where dishes and / or cooking sauces are bought in ready-made, rather than prepared from fresh / raw ingredients.

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from People 1st, the Embassy of Japan, e2e Linkers Ltd, Visallogic, the Association of Thai Businesses in the UK (ATBUK), Baker & McKenzie LLP (on behalf of MARC (Umu) Limited) and Fernandes Vaz Solicitors.

5.174 The last time we reviewed chefs for shortage was in autumn 2009 (Migration Advisory Committee, 2009b). At that time we found a shortage of skilled chefs and

recommended that it was sensible to allow employers to recruit from outside the EEA. However we also made a number of general points:

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- more progress in up-skilling the native workforce needed to be made;
- illegal workers within the sector were a cause for concern; and
- immigration exists to help the sector, rather than the existence of the sector being a rationale for continued immigration.

5.175 We said that *“Unless these arguments are seriously addressed the Committee is minded to remove skilled chefs from the shortage list on the basis that it will no longer be sensible to include them.”*

5.176 During our call for evidence for this review we met with representatives from the catering sector and we received evidence from a number of partners.

5.177 We were told by e2e Linkers Ltd that our consideration of this occupation in Migration Advisory Committee (2011b), where we looked at skilled jobs on the shortage occupation list to advise on which ones should be removed as a result of the Government’s intention to raise the level of Tier 2 from NQF3+ to NQF4+, did not take account of bottom up evidence. This is incorrect. The bottom-up evidence was taken into account. e2e Linkers Ltd said that we did not take sufficient account of innate ability and the discrepancy of chef salaries

between London and the rest of the UK. Migration Advisory Committee (2011b) lays out our recommendations in relation to chefs and skill and how we arrived at them. We find no reason to re-visit that work.

5.178 Turning to shortage, e2e Linkers Ltd told us that they ran a survey to assess demand for 80 positions across the UK. They reported only receiving 0.5 CVs per job advertised. However, according to their evidence none were advertised with a salary of £28,260 or more and therefore none were directly relevant for our review as they would not have fulfilled the relevant level 4 skill criteria.

5.179 In contrast, People 1st told us that looking across the hospitality sector as a whole, of the jobs posted on Caterer.com (an online recruitment service for the hospitality sector) in the first quarter of 2011, an average of 21 applications were made for every job posted. However, when looking at NQF4+ job titles this dropped to around 14 applications per advertisement for executive chefs, 13 for head chefs and 9 for sous chefs. They also told us that in recent times some chefs have been required to work even longer hours than previously due to shortages of staff. People 1st also told us that there was evidence of staff poaching because of labour shortages.

- 5.180 Visallogic sent in evidence from a number of their restaurant clients. Some are companies with chains of restaurants in the UK. They told us that various efforts had been made to recruit skilled chefs including through: national advertising; offering incentives such as bonuses; Job Centre Plus; and recruitment days. Many also mentioned their own in-house training. Despite these efforts a number of employers were still short of the number of chefs they needed. One told us that out of 12 vacancies they managed to fill just 2.
- 5.181 The Embassy of Japan told us that Japanese food was becoming increasingly popular in the UK and reported that, in London in particular, some highly skilled positions were remaining vacant due to shortages of suitably skilled chefs. Overtime had increased in some establishments and wages were also rising.
- 5.182 The Association of Thai Businesses in the UK (ATBUK) gave us evidence relating to Thai chefs. They told us that they need to replace approximately 200-500 positions in the Thai restaurant sector each year. However, they went on to say that the average earnings of head and second chefs within the Thai sector are up to £24,000. This is below the skill benchmark for the chef occupation on the current shortage occupation list.
- 5.183 Turning to sensible, e2e Linkers Ltd told us that to remove chefs from the shortage occupation list would create a vacuum in the sector and would mean investors would not be able to open new restaurants and existing owners would find it harder to replace skilled chefs who have left.
- 5.184 People 1st told us that some progress has been made in up-skilling resident workers. Apprenticeships can now be found including content covering Bangladeshi, Chinese, Indian and Thai cuisine. In addition People 1st have recently submitted a bid to the Government to set up five centres of Asian and Oriental cuisine. These centres of excellence will support the development of chefs who want to specialise in British Curry, Chinese, Indian and Thai cuisine. Indicative numbers suggest there could be 50 students by March 2012 and another 150 between April 2012 and March 2013. There are also other small projects taking place in various parts of the UK. However, overall up-skilling numbers are still small.
- 5.185 We were told that Japanese restaurants have brought about the expansion of employment in related industries in the UK including producers, processors and wholesalers. Nevertheless, we think the link is just as likely, if not more so, to be the other way round.

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- 5.186 When looking at the impact on their businesses some employers said that their expansion plans for the UK were being affected by the inability to recruit skilled chefs. One company said that the lack of chefs was the only barrier to expansion for them. Another company said that they thought tourism could be affected by substandard food quality and a lack of innovative cooking and fresh concepts if they could not recruit the skilled chefs they needed. One also said that for every 3 chefs they recruit into an establishment it would bring with it employment for 45 EEA nationals. We do not, however, believe the catering sector operates in this manner. If one restaurant does not open due to a lack of non-EEA chefs, in many cases a different restaurant offering another type of cuisine will open in its place.
- 5.187 We were told that the level of English now required by Tier 2 applicants was such that it was more difficult to recruit from outside the EEA as many potential chefs did not reach the required level. The Embassy of Japan asked that the level of the English language requirement should be eased. However, this is not within our remit. Indeed, it is in itself evidence that it may not be sensible to leave chefs on the shortage occupation list if the route cannot be constructively used.
- 5.188 In conclusion, although the evidence was weaker than for previous reviews we still find a case for the very top chefs to be recruited from outside the EEA. The question is whether those chefs identified as skilled to NQF4+ are all in shortage or whether only some of them are in shortage.
- 5.189 When we reviewed the occupation for skill in Migration Advisory Committee (2011b) we recommended chefs earning £28,260, with five years experience, and not working in a fast food or standard fare outlet were skilled to NQF4+. We estimated that this represented around five per cent of the workforce. The UK Border Agency added to our criteria in order to try and prevent abuse. They state that a highly skilled chef must also not be working in an establishment offering a take-away service. In addition, they must be an executive, head, sous or specialist chef and there is a limit on the numbers of each per establishment. We understand the basis for the additional requirements. We accept that there is an argument that the very best global talent should be allowed to be recruited and, pragmatically, we believe the current definition adequately identifies the very best whilst providing measures for preventing abuse. We therefore recommend no change to the current position. Skilled chefs meeting the criteria in Box 5.19 should be retained on the shortage occupation list.

5.17 Antiques-related occupations

Box 5.20: Estimators, valuers and assessors

Occupation(s) and SOC code(s): Estimators, valuers and assessors - 3531

Only the following job titles within this occupation are included on our recommended shortage occupation list:

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees			£14.24		
% employees with NQF4+	42.8						
Shortage		Occupation passes 4 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	4.6	4.6	-2.3	V2: Percentage change of employment level (over 1 year)	-2.6	-23.7	-6.7
P2: Percentage change of median real pay (over 3 years)	-6.6	-6.6	-3.3	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	-0.2
P3: Return to occupation	-0.27	-0.02	-0.10	V4: Change in new hires (over 1 year)	-0.047	-0.005	-0.035
I1: Change in median vacancy duration (over 1 year)	-1.6	3.4	-7.9	E1: Skill-shortage vacancies / total vacancies	44.8	44.8	44.8
I2: Vacancies / claimant count	0.83	0.72	0.54	E2: Skill-shortage vacancies / hard-to-fill vacancies	97.9	97.9	97.9
V1: Percentage change of claimant count (over 1 year)	104.1	-1.4	-25.5	E3: Skill-shortage vacancies / employment	0.37	0.37	0.46
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	3	4	4	Percentage of workforce trained in past 13 weeks	32	30	25

Total employment in this 4-digit occupation is approximately 55000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Moncler Ltd plus various letters of support from the antique sector.

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Box 5.21: Buyers and purchasing officers

Occupation(s) and SOC code(s): Buyers and purchasing officers - 3541

Only the following job titles within this occupation are included on our recommended shortage occupation list:

This occupation is not included on our recommended shortage occupation list

Top-down data

Skilled		Occupation passes 2 out of 3 indicators					
SOC skill level classification	3	Median hourly pay for all employees				£14.80	
% employees with NQF4+	45.6						
Shortage		Occupation passes 4 out of 12 available indicators					
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
P1: Percentage change of median real pay (over 1 year)	4.4	4.4	-3.7	V2: Percentage change of employment level (over 1 year)	0.3	7.3	9.3
P2: Percentage change of median real pay (over 3 years)	-1.2	-1.2	-1.5	V3: Percentage change of median paid hours worked (over 3 years)	0.0	0.0	0.0
P3: Return to occupation	-0.24	0.00	-0.03	V4: Change in new hires (over 1 year)	-0.016	-0.006	0.019
I1: Change in median vacancy duration (over 1 year)	6.3	3.9	-5.5	E1: Skill-shortage vacancies / total vacancies	29.1	29.1	29.1
I2: Vacancies / claimant count	0.13	0.12	0.16	E2: Skill-shortage vacancies / hard-to-fill vacancies	100.0	100.0	100.0
V1: Percentage change of claimant count (over 1 year)	102.3	-19.7	-32.1	E3: Skill-shortage vacancies / employment	0.30	0.30	0.27
Sensible							
	Spr 10	Aut 10	Sum 11		Spr 10	Aut 10	Sum 11
Percentage of workforce born non-EEA	6	7	8	Percentage of workforce trained in past 13 weeks	21	24	25

Total employment in this 4-digit occupation is approximately 69000 (LFS, 2010Q2-2011Q1)

Partner evidence received from:

We received evidence from Monclef Ltd plus various letters of support from the antique sector.

Box 5.22: Furniture makers and other craft woodworkers

Occupation(s) and SOC code(s): Furniture makers and other craft woodworkers - 5492

This occupation is not included on our recommended shortage occupation list.

The top-down data relating to this SOC code are not relevant as we are only dealing here with the skilled subset of an occupation that, as a whole, does not meet our skill criteria.

Partner evidence received from:

We received evidence from Monclef Ltd plus various letters of support from the antique sector.

5.190 We received evidence from Monclef Ltd in respect of antique forensic experts and antique art experts within the occupation estimators, valuers and assessors (SOC 3531). Monclef Ltd sent letters of support from various companies. They also included completed questionnaires from a survey they had conducted. We also received letters directly from Intercentre and Leisurecentre Ltd. Some stated that there was a shortage of antique repairers, which fall under SOC code 5492 and several mentioned a shortage of antique buyers, which fall under SOC code 3541. None of these job titles are on the current shortage occupation list.

5.191 Antique forensic experts, art experts and antique buyers are in occupations that are skilled to NQF4+. This, coupled with the evidence we received for pay (around £35,000 to £40,000 per annum) and the need for extensive experience, suggests these job titles meet the skill criteria for Tier 2. In relation to antique repairers that fall within a non-NQF4+ occupation, we received little evidence relating to skill. However, these job titles form a small subset of the appropriate occupations and evidence supplied on annual salaries (again, around £35,000 to £40,000) and the length of experience, suggest that they may well be skilled to NQF4+. We were told that many of the people working in

this sector do not have professional qualifications but build up their skills through years of on- the-job training and experience.

“...some of the Artists, Repairers and Forensic Experts did not even achieve any academic degree since they have been intensively working in the field from a very young age gaining practical experience and knowledge.”

Massoudnia Rare Antiques in Monclef Ltd response to MAC call for evidence

5.192 Our top-down data for the SOC codes 3531 (estimators, valuers and assessors) and 3541 (buyers and purchasing officers) show little indication of shortage. Both occupations pass 4 out of our 12 shortage indicators. Both pass our threshold for the decrease in the number of workers in the claimant count over the year. Both also pass 2 out of 3 of the shortage indicators that are based on NESS data: NESS was last conducted in 2009, which may make these indicators less reflective of the true extent of current labour shortages in these occupations.

5.193 Although the top-down data are not strongly supportive of labour shortages, we recognise that the job titles being put forward by partners only contribute a small proportion of all employment within these occupations. Consequently, the top-down data are of only limited relevance to the possible

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labour shortages considered in this review.

- 5.194 We were told that some employers had been struggling to fill vacancies for some time without success.

“...for the last 5 years we have been trying to employ a genuine antique repairer to restore these items, but we have been struggling to find a proper person”

Global Enterprises Investment Corporation in Monclef Ltd response to MAC call for evidence

“We always struggle to find real antique repairers and forensic experts from the UK and other EU markets”

Leisurecentre Ltd response to MAC call for evidence

- 5.195 Leisurecentre Ltd stated that allowing a small number of workers in from outside the EEA will aid the UK economy whilst not greatly increasing the net migration figures. Monclef Ltd told us that allowing them to recruit workers from outside the EEA will help the antiques market which uses UK labour and will allow for the transfer of skills to the UK workforce.
- 5.196 Although efforts have been made to recruit from the domestic and EEA labour market there was no evidence provided on what steps are being taken to up-skill the resident labour market.

- 5.197 In conclusion, evidence provided for these job titles was limited. Probably at least some, if not all, of the job titles are skilled. The evidence on labour shortage was limited, and it was not sufficiently demonstrated that our criteria for it to be sensible to recruit from outside the EEA were being met. Therefore we do not recommend any antiques-related job titles for the shortage occupation list.

5.18 Other evidence

- 5.198 We received evidence from Lantra relating to a number of roles in the agriculture, horticulture and farming sectors. However, it was inadequate to allow us to consider any of the roles in detail. We discuss their evidence in relation to dairy herdsmen and dairy herd managers elsewhere in this chapter.
- 5.199 We received a letter from Alan Reid MP, supported by Angus McNeil MP, in relation to fishermen and particularly the position with temporary visas which are due to expire later this year. The extension of visas is an operational issue which we have not been asked to look at and cannot therefore advise upon. We met Mr Reid and some of his Parliamentary colleagues to discuss their concerns, but the issue was raised too late for us to review fishermen against our skill, shortage and sensible criteria for this review. Nevertheless, when we last reviewed this

- occupation in spring 2010 (Migration Advisory Committee, 2010c) we found that the shortages were at the lower skill levels and not those required for Tier 2, which at the time was below the current level of NQF4+.
- 5.200 We received evidence from The Evangelical Lutheran Church of England in relation to the job title Lutheran Pastor. We did not consider the job title for inclusion on the shortage occupation list as there is a specific, and more appropriate, route for ministers of religion under Tier 2 of the PBS.
- 5.201 We received evidence from the Association of the British Pharmaceutical Industry (ABPI) on a number of job titles within the pharmaceutical industry. They provided evidence in relation to regulatory affairs manager, pharmacovigilance manager (both within SOC 1141), veterinary pathologist (SOC 2112), in-vivo physiologist (SOC 2112), in-vivo pharmacologist (SOC 2213), medical practitioners (SOC 2211), pharmacist (SOC 2213), health economist (SOC 2423), and health informatics statistician (SOC 2423).
- 5.202 The ABPI provided some evidence in relation to shortage. However much of the evidence was anecdotal and in some cases vacancies had been filled by workers from within the EEA. On this occasion the evidence provided for each job title was not sufficient enough for us to consider them in detail. However, we are happy to work with ABPI to establish whether better evidence can be provided if and when we are asked to review the shortage occupation list again in the future.
- 5.203 Creative and Cultural Skills is the Sector Skills Council for craft, cultural heritage, design, literature, music, performing and visual arts. They told us of potential shortages in a number of associate professional and technical job titles within the performing arts sector, such as: stage and set designers, lighting technicians and wardrobe assistants. These were predicted shortages in the future and we would be happy to work with the sector when the appropriate time comes to establish whether any of these job titles are skilled to NQF4+ and should be considered for the UK shortage occupation list.
- 5.204 Evidence was presented to us at a meeting of the Information Technology, Communications and Electronics (ITCE) Panel. E-skills UK, the Sector Skills Council for IT and telecoms, provided a copy of their bi-annual sector panel report on skills and labour market issues, which concluded that there are no ICT skills or occupations currently considered to be in shortage.
- 5.205 The Professional Contractors Group Ltd (PCG) told us

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about a number of IT related occupations that they felt were specifically not in shortage. They were: information and communication technology managers (SOC code 1136), IT strategy and planning professionals (SOC code 2131), software professionals (SOC code 2132), IT operations technicians (SOC code 3131), IT user support technicians (SOC code 3132) and computer engineers, installation and maintenance (SOC code 5245). Indeed they suggested to us that use of the immigration system to fill roles in these occupations may increase unemployment in these areas.

- 5.206 The only job titles recommended for the UK shortage occupation list that fall within these occupations are software developer, systems engineer and shader writer within the visual effects and video games industries, which are within the occupation software professionals (SOC code 2132). However, as explained earlier in this chapter, these are very specialist roles within the visual effects and video games industries and do not relate widely to the IT sector.

Chapter 6 Scotland

6.1 Introduction

6.1 In his foreword to Scottish Government (2007a) the First Minister of Scotland wrote that: *"The Purpose of the Government I lead is to create a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth. Sustainable economic growth is the one central Purpose to which all else in government is directed and contributes. Our Strategic Objectives – to make Scotland wealthier and fairer; smarter; healthier; safer and stronger; and greener – are all predicated on our efforts to bring more economic success to our country."*

6.2 Since May 2011 there has been a new Scottish Government. Although Scottish Government (2007a) remains in place from the time of the previous Scottish Government, the manifesto of the new Scottish Government did not contain any specific pledges on immigration for Scotland and did not repeat the previous Scottish Government's implicit aim to grow Scotland's population through increased

immigration. However, the manifesto did make a number of pledges that could have an impact on Scotland's ability to meet any future skill shortages.

6.3 The new Scottish Government pledged to make Scotland totally reliant on renewable sources for its energy needs and to provide the investment and support needed to reach its target of 130,000 jobs in the low-carbon economy by 2020. The Scottish Government also undertook to establish a new Scottish Futures Fund able to invest £250 million in young people, digital connectivity, homes and transport. Additionally, the Scottish Government pledged to deliver 100,000 training opportunities each year for young Scots including 25,000 modern apprenticeships. Commitment was also given for additional funding for college bursaries.

6.2 The Scottish economy and labour market

Macro-economy and demography

6.4 Like the rest of the UK, Scotland is slowly recovering from economic recession. Over the year to the first

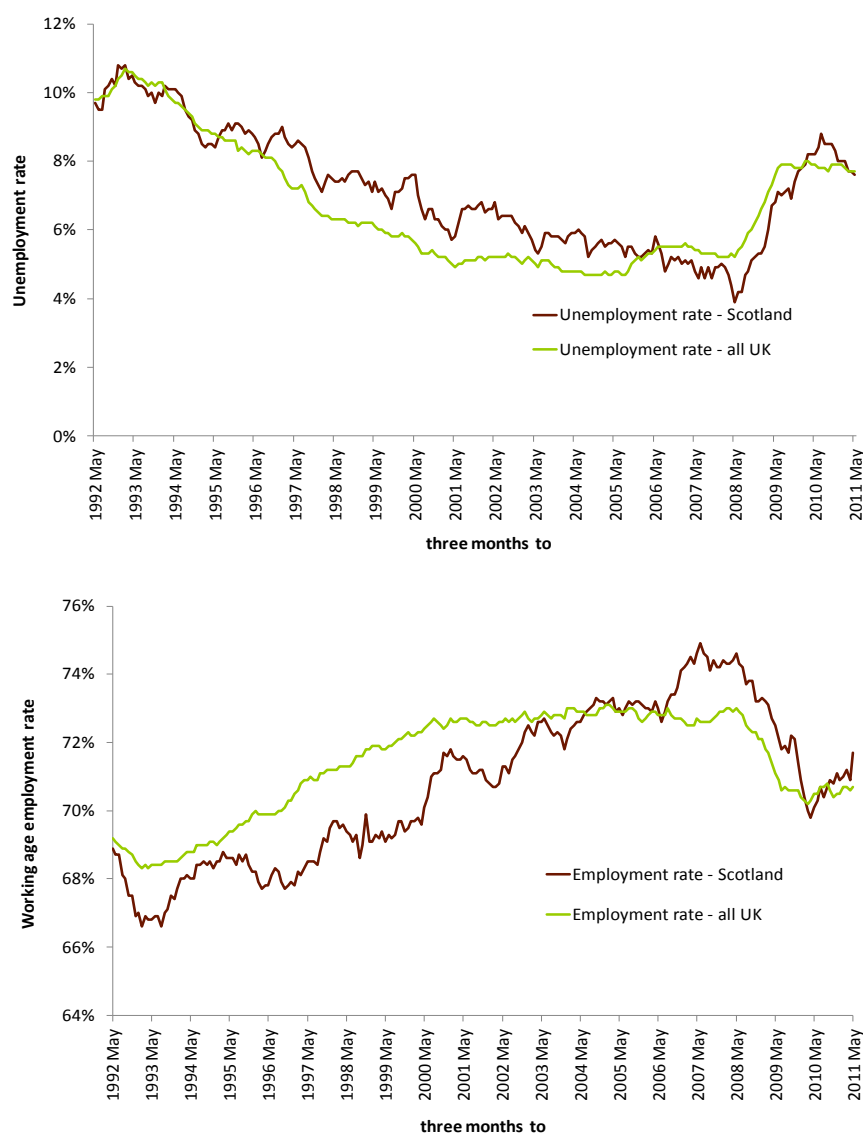
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- quarter of 2011 gross domestic product (GDP) grew by 1.3 per cent in Scotland, compared to GDP growth of 2.0 per cent for the UK as a whole over the same period (Scottish Government, 2011a).
- 6.5 During the year to the first quarter of 2011, output of services in Scotland grew by 0.1 per cent, production grew by 1.6 per cent, and construction grew by 13.9 per cent (Scottish Government, 2011a).
- 6.6 The Scottish Independent Treasury Economic Model (ITEM) Club expects the Scottish economy to grow by 1.7 per cent in 2011 and by 1.9 per cent in 2012 (Scottish ITEM Club, 2011). Its comparative forecasts for the UK as a whole are 1.8 per cent and 2.4 per cent.
- 6.7 The Office for National Statistics' (ONS) mid-year estimate of the Scottish population for 2010 was 5.2 million: up 2.5 per cent on five years before. The 2010 mid-year estimate of the working-age population of Scotland was 3.3 million (or 63 per cent of the total population). The comparative estimate of the UK working-age population was 38.4 million (or 62 per cent of the total population).
- 6.8 According to the latest population projections produced by the ONS, the population of Scotland will increase by 4 per cent between 2008 and 2018, whilst the population of the UK as a whole is projected to increase by almost 7 per cent over the same period (Office for National Statistics, 2009). The lower projected population growth rate for Scotland is due to assumed lower fertility rates and life expectancy levels in Scotland than in the UK as a whole.
- ### Labour market
- 6.9 As shown in Figure 6.1, the working-age employment rate in Scotland was 71.7 per cent in the three months to May 2011 (compared to 70.7 for the UK as a whole), down from a recent high of 74.9 per cent in the three months to May 2007. The unemployment rate in Scotland was 7.6 per cent in the three months to May 2011 (compared to 7.7 per cent for the UK as a whole), up from a recent low of 3.9 per cent in the three months to May 2008 (Office for National Statistics, 2011f).
- 6.10 The results of the most recent Scottish Employer Skills Survey, which was carried out in 2010 and comprised workplace interviews with approximately 6,000 employers, are presented in Scottish Government Social Research (2011). Results are slightly more recent than for the National Employer Skills Survey (NESS), the equivalent survey for England, which was discussed in previous chapters. Unfortunately, the Scottish survey is about one tenth the size of NESS. Due to the small number of employers

- that are surveyed, reliable results cannot be obtained at a more disaggregated level than the highest '1-digit' level of the Standard Occupational Classification (SOC) 2000.
- 6.11 The majority of respondents to the Scottish Employer Skills Survey said that the recent economic downturn had no impact on the number of staff they employed, the number of young people they recruited to their first job, or the number of apprentices or new trainees they hired. However, where employers did report a change in employment patterns, more employers reported a decline in staff numbers (21 per cent of respondents) than reported an increase (9 per cent of respondents), and more employers said that the number of apprentices and trainees had decreased (23 per cent of respondents) than said that the number had increased (12 per cent of respondents).
- 6.12 The challenge for the next 12 months that was most frequently cited by employers in the 2010 survey (as well as in the previous survey, carried out in 2008) was 'cash flow', while 'attracting new customers' was the next most frequently cited challenge. 'Attracting appropriately skilled staff' was found to be the seventh largest challenge facing employers in the coming year: 7 per cent of respondents cited this challenge, down from 12 per cent in the 2008 survey.
- 6.13 Table 6.1 shows the number of employees and vacancy rates by 1-digit SOC 2000 level as reported in Scottish Government Social Research (2011). The table shows that vacancy rates were highest in the personal service, associate professional and technical and skilled trades occupations. Vacancy rates were lowest for managers and senior officials and professional occupations. These results are largely similar to those of the 2008 survey.

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Figure 6.1: Unemployment rate and working-age employment rate, Scotland and all UK, Mar-May 1992 to Mar-May 2011



Notes: Seasonally adjusted. The employment rate is calculated from the Labour Force Survey (LFS) and is given by the number of working-age individuals who did at least one hour's paid work in the week prior to their LFS interview, or who have a job that they are temporarily away from, as a proportion of the working-age population. The definition of unemployment is internationally agreed and recommended by the International Labour Organisation, where every individual aged 16 or over is classified as either in employment, unemployed, or economically inactive. Individuals are defined as unemployed if they are without a job, want a job, have actively sought work in the last 4 weeks and are available to start work in the next 2 weeks; or are out of work, have found a job and are waiting to start it in the next 2 weeks. The unemployment rate is calculated from the LFS and is given by the proportion of the economically active population (those who are in employment or unemployment) who are unemployed. Source: Office for National Statistics (2011f); Office for National Statistics (2011g)

Table 6.1: Vacancy rates by occupation

	Number of employees (thousands)	Vacancies as a percentage of employment	Hard-to-fill vacancies as a percentage employment	Skill shortage vacancies as a percentage of employment
Managers and senior officials	247	0.5	0.2	0.1
Professional occupations	436	0.9	0.2	0.1
Associate professionals and technical occupations	189	2.5	0.8	0.5
Administrative and secretarial occupations	291	1.4	0.4	0.1
Skilled trades occupations	176	2.5	1.5	1.1
Personal service occupations	199	2.9	1.3	0.6
Sales and customer service occupations	317	2.2	0.3	0.2
Process, plant and machine operatives	168	2.0	1.2	0.8
Elementary occupations	294	2.4	0.8	0.3
Total	2,317	1.9	0.7	0.3

Notes: All percentages have been rounded to one decimal place. The number of employees has been rounded to the nearest 1,000. Occupations are presented at the 1-digit level of SOC 2000. Source: Scottish Government Social Research (2011)

6.14 As a percentage of employment, rates of hard-to-fill and skill shortage vacancies were highest in skilled trades occupations and lowest among managers and senior officials and professional occupations. The survey suggests that the number of skill shortage vacancies in Scotland has decreased since 2008, and that these shortages were less likely to be experienced by larger employers. However, this has not been the case across all occupations, with skill shortage vacancies as a percentage of employment rising for both skilled trades

occupations and process, plant and machine operatives since the 2008 survey.

6.15 In summary, the data suggest that Scotland's economy is slowly recovering from recession, with the unemployment (employment) rate still considerably higher (lower) than it was immediately prior to the downturn. Survey evidence suggests that the impact of recession is still being felt by Scottish employers. There is some evidence of skill shortages, although these shortages account for a small proportion of total vacancies and total employment.

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6.3 Corporate partner engagement in Scotland

6.16 This section describes general points and themes emerging from the corporate partner evidence we received in relation to Scotland. Issues raised in relation to specific shortage occupations are discussed in paragraphs 6.32 onwards.

Labour supply and skills issues in Scotland

6.17 In 2011, the Scottish Government contracted consultants to conduct a survey of employers in Scotland within the electronics or advanced engineering, advanced information and communication technology, and digital media fields. The outcomes of this survey are discussed in paragraphs 6.25 onwards.

6.18 As part of the survey, employers were asked if they would like to have more contact with the MAC in relation to its work on shortage occupations. Those who responded positively were contacted by the Fresh Talent Initiative team within the Scottish Government and a series of meetings were arranged with a representative from the MAC. As a result of this, and also contact with other interested corporate partners, a member of our secretariat spent a week in Scotland engaging directly with a wide range of corporate partners. This represented a significant step change in the

MAC's engagement with Scottish employers and increased and deepened our understanding of occupation shortage issues across Scotland. We are grateful to the Fresh Talent Initiative team for their assistance with these meetings.

6.19 A full list of those that we met with is included in Annex A to this report. The sectors represented included social care, new and developing technology industries, local government, the health sector and the finance sector. Additionally, a day was spent at the All Energy Conference in Aberdeen on 19 May 2011 meeting representatives from the oil and gas industry and with employers working on emerging technology within the renewables sector.

6.20 A number of general points were raised in the evidence submitted to us. We were told on a number of occasions that there seemed to be a mismatch between qualifications and skills. GNE Consultancy told us that many young people seem not to possess the people skills required to succeed in work and that basic skills such as customer service would enhance a young person's employment prospects. They cited the Curriculum for Excellence (a curriculum aiming to achieve a transformation in education in Scotland by providing a coherent, more flexible and enriched curriculum from ages 3 to 18) as an example of a

- shift into a focus on cross-curriculum studying with students looking at how to educate themselves. We heard at a number of meetings that many candidates lack the ability to think commercially in a scientific environment.
- 6.21 Other partners told us that they had experienced difficulties in recruiting the very best possible candidates. ThinkTank Maths (a company that provides innovative mathematics and artificial intelligence based solutions to a variety of sectors including financial services, energy, defence, new media and business analytics) expressed concern over the quality of the applicants they were seeing, even at PhD level. They felt that students were being taught to learn by rote rather than to work things out and that often the PhD is too narrow and of low research value. Thinktank Maths argued that the requisite skills often had to be sought from outside the European Economic Area (EEA) for these reasons.
- 6.22 AppShare is a venture funded technology company spun out of Strathclyde University in 2008. It is a single product firm aimed at developing new software to facilitate web sharing and web collaboration. They told us that they want people who can work in an innovative manner and with a broad range of skills. They said that they need candidates who are capable of becoming world leaders in their field and that UK universities do not produce candidates of a sufficient calibre to meet AppShare's growing needs. Similarly, Contemplate (a spin out technology company from the University of Edinburgh which develops tools for programmers to improve the quality of software products by automatically finding bugs in software) told us that they need employees who understood the underlying scientific principles and theories and who could translate them into a commercial product. They said that there were more such candidates in the United States than in Europe.
- 6.23 Another technology company told us of how they located the ideal candidate from outside the EEA for a position but were unable to secure their relocation to Scotland and had to make do with a less directly relevant candidate from within the EEA. A number of other employers felt that they were being told to settle for second best candidates from the UK or EEA instead of being able to pursue those most qualified and most suitable person wherever they came from. Scottish Care said that rural areas such as Argyll and Bute find it particularly hard to recruit staff. They suffer from a higher proportion of older people already living in rural areas and a lack of younger people to do the work. This is compounded by an influx of

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- older people moving out from the cities to the countryside and younger people moving in the opposite direction to find work.
- 6.24 The Convention of Scottish Local Authorities (COSLA) told us that rural and island communities can face skill shortages which are difficult to address because the Scottish workforce is reluctant to move to these areas, and that training up the local workforce is not a viable solution when experienced employees are sought. These two effects (lack of people and inability to train up those there are) reinforce each other in that there are no experienced workers in situ to provide the training that may be required by the local workforce.
- 6.25 We received a copy of a report on research findings from a survey of employers in the areas of electronics or advanced engineering, advanced information and communications technology and digital media commissioned from George Street Research and Frontline Consultants by TalentScotland (TalentScotland, 2011). A sample of 1,543 firms from these sectors was identified and 206 telephone interviews were held. The survey focussed on the current and future skill needs of employers in the areas stated above.
- 6.26 The main findings from this survey were that the terms used by respondents to describe their business sector varied widely, with some businesses identifying with the sector they sell to rather than their actual business activity. This mirrors something that we have found with employers across the rest of the UK, particularly in fields that are new and emerging. Additionally, there is a large degree of overlap between these areas especially between digital media and advanced information and communications technology and between electronics or advanced engineering and advanced information and communications technology. Again, the MAC has found particular difficulties with this overlap in the same areas in the whole of the UK, as discussed in section 5.13 in this report in relation to the SOC codes for the visual effects and gaming sector. Respondents identified the following as the key barriers to recruitment:
- a lack of the right kind of people or a small talent pool (27 per cent within the electronics or advanced information and communications technology sector); and
 - a lack of people with the relevant skills (29 per cent within the digital media sector).
- 6.27 In terms of barriers to recruitment within Scotland, 60 per cent of all respondents reported that they had faced barriers within the last 12

months. The two main barriers identified were:

- a lack of applicants with a specific skill or skills (65 per cent of all respondents); and
- a lack of applicants with suitable levels of experience (61 per cent of all respondents).

6.4 Initiatives across Scotland to raise skills and attract the right staff

6.28 The Scottish Government has set up the Relocation Advisory Service to provide support and advice to individuals wishing to relocate to Scotland and to employers wishing to bring in employees from outside Scotland. Its advice covers a wide range of issues including immigration, employment, education, accommodation, and leisure and cultural opportunities. Since 2004, RAS has offered advice in response to 27,000 queries, 90 per cent of which were visa related.

6.29 The Scottish Government's Skills for Scotland Strategy, launched in 2007 (Scottish Government, 2007b) and refreshed in October 2010 (Scottish Government, 2010), is intended to set out a strategic approach to up-skill Scotland's workforce to help it compete in the current labour market. It outlines measures intended to empower employers and employees to access advice, support and opportunities to obtain the

skills needed to perform effectively.

6.30 We heard of a number of initiatives, including the Young Engineers and Science Clubs established by the Scottish Council for Development and Industry. They have set up some 400 clubs in schools across Scotland with a membership of over 6,000 children aimed at encouraging engagement in science and engineering through events and competitions.

6.31 GNE Consultancy told us that they felt there had been tangible benefits from the Scottish Government's Skills for Work programme but that the issue now was around developing useable skills to distinguish between candidates.

6.5 Sectors and occupations

6.32 The following sub-sections discuss evidence we received relating to individual occupations and job titles in Scotland that were not mirrored by evidence of similar shortages across the whole of the UK.

The land-based sector

6.33 We were told by the Alliance of Sector Skills Councils and by representatives from the health sector that there remained distinct regional issues in relation to shortage occupations across Scotland. Lantra told us that this was not always solely to do with higher salaries available elsewhere and that there were

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shortage issues around dairy managers and stock managers and with seasonal fruit picking. Lantra felt that there were a number of specific difficulties in Scotland in recruiting gamekeepers, landscape gardeners, turf experts, crop sprayers and experts in weather management, with the overwhelming majority of businesses affected by these difficulties in recruiting to these positions being micro-businesses (some 96 per cent).

Care sector

- 6.34 Scottish Care said that there are over 80,000 people employed across Scotland within the care sector. It is an expanding sector looking to increase the number of homes it has. One third of the demand for places in care homes comes from unplanned admissions.
- 6.35 Scottish Care identified what they see as a need to double the expenditure on homecare over 10 years (to £0.3bn). Scottish Care said that the Scottish Government's plan is to finance some of this expenditure through increased savings in hospital admissions as more people get access to care outside of hospital. In order to facilitate this sort of synchronicity between savings in admissions and increased home care, the Scottish Government will drive unification of NHS and local authority budgets for care.
- 6.36 There are policy initiatives across Scotland to keep people from reaching the stage of needing acute care, if possible. There are increasing numbers of community support workers who have the responsibility for community capacity building and supporting informal care within the family. As a result, roles are becoming more blended. Scottish Care said that the sector needs more people with a blend of social care and nursing skills to reflect the fact that people have mixed needs.
- 6.37 Scottish Care told us that 13 per cent of staff across the care sector are non-UK nationals. This is split almost evenly between EU and non-EU, with the non-EU staff being mostly qualified nurses. The care sector has to compete for staff with other sectors such as the retail trade and hospitality. There can be a seasonal aspect to this also in that staff will leave the care sector in the summer months for better paid jobs in the hospitality sector.
- 6.38 Scottish Care did not report a general shortage of nurses but said that there was a shortage of nurses to work in care homes (within SOC code 3211, nurses). Some care organisations (such as Four Seasons) go out and recruit from overseas. The problem of recruiting staff who became qualified and then leave to work for the NHS was raised. In addition, there are some migrant nurses who are not

registered with the Nursing and Midwifery Council who are working in the care sector as care workers rather than as nurses. The issue of the relevance of qualifications being more related to the work done within the sector is being looked at by Scottish Care along with the possibility of requiring that home care workers obtain a relevant qualification.

- 6.39 Scottish Care felt that middle management roles across the sector could be filled by persons brought in from abroad, subject to their receiving adaptation training. Work is being done with colleges in order to develop an adaptation curriculum.
- 6.40 We are grateful to Scottish Care for the information they provided. We also studied the report *Reshaping Care for Older People: A Programme for change 2011 - 2021* (Scottish Government, 2011b) produced by COSLA, the Scottish Government and NHS Scotland. This report aimed to develop a strategy for reshaping care given the implications of a projected demographic change and financial pressures. Neither Scottish Care nor the Reshaping Care report sought to have occupations or jobs in the care sector added to the shortage occupation list for Scotland.

Social work

- 6.41 COSLA told us that increased legislative requirements are likely to place extra burdens

on adult social workers and, therefore, they would like to see adult social workers (within SOC code 2442, social workers) recognised as a shortage occupation and for social workers working in children's and family services to be retained on the UK shortage occupation list. However, the evidence was not detailed enough in terms of skill, shortage or sensible for us to consider adding adult social workers to the Scotland shortage occupation list. The remaining evidence relating to social workers working in children's and family services is discussed in Chapter 5.

Health sector

- 6.42 The Scottish Government Health Directorates submitted evidence to us of shortage in Scotland in the medical paediatric workforce (within SOC code 2211, medical practitioners), mainly due to vacancies for middle grade doctors in training rotas and also for staff grades and consultants in paediatrics. The occupation is skilled to National Qualification level 4 or above (NQF4+) according to our top-down analysis, and the bottom-up evidence we received confirms that qualified paediatric doctors are skilled to that level: they must have attained a medical degree and successfully completed two years of foundation training followed by the first two years of basic speciality training.

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- 6.43 In terms of our shortage test, the only top-down data for Scotland relevant to this occupation (on 'professional occupations' at the 1-digit level of SOC 2000) was discussed in section 6.2. The data do not indicate labour shortage, but is so aggregated as to be of little relevance. Therefore we have relied on bottom-up evidence.
- 6.44 The Scottish NHS Boards reported to the Scottish Government Health Directorates that they had vacancies in the middle-grade positions within paediatrics, mainly due to high numbers of staff in these grades taking maternity leave, part-time working, sickness absence, or resigning. There was no difficulty reported in recruiting to the lower or higher grades, the latter owing to trainee doctors returning to the programme later to complete their training. Nevertheless, it was stated that the 8 year training programme was presently taking, on average, 11 years to complete.
- 6.45 We were told by the Scottish Government Health Directorates and also the Alliance of Sector Skills Councils that difficulties in covering rotas was further compounded by shortages in the availability of good quality locums and that, therefore, when there was a shortage of training grades there were not locums available to take up the slack. This, we were told, has possible harmful consequences for patient care. Some NHS Boards are using consultants to cover additional working with associated increased costs. One NHS Board was paying a consultant to work at three times the consultant hourly rate to be resident on call. It was emphasised to us that covering rotas by the use of locums also has implications for the quality of patient care, training and potentially patient safety.
- 6.46 The Scottish Government Health Directorates presented evidence showing that in the period June 2010 to April 2011 there were 464 requests for paediatricians on the national locum contract. This represented 12 per cent of all requests for locum cover, despite paediatrics services constituting only around 5 per cent of the total health service workforce in Scotland. Demand was highest amongst the middle grades. Eight out of the 12 Scottish NHS Boards identified medium-term to immediate concerns in relation to the sustainability of paediatric services. The remaining four Boards anticipated that if the shortages of middle grade doctors in this field continued in the longer term then this would have an impact on their services.
- 6.47 Table 6.2 sets out those NHS Boards across Scotland that have the most significant proportions of vacancies in middle grade paediatric doctors.

Table 6.2: Proportions of vacancies in middle grade paediatric doctors in some NHS Boards in Scotland

NHS Board	Percentage of posts that are vacant
Ayrshire and Arran	20
Borders	20
Dumfries and Galloway	67
Forth Valley	40
Lanarkshire	15
Tayside	30

Source: Scottish Government Health Directorates' evidence to the MAC

- 6.48 The Scottish Government Health Directorates referred to data published by The Scottish NHS Information Services Division in March 2011, which indicate that long-term vacancies are also an issue at the consultant level in paediatrics. The data show that, on average, across the Scottish regions, six per cent of the current paediatric consultant workforce is vacant. The length of time for which these posts have been vacant is also an issue. The Scottish Government Health Directorates told us that in Scotland there were nine vacancies, four of which have been vacant for more than six months. The rate of long-term vacancies as a proportion of the total paediatric workforce (1.6 per cent) is higher than other specialities: medical (1.1 per cent); surgery (0.7 per cent); and psychiatric (0.2 per cent).
- 6.49 Additionally, the Scottish Government Health Directorates provided us with examples from NHS Boards and individual hospitals of how shortages in the paediatric specialism were manifesting themselves. Some of these examples include Lanarkshire Health Board reporting that two staff grade and associate specialist (SAS) permanent posts were filled by persons without the full requisite experience and who were working as out-of-grade locums. Dumfries and Galloway Royal Infirmary confirmed that their complement of six paediatric posts had never been filled. The Infirmary has advertised unsuccessfully 12 times since 2008 to try to fill these posts. NHS Fife said that a paediatric post that had stood vacant since July 2008 had only recently been filled with the successful applicant due to start work in September 2011. The post had been advertised unsuccessfully three times. The Scottish Government Health Directorates said that candidates from within the EEA do not have sufficient skills and expertise to be appointed to these posts.
- 6.50 In terms of our sensible test, the Scottish Government Health Directorates provided evidence of how, in the longer

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term, the Scottish health sector was working to resolve the current difficulties within paediatrics. All Scottish NHS Boards are engaging with the *'Reshaping Scotland's Medical Workforce 2008 – 2018'* project which aims to establish consensus within the Scottish medical profession and NHS on what a 'trained doctor' delivered service should mean and to develop a method for medical workforce planning that assists and ensures consistency across services.

projected to exceed required numbers in the next few years. Table 6.3 shows the anticipated bulge in the intake of paediatric trainees. This shows the numbers entering the 8-year training programme. It will obviously take time for sufficient numbers of trainees to move into the middle grades presently in shortage such that labour shortages no longer exist. It is this temporary shortfall that the Scottish Government Health Directorates are seeking to fill.

- 6.51 The anticipated intake of trainee paediatricians is

Table 6.3: Estimated paediatric retirees, and targeted and estimated paediatric trainee intake, 2011 - 2016

Year	2011	2012	2013	2014	2015	2016
Estimated annual retirees	7.2	7.2	7.2	7.2	7.2	7.2
Target annual intake	16	16	16	16	16	16
Estimated intake	7	26	30	32	39	15

Source: Scottish Government Health Directorates' evidence to the MAC

- 6.52 The Scottish Government Health Directorates counsel that the figures in Table 6.3 need to be treated with caution as they are only estimates and could be affected by a number of factors, including higher or lower than anticipated take up of voluntary retirement, greater or smaller numbers taking maternity leave and changes to working patterns.
- 6.53 Work is underway within NHS Education for Scotland (a special health board responsible for supporting NHS services) to improve the recruitment and retention of paediatric trainees. Further work is planned to involve the Speciality Training Board and Royal College of Paediatrics and Child Health in raising awareness within the paediatric speciality of the need for change in the way in which the work is carried out. This will include consultants increasingly delivering care out of hours and a possible increased reliance on advanced practitioners and other health professionals. All these parties will be expected to work more closely together as part of a multi-disciplinary team.

- 6.54 Measures to address the shortage in paediatrics have been put forward by the Short Life Working Group on Long Term Service Models for Paediatric Services set up by the Chief Nursing Officer for Scotland in 2008. This Group found that paediatrics services needed to move away from being reliant on doctors in training by what they describe as service redesign and multi-professional working. The dependence on 24/7 availability of doctors in training to provide acute paediatric services was found to be not sustainable with changes in working hours and the likely reductions in numbers of such doctors. However, the Group found that there will be an opportunity in the next few years to capitalise on the higher than normal number of doctors likely to achieve a Certificate of Completion of Training (CCT) to change this.
- 6.55 The Working Group concluded that NHS Scotland needs to develop strategies to ensure an increased proportion of clinical activity is delivered by trained paediatricians and to maximise the potential contribution that can be made by other healthcare professionals, developing a multi-disciplinary team approach to service delivery. This could involve advanced paediatric nursing making a contribution to changing service models away from dependence on trainees. The issues identified by this Working Group are being addressed over the longer term.
- 6.56 Representatives from NHS Glasgow and Clyde and NHS Lothian made similar points to those made in the evidence from the Scottish Government Health Directorates. Additionally, they said that they were experiencing shortages in psychiatry at training grades and specialist levels and in haematology and pathology but we did not receive further, national evidence about these occupations.
- 6.57 Overall, we consider that there is evidence of shortage within these middle grades in the paediatric profession. We acknowledge the steps being taken to address this as well as the anticipated bulge in future intake to this profession. We therefore recommend that the middle grade paediatric doctors (grade Specialist Trainee ST3, ST5 and ST6 (ST4 is already on the UK list), SAS staff doctors in paediatrics and consultants in paediatrics) job titles all falling within the SOC code 2211 be included on the shortage occupation list for Scotland. We expect to review the position next time the MAC is asked to review the shortage occupation lists.
- 6.58 The current shortage occupation list for Scotland contains the job title of consultant radiologist within the medical practitioners (SOC 2211) occupation. The

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Scottish Government Health Directorates confirmed that this job title was no longer in shortage and that they were content for it to be removed from the shortage occupation list for Scotland. We therefore do not include this job title on our recommended shortage occupation list for Scotland.

Local government

6.59 COSLA said that there are shortages in a small number of occupations not presently on the shortage occupation list, namely home economics teachers and educational psychologists, but no detailed evidence was submitted to us in relation to these job titles. COSLA feels that the Tier 2 shortage occupation list is not an effective tool for meeting the needs of Scotland in relation to migration, notwithstanding the existence of an additional shortage occupation list for Scotland. They consider that the present system is not sufficiently nuanced to take account of the economic and demographic position in Scotland. For instance, they argued that the earnings requirement is seemingly weighted towards the needs of London and the South East of England, where the cost of living and wages are higher than in Scotland. COSLA point to the Australian points based system and its regional flexibilities as a model worthy of further consideration.

Scientists

6.60 Toshiba Medical Visualisation Systems Europe asked that we consider the job titles of scientist and senior scientist for inclusion on the shortage occupation list for Scotland. The employer is an independent company owned by the Toshiba Corporation and specialises in providing diagnostic medical imaging systems such as CT scanners, X-ray, ultrasound, nuclear medicine, MRI equipment and information systems for medical institutions.

6.61 There are no occupations within the SOC code classification which correspond to the scientist and senior scientist identifier. There are occupations such as scientific researcher (SOC 2321) or biological scientists and biochemists (SOC 2121) into which these job titles could fall, although the job description and requirements mean they also lean towards the software professional (SOC 2132) occupation. Notwithstanding this, we did look to see whether the employer had provided sufficient evidence of skill, shortage and sensible before considering whether to add these job titles to the shortage occupation list for Scotland, and, if so, then under which SOC code.

6.62 The role of a scientist within Toshiba Medical Visualisation Systems is to create, develop and maintain innovative

rendering or image analysis solutions in advanced medical imaging. The post requires an honours degree in computing or a related discipline such as maths or physics plus knowledge and experience of the relevant technology. The role of senior scientists within Toshiba Medical Visualisation Systems is to provide technical leadership to a team of such scientists. The requirements for the job include qualifications as above as well as a PhD or significant experience in a relevant area and wide-ranging knowledge and experience of the relevant technology. We are satisfied that both these posts are skilled to NQF4+.

- 6.63 At a meeting with Toshiba Medical Visualisations Systems they explained that they were experiencing difficulty in recruiting to these posts. However, despite a further request from ourselves

for additional information, the company did not provide us with evidence such as to cause us to believe that their local recruitment difficulty was symptomatic or indicative of a shortage across Scotland. Therefore, we do not recommend these job titles for inclusion on the shortage occupation list for Scotland at this time.

6.6 Conclusions

- 6.64 We recommend that the job title of consultant radiologist be removed from the shortage occupation list for Scotland and the job titles of grade Specialist Trainee ST3, ST5 and ST6 in paediatrics, SAS staff doctors in paediatrics and consultants in paediatrics (all falling within the medical practitioners SOC code 2211) be included on the shortage occupation list for Scotland.
- 6.65 Our recommended shortage occupation list for Scotland is shown in Table 6.4.

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Table 6.4: Recommended shortage occupation list for Scotland for Tier 2 of the Points Based System, July 2011

Occupation title and SOC code (see notes 1 and 2)	Job titles included on the shortage occupation list	Other information
Medical practitioners (2211)	<p>ONLY the following job titles within this occupation:</p> <p>ST3, ST5 and ST6 trainees in paediatrics.</p> <p>SAS staff doctors in paediatrics.</p> <p>Consultants in paediatrics.</p>	

Notes:

(1) SOC codes relate to the Standard Occupational Classification (SOC) 2000.

(2) For official job descriptions relating to four-digit occupations in SOC 2000, see www.statistics.gov.uk/methods_quality/ns_sec/downloads/SOC2000_Vol1_V5.pdf.

7.1 Introduction

7.1 Here we draw together the reviews of individual occupations covered in Chapters 3-5 to provide the recommended shortage occupation list for the UK under Tier 2 of the Point Based System (PBS).

7.2 The recommended UK shortage occupation list

7.2 Before providing the full recommended UK shortage occupation list we outline the key changes compared with the current list.

7.3 **Additions** that we recommend to the shortage occupation list are:

- managing director within the decommissioning and waste management areas of the nuclear industry;
- programme director within the decommissioning and waste management areas of the nuclear industry;
- site director within the decommissioning and waste management areas of the nuclear industry;
- operations manager within the decommissioning and waste management areas of the nuclear industry;
- decommissioning specialist manager within the decommissioning and waste management areas of the nuclear industry;
- project/planning engineer within the decommissioning and waste management areas of the nuclear industry;
- radiological protection advisor within the decommissioning and waste management areas of the nuclear industry;
- consultant in clinical neurophysiology;
- consultant in emergency medicine;
- qualified actuary working in the life assurance, general insurance, and health and care sectors, etc;
- high integrity pipe welder;

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- radioactive waste manager within the decommissioning and waste management areas of the nuclear industry;
- technical services manager within the decommissioning and waste management areas of the nuclear industry;
- technical services representative within the decommissioning and waste management areas of the nuclear industry;
- mining and coal engineer;
- metallurgical/mineral processing engineers;
- environmental scientist;
- geochemist;
- substation electrical engineer within the electricity transmission and distribution industry;
- mining geotechnical engineer;
- manufacturing engineer (process planning) in the aerospace sector;
- technical services representative in the aerospace sector;
- aerothermal engineer in the aerospace sector;
- stress engineer in the aerospace sector;
- simulation development engineer;
- advance tool engineer in the aerospace sector;
- manufacturing engineer (purchasing) in the aerospace sector;
- wells engineer;
- 2D supervisor within visual effects and 2D/3D computer animation for film, television or video games;
- 3D supervisor within visual effects and 2D/3D computer animation for film, television or video games;
- software developer within visual effects and 2D/3D computer animation for film, television or video games;
- stereo artist within visual effects and 2D/3D computer animation for film, television or video games; and
- shader writer within visual effects and 2D/3D computer animation for film, television or video games.

7.4

The following job titles are currently on the shortage occupation list under SOC 3434. We are recommending that they **remain** on the shortage occupation list but under revised SOC codes as follows:

- systems engineer within visual effects and 2D/3D computer animation for

Chapter 7: The recommended UK shortage occupation list

- film, television or video games - SOC 2132;
 - animator within visual effects and 2D/3D computer animation for film, television or video games - SOC 3411;
 - computer graphics supervisor within visual effects and 2D/3D computer animation for film, television or video games - SOC 3416;
 - producer within visual effects and 2D/3D computer animation for film, television or video games - SOC 3416;
 - production manager within visual effects and 2D/3D computer animation for film, television or video games - SOC 3416;
 - technical director within visual effects and 2D/3D computer animation for film, television or video games - SOC 3416;
 - visual effects supervisor within visual effects and 2D/3D computer animation for film, television or video games - SOC 3416;
 - compositing artist within visual effects and 2D/3D computer animation for film, television or video games - SOC 3421;
 - matte painter within visual effects and 2D/3D computer animation for film, television or video games - SOC 3421;
 - modeller within visual effects and 2D/3D computer animation for film, television or video games - SOC 3421;
 - rigger within visual effects and 2D/3D computer animation for film, television or video games - SOC 3421; and
 - texture artist within visual effects and 2D/3D computer animation for film, television or video games - SOC 3421.
- 7.5 Recommended removals from the shortage occupation list are:**
- secondary education teachers in the subject of biology;
 - consultant in audiological medicine;
 - consultant in medical microbiology and virology;
 - consultant in obstetrics and gynaecology;
 - consultant in paediatric surgery;
 - consultant in nuclear medicine;
 - consultant in paediatric dentistry;
 - speech and language therapists at Agenda for Change bands 7+ and their independent sector equivalents;

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- pharmacist (including pre-registration pharmacist);
- orthoptist;
- veterinary surgeon;
- project manager in the electricity generation industry;
- station manager in the electricity generation industry;
- shift/group leader in the electricity generation industry;
- project civil engineer in the electricity generation industry;
- mechanical engineer in the electricity generation industry;
- electrical engineer in the electricity generation industry;
- project control engineer in the electricity generation industry;
- control and instrumentation engineer in the electricity generation industry;
- assistant engineer in the electricity generation industry;
- plant process engineer in the electricity generation industry;
- production controller in the electricity generation industry;
- tutti (also known as rank and file) orchestral musician;
- animation supervisor within visual effects and 2D/3D computer animation for film, television or video games;
- editor within visual effects and 2D/3D computer animation for film, television or video games;
- R&D software within visual effects and 2D/3D computer animation for film, television or video games;
- R&D tools within visual effects and 2D/3D computer animation for film, television or video games;
- rigging supervisor within visual effects and 2D/3D computer animation for film, television or video games; and
- software engineer within visual effects and 2D/3D computer animation for film, television or video games.

7.6

Incomplete data and the fact that the list comprises mainly job titles rather than entire occupations at 4-digit level mean that it is difficult to provide a precise figure for the labour market coverage of our recommended shortage occupation list. However, we estimate that job titles and occupations on our recommended list employ

approximately 190,000 people in the UK, accounting for under 1 per cent of total employment in the UK. This estimate relates to the number of people (immigrant and non-immigrants) currently working in those occupations and job titles. It does not indicate potential flows of immigrants into job titles and occupations on the list, nor the number of vacancies currently available.

7.7 This estimate represents a further reduction of the labour market coverage of the shortage occupation list since our first review in autumn 2008 (Migration Advisory Committee, 2008), before which the employment coverage of the list was approximately one million. In any future reviews we will continue to rigorously apply our skilled, shortage and sensible criteria. We also continue to believe that employers and occupational, sectoral, labour market, education and skills bodies should be taking concerted action to raise the skill levels of the resident workforce. Nevertheless, the scope for any further significant reductions in the overall labour market coverage of the list may now be limited, especially as the economic recovery continues: as detailed in Chapter 2, our top-down analysis for this review shows potential indications of labour shortage in an increasing number of occupations.

7.8 Our recommended shortage occupation list for the UK is set out in Table 7.1. The Government will announce in due course whether or not it accepts our recommendations and, if it accepts them, when it will amend the current shortage occupation list used under Tier 2 of the PBS.j

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Table 7.1: Recommended UK shortage occupation list for Tier 2 of the Points Based System, July 2011

Occupation title and SOC 2000 code (see notes 1, 2 and 3)	Job titles included on the shortage occupation list (and other information where applicable)
Director/Chief Executives of major organisations (1112)	<p>ONLY the following job titles within this occupation:</p> <p>the following job titles within the decommissioning and waste management areas of the nuclear industry: managing director, programme director and site director.</p>
Production, works and maintenance managers (1121)	<p>ONLY the following job title within this occupation:</p> <p>project manager within the electricity transmission and distribution industry.</p>
Managers in mining and energy (1123)	<p>ONLY the following job title within this occupation:</p> <p>site manager within the electricity transmission and distribution industry.</p>
Medical practitioners (2211)	<p>ONLY the following job titles within this occupation:</p> <p>Consultants within the following specialities: clinical neurophysiology, emergency medicine, genitourinary medicine, haematology, neurology and occupational medicine.</p> <p>Consultants within the following specialities of psychiatry: forensic psychiatry, general psychiatry, learning disabilities psychiatry and old age psychiatry.</p> <p>Non-consultant, non-training, medical staff posts in the following specialities: anaesthetics, paediatrics and general medicine specialities delivering acute care services (intensive care medicine, general internal medicine (acute), emergency medicine, general surgery, obstetrics and gynaecology, and trauma and orthopaedic surgery).</p> <p>ST4 trainees in paediatrics.</p>
Biological scientists and biochemists (2112)	<p>ONLY the following job titles within this occupation:</p> <p>cardiac physiologist, clinical neurophysiologist, clinical vascular scientist, respiratory physiologist and sleep physiologist.</p>

Table 7.1: Recommended UK shortage occupation list for Tier 2 of the Points Based System, July 2011

Occupation title and SOC 2000 code (see notes 1, 2 and 3)	Job titles included on the shortage occupation list (and other information where applicable)
Physicists, geologists and meteorologists (2113)	<p>ONLY the following job titles within this occupation:</p> <p>hydrogeologist, geophysicist, geoscientist, geophysical specialist, engineering geophysicist; engineering geomorphologist, geologist, geochemist, and environmental scientist.</p> <p>The following job title in the decommissioning and waste areas of the nuclear industry: technical services manager.</p> <p>Nuclear medicine scientist and radiotherapy physicist. Also staff working in diagnostic radiology (including magnetic resonance imaging).</p>
Civil engineers (2121)	<p>ONLY the following job titles within this occupation:</p> <p>petroleum engineer, drilling engineer, completions engineer, fluids engineer, offshore and subsea engineer, control and instrument engineer, process safety engineer, geotechnical design engineer, tunnelling engineer, geotechnical specialist, reservoir engineer, reservoir panel engineer, rock mechanics engineer, soil mechanics engineer, geomechanics engineer, mining geotechnical engineer, mining and coal engineer and wells engineer.</p>
Mechanical engineers (2122)	<p>ONLY the following job title within this occupation:</p> <p>mechanical engineer within the aerospace sector.</p>
Electrical engineers (2123)	<p>ONLY the following job titles within this occupation:</p> <p>electrical engineer within the oil and gas industry.</p> <p>The following job titles within the electricity transmission and distribution industry: power system engineer, control engineer, and protection engineer.</p>
Chemical engineers (2125)	<p>ALL jobs within this occupation.</p>
Design and development engineers (2126)	<p>ONLY the following job titles within this occupation:</p> <p>design engineer within the electricity transmission and distribution industry; and simulation development engineer.</p>

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Table 7.1: Recommended UK shortage occupation list for Tier 2 of the Points Based System, July 2011

Occupation title and SOC 2000 code (see notes 1, 2 and 3)	Job titles included on the shortage occupation list (and other information where applicable)
Production and process engineers (2127)	<p>ONLY the following job title within this occupation:</p> <p>manufacturing engineer (process planning) within the aerospace sector.</p> <p>Technical services representative in the decommissioning and waste areas of the nuclear industry.</p>
Planning and quality control engineers (2128)	<p>ONLY the following job titles within this occupation:</p> <p>The following job titles within the electricity transmission and distribution industry: planning/development engineer, and quality, health, safety and environment (QHSE) engineer.</p>
Engineering professionals n.e.c. (2129)	<p>ONLY the following job titles within this occupation:</p> <p>geoenvironmental specialist, geoenvironmental engineer, contaminated land engineer, landfill engineer and metallurgical/mineral processing engineer.</p> <p>The following job titles within the electricity transmission and distribution industry: project engineer and proposals engineer.</p> <p>The following job titles within the aerospace sector: aerothermal engineer, stress engineer, chief of engineering, and advance tool and fixturing engineer.</p> <p>The following job titles within the decommissioning and waste management areas of the nuclear industry: operations manager, decommissioning specialist manager, project/planning engineer, radioactive waste manager, and radiological protection advisor.</p>
Software professionals (2132)	<p>ONLY the following job titles within this occupation:</p> <p>roles within visual effects and 2D/3D computer animation for film, television or video games: software developer, systems engineer and shader writer.</p>
Secondary education teaching professionals (2314)	<p>ONLY the following job titles within this occupation:</p> <p>secondary education teachers within the subjects of maths and science (chemistry and physics).</p>
Special needs education teaching professionals (2316)	<p>ONLY the following job title within this occupation:</p> <p>All teaching posts in special schools.</p>

Table 7.1: Recommended UK shortage occupation list for Tier 2 of the Points Based System, July 2011	
Occupation title and SOC 2000 code (see notes 1, 2 and 3)	Job titles included on the shortage occupation list (and other information where applicable)
Management consultants, actuaries, economists and statisticians (2423)	ONLY the following job title within this occupation: qualified actuaries working in the life assurance, general insurance, and health and care sectors.
Social workers (2442)	ONLY the following job title within this occupation: social workers working in children’s and family services.
Engineering technicians (3113)	ONLY the following job title within this occupation: The following job titles in the electricity transmission and distribution industry: commissioning engineer and substation electrical engineer.
Nurses (3211)	ONLY the following job titles within this occupation: specialist nurse working in operating theatres, operating department practitioner and specialist nurse working in neonatal intensive care units.
Medical radiographers (3214)	ONLY the following job titles within this occupation: HPC registered diagnostic radiographer, HPC registered therapeutic radiographer and sonographer.
Medical and dental technicians (3218)	ONLY the following job titles within this occupation: nuclear medicine technologist and radiotherapy technologist.
Artist (3411)	ONLY the following job title within this occupation: animator within visual effects and 2D/3D computer animation for film, television or video games.

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Table 7.1: Recommended UK shortage occupation list for Tier 2 of the Points Based System, July 2011

Occupation title and SOC 2000 code (see notes 1, 2 and 3)	Job titles included on the shortage occupation list (and other information where applicable)
Dancers and choreographers (3414)	<p>ONLY the following job titles within this occupation: skilled classical ballet dancer and skilled contemporary dancer.</p> <p>Other information: For this job to be skilled (to level NQF4+), classical ballet dancers must meet the standard required by internationally recognised UK ballet companies (e.g. Birmingham Royal Ballet, English National Ballet, Northern Ballet Theatre, the Royal Ballet and Scottish Ballet). For operational purposes, the type of factor to be taken into account may include whether the company has: performed, or has been invited to perform, at venues of the calibre of the Royal Opera House, Sadler's Wells or the Barbican, either in the UK or overseas; attracts dancers and / or choreographers and other artists from other countries; and is endorsed as being internationally recognised by a UK industry body such as the Arts Councils (of England, Scotland and/or Wales).</p>
Musicians (3415)	<p>ONLY the following job title in this occupation: skilled orchestral musicians who are leaders and principals.</p> <p>Other information: For this job, the orchestral musicians who are leaders or principals must meet the standard required by internationally recognised UK orchestras (including London Symphony Orchestra, London Philharmonic Orchestra, Philharmonia Orchestra and Royal Philharmonic Orchestra).</p>
Arts officers, producers and directors (3416)	<p>ONLY the following job titles within this occupation: roles within visual effects and 2D/3D computer animation for film, television or video games: 2D supervisor, 3D supervisor, computer graphics supervisor, producer, production manager, technical director, and visual effects supervisor.</p>
Graphic designers (3421)	<p>ONLY the following job titles within this occupation: roles within visual effects and 2D/3D computer animation for film, television or video games: compositing artist, matte painter, modeller, rigger, stereo artist and texture artist.</p>
Buyers and purchasing officers (3541)	<p>ONLY the following job title within this occupation: manufacturing engineer (purchasing) within the aerospace sector.</p>
Metal working production and maintenance fitters (5223)	<p>ONLY the following job title within this occupation: licensed and military certifying engineer/inspector technician.</p>

Table 7.1: Recommended UK shortage occupation list for Tier 2 of the Points Based System, July 2011

Occupation title and SOC 2000 code (see notes 1, 2 and 3)	Job titles included on the shortage occupation list (and other information where applicable)
Line repairers and cable jointers (5243)	<p>ONLY the following job title within this occupation: overhead linesworker (high voltage only).</p> <p>Other information: Skilled to NQF level 4+ requires that the job involves working on high voltage lines that carry at least 275,000 volts.</p>
Welding trades (5215)	<p>ONLY the following job title within this occupation: high integrity pipe welder.</p> <p>Other information: Skilled to NQF level 4+ requires that the individual has three or more years documented evidence of related on-the-job experience.</p>
Chefs, cooks (5434)	<p>ONLY the following job title within this occupation: chef skilled to NQF level 4+.</p> <p>Other information: Skilled to NQF level 4+ requires that the individual is earning at least £28,260 per year after deductions for accommodation, meals, etc; has five years of relevant experience in a role of at least equivalent status to the one they are entering; and that the job should not be in a fast food or standard fare outlet.</p> <p>The UK Border Agency also has additional requirements to prevent abuse (see Box 5.19 in Chapter 5).</p>

Notes:

- (1) SOC codes relate to the Standard Occupational Classification (SOC) 2000.
- (2) n.e.c. stands for 'not elsewhere classified'.
- (3) For official job descriptions relating to four-digit occupations in SOC 2000, see www.statistics.gov.uk/methods_quality/ns_sec/downloads/SOC2000_Vol1_V5.pdf.

Chapter 8 Conclusions and next steps

8.1 Introduction

8.1 We are grateful to the corporate partners that have contributed to the evidence base for this full review. This represents our fifth review of the shortage occupation lists since our first report in autumn 2008 (Migration Advisory Committee, 2008).

8.2 In Table 8.1 we present for the first time a list of occupations and job titles that have been on the shortage occupation list continuously since our first recommended list in autumn 2008. Previously, we have categorised four types of labour shortage: cyclical; structural; global talent; and public spending-related. Most of the occupations and job titles listed in Table 8.1 can be categorised as structural shortage, with few under the global talent and public-spending related categories (for example, ballet dancer and social workers employed in family and children's services respectively).

8.3 Structural shortages occur due to a lack of sufficiently skilled, trained and experienced labour within the

resident occupational workforce, meaning that foreign labour may be needed in order to match supply to demand at prevailing market price or wage levels. We understand that, in many cases, it can take a period of years to address such imbalances. Nevertheless, it does not follow that occupations with structural labour shortages should be on the shortage occupation list for all time. Similarly, shortages due to limited public funding can be addressed in the long-term, even if this involves a reallocation of limited public funding across public service occupations. We urge the Government and employers to give serious consideration to how the persistent labour shortages identified in Table 8.1 can be addressed in the long-term, with a view to the eventual removal of many of these occupations and job titles from the shortage occupation list.

8.4 The Government will decide the timetable for the next review of the shortage occupation lists. However, subject to other priorities, we believe the lists should be kept up to date and would

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benefit from a further partial review within the next year or so.

- 8.5 From early 2012 we should be in a position to adopt the new Standard Occupation Classification 2010 (SOC2010) into our

methodology and, consequently, revise both the list of occupations skilled to National Qualifications Framework level 4 and above that qualify for Tier 2 and the UK and Scotland shortage occupation lists.

Table 8.1: List of occupations and job titles included in the recommended UK shortage occupation list since autumn 2008

Occupation title and SOC code	Job titles included on the shortage occupation list
Civil engineers (2121)	The following job titles within this occupation: petroleum engineer; geotechnical design engineer; geotechnical specialist; reservoir panel engineer; rock mechanics engineer; soil mechanics engineer; geomechanics engineer; and tunnelling engineer.
Physicists, geologist and meteorologist (2113)	The following job titles within this occupation: hydrogeologist; geophysical specialist; geophysicist; and geoscientist.
Chemical engineers (2125)	All job titles within this occupation
Medical practitioners (2211)	The following job titles within this occupation: consultants within the following specialities: genitourinary medicine; haematology; neurology and occupational medicine. Consultants within the following specialities of psychiatry: forensic psychiatry; general psychiatry; learning disabilities psychiatry; and old age psychiatry.
Secondary education teaching professionals (2314)	The following job titles within this occupation: secondary education teacher within the subjects of maths and science (chemistry and physics only).
Nurses (3211)	The following job titles within this occupation: specialist nurse working in operating theatres and operating department practitioner.
Medical radiographers (3214)	The following job titles within this occupation: HPC registered diagnostic radiographer; HPC registered therapeutic radiographer and sonographer.
Dancer and choreographers (3414)	The following job title within this occupation: skilled classical ballet dancer.
Chefs, cooks (5434)	NQF4+ chef (as defined in Table 7.1).
Lines repairers and cable jointers (5243)	The following job title within this occupation: overhead linesworker (high voltage only).

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8.2 Other MAC work

8.6 At the request of the Government, we are currently considering the following four questions:

- What would be the economic effects of restricting or removing settlement rights in Tiers 1 and 2 and/or restricting leave to a maximum of 5 years? And, if settlement were to be restricted: a) which economic criteria could be used to identify the most economically important Tier 2 migrants for settlement? b) would there be merit in making allowance for specific skills or occupations as part of the assessment criteria, based on factors including strategic economic importance, provision of key public services, and ensuring that the UK attracts the top global talent?
- Is there a serious disturbance, or threat of such a disturbance, to the UK labour market and would maintaining the existing restrictions on Bulgarian and Romanian nationals' access to the labour market assist in addressing any such disturbance or threat?
- What should the minimum income threshold be for sponsoring spouses/partners and dependants in order to ensure that the sponsor

can support his/her spouse or civil or other partner and any dependants independently without them becoming a burden on the state?

- To research the labour market, social and public service impacts of non-EEA migration; and to advise on the use of such evidence in cost-benefit analyses of migration policy decisions.

8.7 We have been asked to report to the Government by the end of September on the first question, and by the end of October on the second and third questions. We will report on the fourth question by the end of November. As always, partners' input is essential to inform our advice to the Government. We are currently holding a call for evidence in relation to the first question on settlement and are actively engaging with interested parties on all of the above questions through meetings and events. We welcome correspondence or information provided in relation to any of the four commissions.

8.3 Current research

8.8 We have commissioned a research project to identify skills that are of strategic importance to the UK economy and to determine how any related skill needs in the UK can best be addressed. We have asked the contractor to consider the

role that migrants play, if any, in providing these strategically important skills and what the implications are for the design and operation of the UK Points Based System (PBS) and in particular for the shortage occupation lists. The project is scheduled to be completed in the summer this year and will inform our future work including any future reviews of the shortage occupation lists.

- 8.9 We have also commissioned five research projects to examine gaps in the existing evidence base on the impact of migration on the consumption of public services (health and education), crime, the housing market, social cohesion and transport and congestion. They will also consider how gaps in the evidence and data can be overcome. A further project is considering the role migrants play in the provision of public services in the UK. These projects are scheduled to be completed by October this year and we will use their findings to support our recommendations in relation to the Government commission to research the labour market, social and public service impacts of migration.

A.1 List of organisations and individuals that submitted evidence

Advancing UK Aerospace, Defence & Security Systems (ADS)

Ashton, Leigh and Wigan Local

Pharmaceutical Committee

Association of British Orchestras

Association of the British Pharmaceutical Industry

Association of Thai Businesses in the UK

Babcock

Baker and McKenzie LLP

Balfour Beatty Utility Solutions

Broadcasting, Entertainment, Cinematograph and Theatre Union (BECTU)

British Medical Association

British Veterinary Association

BUPA

Burgess, Gary

Centre for Workforce Intelligence

Cogent

Confederation of British Industry

Construction Skills

COSLA Strategic Migration Partnership

Creative & Cultural Skills

Dearson Winyard on behalf of Airbus Operations Ltd

Department for Business, Innovation & Skills

Department for Education

Department for Employment and Learning, NI

Department of Energy & Climate Change

Department for Transport

Doosan Babcock

e2e Linkers Ltd

EDF Energy

Embassy of Japan

Energysolutions EU Ltd

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Energy & Utility Skills Limited	NHS Pharmacy Education and Development Committee
Fernandes Vaz solicitors	NHS Scotland Boards
Fresenius Medical Care	Oil & Gas UK
General Healthcare Group	Producers Alliance for Cinema and Television (PACT)
GoSkills	Paice, James MP
Ground Forum	People 1st
Institution of Chemical Engineers (IChemE)	Pharmacy Voice
IEP Management	PricewaterhouseCoopers LLP
Incorporated Society of Musicians	Pricewaterhouse Coopers LLP on behalf of BP plc
Institute and Faculty of Actuaries	Professional Contractors Group
Intercentre	Purolite
KBR (UK)	Reid, Alan MP
Lantra	Rolls-Royce plc
Leisurecentre Ltd	Royal College of Veterinary Surgeons
MacNeil, Angus MP	Scottish Council for Development and Industry
Marshall Aerospace & Aeropeople Limited	Scottish Social Services Council
Marubeni Europe plc	Semta
Monclef Ltd	Skillset and the UK Screen Association
Ministry of Defence	Skills for Care and Development
Musicians' Union	Skills for Justice
National Farmers Union	Skillsmart Retail Limited
National Grid	
Nautilus International	
NHS Employers	

Society of London Theatre
and the Theatrical
Management Association

South Tees Hospitals NHS
Foundation Trust

SRK Consulting (UK) Limited

TECOSIM Technical
Simulation Ltd

The Chamber of Shipping

The Evangelical Lutheran
Church of England

The Institute of Materials,
Minerals and Mining

The Professional Trades
Union for Prison, Correctional
& Secure Psychiatric Workers
(POA)

The Royal College of
Anaesthetists

The Society and College of
Radiographers

Senspa

United Kingdom Homecare
Association

University Hospitals
Birmingham NHS Foundation
Trust

Visalogic

Wardell Armstrong

Westinghouse Electric
Company

Anonymous – 3 responses

A.2 List of individuals and organisations met with

Academy of Oriental Cuisine

Appshare

Company Chemists
Association

Confederation of British
Industry

Convention of Scottish Local
Authorities

Cundall Johnson

Danygraig Nursing Home

Department for Business,
Innovation and Skills

Department for Culture, Media
and Sport

Department for Education

Department for Work and
Pensions

Department of Energy and
Climate Change

Double Negative

Energy & Utility Skills Limited

e-skills UK

Fernandes Vaz Solicitors

GNE Consultancy Ltd

Guild of Bangladeshi
Restaurateurs

Information Technology,
Communications and
Electronics (ITCE) Sector
Advisory Panel

Institution of Chemical Engineers (IChemE)	Society of London Theatre and Theatrical Management Association
Independent Theatre Council	
Kawasaki Heavy Industries	South Tees Hospitals NHS Foundation Trust
Kingsley Napley LLP	Speechly Bircham LLP
London First	SRK Consulting
Marshall Aerospace & Aeropeople Ltd	Summit Skills
Mishcon de Reya	The Chamber of Shipping
NASSCOM	The Chartered Society of Physiotherapy
National Association of Medical Personnel Specialists	The Mill
National Campaign for the Arts	The Royal College of Midwives
National Farmers Union	UK Screen Association
National Grid	
NGK Spark Plugs	
Oil and Gas UK	
Paragon Law	
Pharmacy Voice	
RCUK Shared Service Centre Ltd & the Medical Research Centre	
Recruitment and Employment Confederation	
Registered Nursing Home Association	
Robert Gordon University	
Rolls-Royce plc	
Sealion Shipping Ltd	

Further details of our top-down methodology

B.1 Introduction

B.1 This annex consists of two parts. First, it describes in full the top-down approach we used to identify those 4-digit Standard Occupational Classification (SOC) 2000 occupations that are considered skilled to at least level 4 of the National Qualifications Framework (NQF4+) for the purposes of Tier 2 of the Points Based System (PBS). Second, it discusses the changes we have made to our top-down approach for assessing labour shortage.

B.2 Our top-down methodology is based on SOC 2000 instead of the updated SOC 2010 classification published by the Office for National Statistics (ONS) in June 2010. This is because the datasets used in our methodology are not yet available in SOC 2010 format. Unless otherwise stated, any reference to SOC in this annex is a reference to the SOC 2000 classification of occupations.

B.2 Skill

B.3 In this section we discuss our methodology for identifying occupations skilled to NQF4+.

This methodology was introduced in Migration Advisory Committee (2011a) and is summarised in Chapter 2 of this report.

Identifying occupations skilled to NQF4+

B.4 To compile the list of occupations considered skilled to NQF4+ recommended in Migration Advisory Committee (2011a), we assessed all 4-digit SOC occupations against three top-down indicators of skill. These were

- **SOC skill level:** the four-tier SOC 2000 skill level categorisation, as determined by the Office for National Statistics. Level 4 is the highest level and level 1 the lowest.
- **Earnings:** Median gross hourly earnings of full-time employees, as recorded in the 2010 Annual Survey of Hours and Earnings (ASHE).
- **Formal qualifications:** The proportion of working-age, full-time employees in an occupation that hold a NQF4+ qualification, measured using twelve

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- quarters of pooled data from the Labour Force Survey (LFS) from 2007 Q4 to 2010 Q3.
- B.5 Neither economic theory nor the academic literature point to a clearly desired method of identifying occupations skilled to NQF4+ using these three top-down indicators. Therefore, we considered a range of options for combining our indicators to identify such occupations.
- B.6 The approach we used involved setting threshold values for each of our three indicators (SOC 2000 skill level, earnings and qualifications) and requiring that an occupation is above the threshold on at least two out of three indicators to be considered skilled to NQF4+.
- B.7 At the time of writing Migration Advisory Committee (2008) National Qualifications Framework level 3 or above (NQF3+) was the required skill level for Tier 2 of the PBS. Levels in the SOC skill classification do not equate directly to levels on the NQF. Nevertheless, in order to identify occupations skilled to NQF3+, the appropriate threshold value for the SOC skill level indicator was determined to be level 3.
- B.8 In order to identify a higher level of skill (NQF4+) in Migration Advisory Committee (2011a), it seemed reasonable to increase the threshold value for this indicator. As the SOC skill level indicator consists of four levels of skill, the only possible way in which the threshold could be increased was to raise it to level 4. In addition, for an occupation to be classified at level 3, it must 'require a body of knowledge associated with a period of post-compulsory education, but not to degree level', while occupations classified to level 4 normally 'require a degree or equivalent period of work experience'. Therefore, we believe that level 4 of the SOC skill categorisation matches most closely, albeit not perfectly, with level 4 of the NQF.
- B.9 As discussed in Box B.1, we based our analysis on the important assumption that the proportion of working-age, full-time employees in jobs that are skilled to NQF4+ is 38 per cent. We set threshold values for each of the earnings and qualifications indicators by ranking 4-digit SOC occupations according to these indicators, i.e. by ranking occupations (from highest to lowest) by median gross hourly earnings of full-time employees and by the proportion of working-age, full-time employees that hold a NQF4+ qualification. For each indicator we then set the threshold such that the proportion of all employment in occupations above the threshold was approximately 38 per cent. Therefore, in the case of each indicator, occupations accounting for 62 per cent of employment are below the skill threshold.

Box B.1: Basis for assuming that the proportion of UK jobs skilled to NQF4+ is 38 per cent of the labour market

In Migration Advisory Committee (2011a) to estimate the proportion of jobs in the UK that are skilled to NQF4+, we made the preliminary assumption that this proportion is equal to the percentage of working-age, full-time employees in the UK workforce that are qualified to NQF4+. This was based on the premise that the supply of appropriately skilled workers should, in equilibrium, match the demand for such workers. Adjustments over time in factors including occupational earnings, the structure of product markets, methods of production and the provision of places in training and education could plausibly lead to such an equilibrium being reached.

It is important to be clear that the above assumption does not require that all individuals in the labour market with NQF4+ qualifications are working in NQF4+ jobs, or that all individuals without such qualifications are not in NQF4+ jobs. Such an assumption would clearly be unrealistic because there will be both over-qualified workers (with qualifications at a higher level than are required by their jobs) and under-qualified workers (with lower level qualifications than are required by their job) in the labour market. Nevertheless, if these two factors broadly balance each other out, our assumption will be valid.

We considered the validity of the assumption, but concluded that there was no strong reason to deviate from our preliminary assumption that the proportion of jobs skilled to NQF4+ is equal to the proportion of working age, full time employees in the UK workforce that are qualified to NQF4+. According to the LFS, the proportion of working-age, full-time employees in the UK workforce that hold NQF4+ qualifications is **38 per cent**.

Analysis of occupations

B.10 Following the approach outlined above, in order to identify occupations that are skilled to NQF4+, the threshold values for the three top-down indicators of skill were set as follows:

- **SOC skill level:** We required an occupation to be classified at skill level 4 (the highest of the four skill levels) in the Standard Occupational Classification (SOC) 2000 hierarchy.
- **Earnings:** We required median hourly earnings for

full time employees within an occupation to be £13.40 per hour or more.

- **Formal qualifications:** We required that 41 per cent or more of the workforce within an occupation be qualified to NQF4+.

B.11 Given these threshold values, and the requirement that an occupation must pass on at least two of the three top-down indicators of skill, 121 of the 353 4-digit SOC occupations were identified as skilled to NQF4+ according to our analysis. A list of these

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occupations is available in Migration Advisory Committee (2011a). Each of these occupations appeared on the list of 192 occupations that we had previously identified as being skilled to NQF3+ in Migration Advisory Committee (2008). Consequently, there were 71 occupations that we had previously considered skilled to NQF3+ but did not consider skilled to NQF4+. A full list of these occupations is also available in Migration Advisory Committee (2011a).

B.12 Of the 121 occupations that we identified as being skilled to NQF4+, 54 passed on two of our indicators, while 67 passed on all three. The 121 occupations covered 39 per cent of working-age, full-time employees in the UK labour market. This figure was very similar to the proportion of UK working-age, full-time employees qualified to NQF4+, found to be 38 per cent (see Box B.1 above). The reason for the small difference between the two percentages is that, although we calibrated each indicator to the appropriate share of the labour market, the proportion of the labour market that the final list covers depends on the correlation between all three indicators. Nevertheless, we believe that if these two figures were substantially different it would raise potential questions about the validity of our approach. Conversely, our approach passed this particular test of validity.

B.13 We also undertook sensitivity analysis on the list of occupations skilled to NQF4+ identified from our top-down analysis by examining:

- **alternative approaches** to identifying occupations skilled to NQF4+;
- the impact of our choice of using **hourly earnings** rather than annual earnings as an indicator of skill; and
- the sensitivity of the list of NVQ4+ occupations to the precise value of the chosen **threshold values** for the earnings and qualifications indicators.

B.3 Shortage

B.14 In this section we discuss the changes we have made to our top-down methodology for assessing shortage since Migration Advisory Committee (2008) that are not discussed in Chapter 2. In Migration Advisory Committee (2010b) we discussed a number of potential changes to our top-down shortage methodology. The changes that were discussed in that report and which we have incorporated into the methodology we have used in this review are:

- **averaging the median vacancy duration over 12 months** to reduce volatility and remove seasonal patterns for indicator I1;
- **using a three year timescale to calculate the percentage change in**

hours worked for full time employees for indicator V3.

- B.15 We have also decided to make changes to all three of our pay indicators (P1, P2 and P3). In Migration Advisory Committee (2010b) we discussed increasing the period over which indicators P1 and P2 were estimated to three years from one year. We have decided to revise these indicators such that we estimate the change in median pay over both one year (indicator P1) and three years (indicator P2) to pick up both shorter-term and longer-term labour market fluctuations. We have decided to drop our old P2 indicator which measured the percentage change in mean pay.
- B.16 In Chapter 2 we describe the benchmarking approach for setting the top-down shortage indicator threshold values that we have adopted. As discussed in Migration Advisory Committee (2010b), under this approach it is appropriate to specify indicators P1 and P2 to measure the percentage change in real pay, rather than nominal pay. Therefore, these indicators are deflated using the Retail Price Index (RPI) rate of inflation.
- B.17 The changes we have made to indicator P3 (which measures the return to occupation) are summarised in Table B.1. The first set of changes, which relate to the way in which we determine which individuals are included in our LFS sample, have been made to reflect the increase in the skill level of Tier 2 from NQF3+ to NQF4+.
- B.18 The second and third sets of changes involve expanding the range of control variables in the regression specification and increasing the number of quarters of LFS data used to generate the sample used. These changes have been made in order to improve the ability of the indicator to assess shortage at the occupational level, and were decided upon as a result of our externally commissioned research and our own internal analysis.

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Table B.1: Revision of indicator P3 (return to occupation)

Aspect	Original methodology (1)	Revised methodology
Sample restriction	Those qualified to National Qualifications Framework level 3 only	i) Those qualified to National Qualifications Framework level 4 and above; and ii) in a 'graduate' occupation (2)
Control variables	Age (and its square and cube), Government Office Region	Added sex, marital status, number of A-levels, number of O-levels/GCSEs and whether working full time
LFS quarters in the sample	4	12

Notes: (1) The original methodology is that which we first described in Migration Advisory Committee (2008). (2) The list of 'graduate' occupations was defined in Migration Advisory Committee (2011a).

Abbreviations

ABO	Association of British Orchestras
ABPI	Association of the British Pharmaceutical Industry
AIMp	Association of Independent Multiple pharmacies
ASHE	Annual Survey of Hours and Earnings
ATBUK	Association of Thai Businesses in the UK
BBUS	Balfour Beatty Utility Solutions
BECTU	Broadcasting, Entertainment, Cinematograph & Theatre Union
BIOS	British and Irish Orthoptist Society
BMA	British Medical Association
BVA	British Veterinary Association
CCA	Company Chemists' Association
CCT	Certificate of Completion of Training
CfWI	Centre for Workforce Intelligence
CoS	Certificate of Sponsorship
COSLA	Convention of Scottish Local Authorities
CPAP	Continuous Positive Airway Pressure
CPI	Consumer Price Index
DCMS	Department for Culture, Media and Sport
DECC	Department of Energy and Climate Change
DfE	Department for Education
DH	Department of Health
DNOs	Distribution Network Operators
EADS	European Aeronautic Defence and Space Company
ECAA	European Community Association Agreement
ECITB	Engineering Construction Industry Training Board
EEA	European Economic Area
ES	Energy Solutions
EU	European Union
GDP	Gross Domestic Product
GSCC	General Social Care Council
GTSC	Gas Turbine Supply Chain Design
HNC	Higher National Certificate
HPC	Health Professions Council
IChemE	Institution of Chemical Engineers

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IHAS	Independent Healthcare Advisory Service
IPEM	Institute of Physics and Engineering in Medicine
ITCE	Information Technology, Communications and Electronics
ITEM	Independent Treasury Economic Model
ITT	Initial Teacher Training
LFS	Labour Force Survey
MAC	Migration Advisory Committee
MU	Musicians Union
NESS	National Employers Skill Survey
NESTA	National Endowment for Science, Technology and the Arts
NFU	National Farmers Union
NHS IC	National Health Service Information Centre
NHSE	National Health Service Employers
NICE	National Institute of Clinical Excellence
NPA	National Pharmacy Association
NQF	National Qualifications Framework
NVQ	National Vocational Qualification
OBR	Office of Budget Responsibility
ODPs	Operating Department Practitioners
ONS	Office for National Statistics
OSAHS	Obstructive Sleep Apnoea/Hypopnoea Syndrome
OSPAP	Overseas Pharmacists Assessment Programme
Pact	Producers Alliance for Cinema and Television
PBS	Points Based System
PCG	Professional Contractors Group Ltd
PET	Positron Emission Tomography
PSA	Public Sector Agreement
PwC	PricewaterhouseCoopers
RAS	Relocation Advisory Service
RCoA	Royal College of Anaesthetists
RCPCH	Royal College of Paediatrics and Child Health
RCSLT	Royal College of Speech and Language Therapists
RCVS	Royal College of Veterinary Surgeons
RLMT	Resident Labour Market Test
RPSGB	Royal Pharmaceutical Society of Great Britain
SAS	Staff grade and Associate Specialist
SCDI	Scottish Council for Development and Industry
SCoR	Society and College of Radiographers
SCST	Society for Cardiological Science and Technology
SEN	Special Education Needs
SfC&D	Skills for Care and Development
SfH	Skills for Health
SOC	Standard Occupational Classification
SSSC	Scottish Social Services Council

SWF	School Workforce Census
STEM	Science, Technology, Engineering and Mathematics
UKCES	UK Commission for Employment and Skills
UKHCA	United Kingdom Homecare Association
VFX	Visual Effects
WRT	Workforce Review Team
WTD	Working Time Directive

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Migration Advisory Committee Report
September 2011
www.ukba.homeoffice.gsi.gov.uk/mac

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ISBN: 978-1-84987-562-2