UK Cast Metals Industry Census and Expectations

An independent report sponsored by the Cast Metals Federation

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Chairman's Introduction

The Cast Metals Federation is delighted to have commissioned this study and is pleased to present it to you.

It is more than a decade since such a comprehensive census of the metal castings industry was undertaken. In that period, in line with the rest of the United Kingdom’s manufacturing sector, our industry has undergone considerable strategic change.

According to information derived from the census, the industry represents a turnover in excess of £2 billion and employs more than 17,000 people in over 400 organisations.

As well as the census and responses to the telephone questionnaire, the review seeks to set the cast metals industry in the wider economic background and reviews opportunities in two market segments (automotive and energy) which are representative of the many sectors the industry operates.

Responses to the census indicate an industry which has come to terms with the changing industrial situation, has reacted to new circumstances, and reinvigorated, is now looking for growth as the country's economy recovers.

Our thanks go to The University of Buckingham, Professor Peter Cooke and his team for preparation of the report.

I commend this report to you.

Martin Shenton
Chairman
Cast Metals Federation
Executive Summary

The report has been written for the Cast Metals Federation. It is based on industry research, a census of 141 members and known players, and a survey of 24 senior executives in the cast metals sector.

The principal findings of the report might be summarised as follows;

- The UK castings industry, today, comprises some 400 companies that employ over 17,000 people and produce in excess of 520,000 tonnes of castings annually with a value of some £2.2 billion.

- The shape of the cast metals industry is driven by UK manufacturing and by export opportunities. Change has been driven by the transformation in UK manufacturing and, as the economy recovers, so should opportunities develop for the cast metals sector.

- The report reviews the trend in the UK economy and the apparent start of economic recovery. Two industries, automotive and indigenous energy developments, are examined. While there is significant excess installed manufacturing capacity in the European automotive sector, the UK industry seems set for considerable growth. Indigenous energy production is due for change as a new energy policy emerges.

- Members report an industry, which has experienced a period of austerity over the past few years, but is generally optimistic about the future. A key issue is to build on quality and flexibility although, as with many industries, capital for investment is a major concern.

- The census shows an industry in which a third of turnover lies in investment castings. The survey presents a detailed analysis of individual industry segments – one that is strongly export oriented.

- Industry expectations suggest a sector committed to growth as the economy recovers; one which is well aware of competitive pressures. The report also highlights a number of issues that require ongoing support and development.

The above points are expanded at some length in the following pages.
# Table of Contents

Chairman's Introduction ................................................. 1  
Executive Summary ...................................................... 2  

**Chapter 1** Introduction and Principal Issues .................. 4  
  • Report Objectives ................................................. 4  
  • Report Structure ................................................. 5  
  • Principal Findings .............................................. 5  

**Chapter 2** The Developing UK Economy ...................... 8  
  • Sluggish Recovery ................................................ 8  
  • Disposable Incomes ............................................. 11  
  • CPI and RPI .......................................................... 11  
  • Employment ....................................................... 12  

**Chapter 3** Cast Metal Industry; Two Analyses .............. 14  
  • The Automotive Sector ......................................... 14  
  • The Indigenous Energy Industry .............................. 16  

**Chapter 4** Status of Cast Metals Industry .................... 19  
  • Responses to Telephone Questionnaires .................. 19  
  • A Strong Consensus ............................................ 27  

**Chapter 5** Census Results ........................................... 28  
  • Number of Key Issues .......................................... 28  
  • UK Cast Metals Industry, Employment .................... 29  
  • UK Cast Metals Industry, Sales Value ..................... 31  
  • UK Cast Metals Industry, Markets ......................... 31  
  • UK Cast Metals Industry, Manufacturing Output ........ 35  
  • UK Cast Metals Industry, Manufacturing Processes Overview 36  
  • UK Cast Metals Industry; Exports and Imports .......... 38  
  • UK Cast Metals Industry, Added-Value Services ....... 39  
  • Industry Locations ............................................. 39  

**Chapter 6** Short, Medium-term Industry Developments .... 41  
  • Supply Chain Development .................................... 41  
  • Customer Development ....................................... 42  
  • New Ways of Doing Business ................................ 43  
  • Employment in the Cast Metals Industry ............... 44  
  • Export Opportunities ......................................... 45  
  • Financial Issues ................................................ 45  
  • Role of the Cast Metals Federation ....................... 46  

**Chapter 7** Implications and Conclusions ....................... 47  

**Appendix 1** Research Methodology ............................... 48  

**Appendix 2** Additional Statistics ................................ 49  

This report is intended for information only. Neither the Cast Metals Federation nor The University of Buckingham can accept any responsibility or liability for consequences arising from its interpretation or implementation.
Introduction and Principal Issues

The objective review presented on the following pages has been independently researched by members of The University of Buckingham Business School. The surveys used to complete the report have been gathered over several months.

The cast metals industry has undergone many changes in the past decade. It now appears to be in a state of evolution, as it changes its stance and the products and services it offers to industry, as its clients, in turn, change their requirements.

UK manufacturing industry has suffered a serious reduction in the past decade, and perhaps even lack of government interest. However, the situation may now be changing as the coalition government seeks to create a sustainable and balanced economy between financial services and manufacturing industries.

Of course, the expectation for manufacturing industry may be very different to a decade ago. Competition has changed with the rise and rise of the Far East, in particular China, India, Thailand and Indonesia, as providers of low-cost castings.

No longer can a company rest on its laurels and long-term relationships. Competition is now global and an industry such as cast metals has to stay ahead of the game, competing domestically as well as globally with quality, innovation and price.

Report objectives.

The principal objectives of the report might be broadly summarised as;

- To present a census on the current status of the cast metals industry in 2011–2012, researching both members and non-members of the Cast Metals Federation.

- To present the findings of a telephone survey of senior executives working in the foundry industry.

- To provide a short document that may be used to inform government and regional development organisations of the importance of the cast metals industry.

- Present a document to help explain the industry sector to customers and help with recruitment to the industry.
Chapter 1 – Introduction and Principal Issues

Report structure

For ease of reference, the report is divided into a number of chapters which might be summarised as follows;

- **Chapter 2;** presents a high-level view of the United Kingdom economy since 2000 and more specifically post banking crisis. This chapter has been included as all industries are related to the broader economy which ultimately impacts on the way businesses move forward.

- **Chapter 3;** continues the macroeconomic review and considers historic developments in two sample industry sectors that cast metals perform a critical supply chain role – the automotive and energy industries.

- **Chapter 4;** sets out the key findings of a telephone census undertaken early in 2013 with 24 senior executives whose companies are members of the Cast Metals Federation. Respondents gave freely of their time and insights during interviews lasting 25-40 minutes.

- **Chapter 5;** contains a summary of tables from more than 140 sets of data gathered during the census.

- **Chapter 6;** presents some future scenarios and considerations for the businesses involved in the industry as interpreted by The University of Buckingham Business School team that worked on the project. These reflections have sought to bring together the plethora of data gathered during the study.

- **Chapter 7;** provides a short summary of the findings of the overall report.

Principal Findings

The following bullet points set out the principal findings and analyses of the report which are discussed in the relevant chapters.

- The writers have sought to present the broad economic situation in the United Kingdom in terms of GDP and inflation as well as changing levels of employment and, by implication, unemployment. The principal conclusion is that the UK remains in a period of economic downturn, although most recent analyses suggest recovery is, to a greater or lesser extent, on the horizon. A classic industry such as cast metals may well be one to begin recovering early as orders are placed for material to generate capital assets ahead of sustained economic recovery.

- Chapter three of the report outlines the economic profile of two industries which are key clients of the cast metal industry. Firstly, the macroeconomic situation of the UK motor industry in terms of vehicle and engine manufacturing levels. Contrary to many predictions, the UK motor manufacturing industry is doing relatively well and is expected to grow further over the next few years. One issue raised regularly is the way the supply chain has been scoured in the past few years.
Chapter 1 – Introduction and Principal Issues

The chapter briefly examines development of the indigenous energy industry and highlights some of the investment opportunities that are likely to emerge as the UK’s energy policy is finally settled and new sources of power are created. The challenge is that energy is perhaps the most global of all production industries – and so are the suppliers in the sector.

One of the concerns of almost every senior executive in industry is the task of taking time to stand back and look at the developments in their sector and how these may impact on their business.

- An extended telephone exercise with 24 senior executives whose organisations belong to the Cast Metals Federation focused on key business issues. The clear message that emerges is that ‘business conditions are tough out there’. However, respondents all said they are taking on these business conditions and, by and large, winning.

There are a number of positive reports of expansion and investment, new technologies being embraced, new ways of doing business and thrusts to generate new business. Investment for expansion appears to be tight, even among larger organisations. Respondents also identified a need for recruitment into the industry, for apprentices when they can be afforded, a need for skilled labour and also a requirement for management and management succession planning.

The strongest and most consistent message that emerged from this stage of the project is the importance of investment and remaining competitive, not just domestically, but also internationally.

- The census results are based on findings from 141 members and non-members – some 75% of the Cast Metals Federation responded and a quarter of non-members contacted also responded.

A census is an interesting project to undertake in that it seeks to represent the current situation. In terms of population censuses, there is often a comparison with the previous event, if one has been undertaken. However, in terms of the Castings 2000+ census undertaken in 1997, the industry has moved forward so much, and the current census examines many different topics, so a simple comparison has not been possible.

The census sought to examine six principal areas – employment in the sector – reported at some 17,500 people, the sales value of the industry in excess of £2 billion, of which a third is in investment castings. The market has been divided into some 20 segments and sales into these in terms of iron, steel and non-ferrous products, as well as a breakdown of investment castings, has been presented.

The cast metals industry, according to the census, is strongly export oriented, with some 80% of respondents undertaking exports, while only 18% import castings.
The principal findings regarding the future for the cast metals industry have been developed by the Buckingham Business School team working from the prime findings of the surveys. Some might claim this chapter is a little negative, but it seeks to identify a range of issues highlighted in the telephone survey and the census exercise. As in many industry sectors at present, a degree of frustration emerges for current and future development.

Among the issues examined are the lack of funding and investment – a challenge highlighted by almost every sector, the need for further employment in the cast metals sector, a need for apprentices and for further management and development.

The report also identifies a growing role for the Cast Metals Federation; trade associations have sometimes lost their way over the past few years as more of their traditional role of lobbying and promotion has moved away from Westminster to Brussels. A strong trade association is important as a conduit to watch developments in Europe and to be able to report best practice to its members.

It is a truism that the role of a well-supported and representative trade association will become increasingly important in future, to be involved in discussions regarding industry development and policy, taxes and grants, acceptable and unacceptable processes – and more. The inclusive trade association is critical.

The final chapter summarises the overall findings of the report, while the Appendix summarises the research methodology used in preparing the report.

As with all reports of this type, it is difficult to strike a balance between using all of the data gathered or producing a few sheets of critical tables without too much interpretation. The Buckingham Team hope they have managed to strike a balance between the two.
The Developing UK Economy

No census would be complete without setting an industry or industries against the changing economic background. Metal castings, a group of industries that form a critical part of the total supply chain in many manufacturing sectors, is no exception to this.

The following pages examine a series of high-level elements indicating how the United Kingdom's economy has developed over the past few years. Given the breadth of influence of the castings industry, and their involvement in much of British industry, a couple of examples of other sectors are used to present the case for industry development.

Sluggish recovery

The UK has been particularly sluggish in recovering from the most recent economic recession starting in 2008. Figure 2.1 shows the rate of GDP growth from the start of the past four UK recessions.

![Figure 2.1; GDP growth by quarter since start of recession](chart.png)

It will be noted that recovery from the 2008 recession has been the slowest of all, the chart showing that after 21 quarters the economy has still not recovered to the level it was at the start of the economic downturn.

While the slow recovery from recession has been attributed to a number of issues, perhaps the overriding one is that each of the previous recessions were ended by a housing boom – with a sustained rise in house prices. We will return to GDP in more detail later in this chapter.
With any short economic review the focus is more on macroeconomic issues and industry development. Figure 2.2 indicates that whatever might be said about the UK economy it has, historically, been one of the faster growing economies and, realistically, the banking crisis, and the country’s over reliance on financial services industry, has probably been the biggest brake on economic growth on this occasion.

It was John Donne who claimed that ‘no man is an island’. The same applies to a modern day economy. The developing UK economy cannot be easily treated in isolation from the rest of the world given the degree of globalisation of the industries in which cast metals industry work.

Figure 2.2 summarises the economic position of the G7 economies – the major international economies with the exception of China.

**Figure 2.2; Economic growth pre and post banking crisis**

The chart shows that pre-banking crisis the United Kingdom’s rate of growth in Q4 1997-Q4 2007 was second only to Canada among the G8 nations and was running ahead of Germany, the United States and France.

However, post the banking crisis, the rate of economic growth has dropped to the lowest rate bar Italy – and Italy has a different series of issues. Medium-term economic growth as represented by the chart is inevitably based on balanced development of the whole services and manufacturing sectors. The UK problem was, as already noted, over reliance on financial services.

A more up-to-date and microeconomic chart (Figure 2.3 overleaf) shows the change in annual Gross Domestic Product post 2000. Following negative growth in 1991, the economy moved into a period of steady growth in the 2-4% range until 2008 when the financial crisis hit the United Kingdom hard.
Since then, GDP growth has been very poor and, based on even some of the more optimistic forecasts, is not reckoned to get back above 2% year-on-year growth mark until at least 2015. Indeed, many forecasters are currently reviewing their predictions downwards rather than up.

Figure 2.3; Annual GDP growth 1988 - 2017

Source: ONS/Office of Budget Responsibility

One further chart (Figure 2.4) shows quarterly changes in GDP versus the previous quarter and the same quarter in the previous year.

Figure 2.4; UK GDP growth vs. previous quarter/previous year

Source: ONS/Office of Budget Responsibility
Chapter 2 – The Developing UK Economy

The importance of the sequence of GDP analyses is that it shows the relative stability or otherwise of the economy – a useful outlook used by industry with regard to production and investment decisions.

A poorly performing economy, conventional wisdom might suggest, is one in which many organisations may not invest or run their plants at full stretch as nobody wants to build inventories for which there is little or no demand.

Disposable incomes

While the GDP data gives an indication of economic activity within the United Kingdom economy, consumer spending is harder to present. Figure 2.5 presents average UK household disposable income (after tax and cost of living expenses) over the past three years. While there is a range of issues that will affect final disposable income – taxes, inflation, the feel-good factor – the chart shows families' spending power has suffered during the current economic downturn.

![Figure 2.5; Avg. UK household weekly disposable income; 2009 - 2013](chart)

Source: Asda Income Tracker/Centre for Economics and Business Research

CPI and RPI

With regard to consumer expenditure, Figure 2.6 overleaf shows the changing Consumer Price Index (CPI) and the Retail Price (RPI) indices over the past seven years – the former used as an index for state pensions and certain other welfare benefits. In simple terms, these represent the way that rising prices eat into the real income of individuals. Both indices were moving towards the Bank of England's longer-term 2% year on year CPI target for most of 2012 – until October's figures were released showing CPI had jumped 0.5 points to 2.7% and RPI had climbed 0.6 points to 3.2%. – remaining around these levels ever since.
The Bank of England has predicted that inflation (CPI) will remain above its 2% target for 'much of the next two years', with price rises peaking at just over 3% later in 2013 before falling back to 2% during 2015.

**Figure 2.6; CPI and RPI indices 2006 - 2013**

Employment

Figure 2.7 plots the change in unemployment post 2000.

**Figure 2.7; UK unemployment/unemployment rate 2000**
Figure 2.7 is self explanatory showing the number of people unemployed ran between 1.42 million in 2004 and a high of 2.68 million in 2011. The orange line on the chart shows the unemployment rate across the period climbed from a low of 4.8% in 2004 to a peak of 8.4% in 2011.

There has been some surprise among statisticians and economists that the rate of unemployment has not risen higher during the present economic downturn, but there has been a phenomenon of some workers taking significant pay cuts to protect employment in their organisations. This, in turn, has led to charges of ‘zombie companies’ which should have been let go to the wall and the funds invested in them released for more productive employment or, at the very least, employees released so they could be redeployed and the economy assisted to recover.

The sequence of charts shown in the foregoing pages have tended to focus on the total economy and individuals. This is deliberate as the markets for metal castings are so widely scattered across industry and form a critical element of the manufacturing supply chain which, in turn, penetrates practically every industry segment.

**Competition is now global**

The foregoing analyses suggests the UK economy is still performing poorly. Although it is doing better than the Eurozone, competition is now global and should be measured against North American and Far Eastern economies; such comparisons are altogether less flattering.
The cast metals industry supplies most industry sectors. For the purposes of the current review, short profiles are presented for two major sectors – automotive and energy.

**The automotive sector**

The short sequence which follows looks at the automotive industry and traces how production in the sector, and thereby demand on cast metals, has changed over the years.

**Figure 3.1 UK domestic/export car production 1980 - 2012**

![Figure 3.1 UK domestic/export car production 1980 - 2012](image)

*Source: SMRT*

Figure 3.1 shows passenger car manufacturing has, to a great extent, avoided the deepest depths of the recent recession, although 2009 was not a good year. While output has recovered steadily since then, it remains some way short of the level reached in 1999.

The reason for this recovery is the growth in cars exported from the United Kingdom, largely by the three principal Japanese players to Europe. These Japanese producers have based their European operations for medium and higher specification cars in the UK because of the flexibility and quality that can be achieved.

However, the downside is that the collapsing European new car market means demand for cars is suffering badly. The result is that exports have to be sought and sent further afield, as one sees with Jaguar Land Rover and their growth in Far Eastern markets.
The SMMT is currently predicting much higher car and LCV manufacturing output in the UK over the next few years – and its associated supply chain – as shown in Figure 3.2.

**Figure 3.2; UK car and LCV production 1970 - 2015**

While the forecast may look rosy, the predicted decline of some three million units in the European new car market from pre-recession levels could make these forecasts somewhat optimistic.

Figure 3.3 shows the number of engines assembled in the UK for use in cars and LCVs worldwide. Given the focus on logistics and supply chain over the next few years, this market sector may become much more important to the United Kingdom's foundry industry.

**Figure 3.3; UK engine production 2003 - 2012**
Currently, it appears that the principal UK engine manufacturers import the bulk of their semi-finished components from Europe or even further afield, and finish the components locally before shipping them to domestic and overseas car assembly plants.

The question is a simple one – ‘despite the issues of breaking into the tier one supply situation – why are these basic components not manufactured and finished and assembled in the United Kingdom?’

**The indigenous energy industry**

The United Kingdom is a major consumer of energy and this demand is likely to continue to grow for the foreseeable future, despite the government’s and industry’s strategies for energy conservation, CO₂ reduction and pricing strategies.

Many would claim that UK energy provision is currently at a strategic cross roads. On the one hand, the current generation of nuclear power stations is coming towards the end of their planned economic lives and, on the other, environmental considerations are leading to the closure of the largest and most economical coal-powered generation stations.

Historic production of primary energy from indigenous sources is shown in the Figure 3.4. It will be noted how the range of sources of energy has changed over the past few years with the decline in coal – a halving post 2007, a reduction to a third of indigenous petroleum products post 1995, and a near halving of natural gas production. Nuclear energy too has shown a rapid demise. The one energy source which has recorded an increase is wind and natural flow energy.

**Figure 3.4; Indigenous production of primary Fuels; 1995 – 2012**

The chart shows changes across the energy source that might be associated with the economic recession and, of course, with substitution by imported energy.
As noted previously, UK energy policy is at a crossroads. Indeed, many would claim decisions should have been made a decade ago. However, the emerging policies, when they are implemented could offer many opportunities for the cast metal industry. The strategic implications of fracking are yet to be properly evaluated.

Figure 3.5 provides a more detailed evaluation of indigenous primary fuels – and the footnotes provide an indication as to the wider range of niche energy sources.

**Figure 3.5; Indigenous production of primary fuels; 2011 - 2012**

<table>
<thead>
<tr>
<th>Million tonnes oil equivalent</th>
<th>Primary electricity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>2010</td>
<td>157.9</td>
</tr>
<tr>
<td>2011</td>
<td>137.0</td>
</tr>
<tr>
<td>2012</td>
<td>122.9</td>
</tr>
<tr>
<td>2011 Q4</td>
<td>34.4</td>
</tr>
<tr>
<td>2012 Q1</td>
<td>34.1</td>
</tr>
<tr>
<td>Q 2</td>
<td>31.9</td>
</tr>
<tr>
<td>Q 3</td>
<td>27.4</td>
</tr>
<tr>
<td>Q 4</td>
<td>29.6</td>
</tr>
</tbody>
</table>

1. Includes solid renewable sources (wood, straw and waste), a small amount of renewable primary heat sources
2. Crude oil, offshore and land, plus condensates and petroleum gases derived at onshore treatment plants
3. Includes colliery methane, landfill gas and sewage gas. Excludes gas flared or re-injected.
4. Includes generation by solar PV.

Source; ONS

One notable omission from the data shown is the provision of energy created through fracking processes to release oil and gas from shale structures. This is a virtually untouched energy source in the United Kingdom. While it is also controversial, there could be longer-term negative economic consequences if the country does not embrace it wholeheartedly.

Energy is probably the most globalised of all industries and, as such, further capital development will be open to international players – consultants, specifiers and construction companies.

The challenge for the cast metals industry will be to develop relations with these suppliers to ensure they satisfy their requirements from UK sources rather than import solutions from elsewhere in the world.
Economy will take time to recover

The foregoing pages illustrate how the UK economy has suffered as a result of over reliance on financial services as its main driving force. The domestic economy will take some considerable time to recover, while the rest of the world, at least beyond the Eurozone, continues to grow.

This chapter illustrates two manufacturing industries with potential for significant future development. The automotive industry, while down across Europe with significant excess installed manufacturing capacity globally, is growing in the UK, and there are increasing opportunities to supply the sector. Equally important, the energy industry is on the cusp of new developments as government policy gradually emerges; although future development is likely to have longer lead times.

Future growth will probably not come across the whole industrial landscape, but in industries that have invested in technology, capital and staff – and will look beyond the domestic market for growth.
Status of UK Cast Metals Industry

Responses to telephone questionnaires

An important element of the Industry Census programme was for members of the research team to contact a random sample of 24 senior executives of Cast Metals Federation member companies to elicit their opinions on a variety of questions regarding the current status, recent changes and expectations of the castings industry. Such responses provide a valuable qualitative response to the detailed census material presented in the next chapter.

Members were promised confidentiality and a summary of some 10 pages of researchers’ notes in response to the telephone interviews are set out in the following pages.

The researchers noted a broad consistency across the sector with changes in business and methods of doing business being topics of particular interest.

For clarity, the responses are presented on a question by question basis although the order or length of summary in no way present any prioritisation of the findings.

The survey was undertaken at the end of January 2013. The telephone interviews typically lasted 25-45 minutes and the researchers would like to thank respondents for their willingness and openness in their discussions for the survey.

1. **How has your business changed in the past 4-5 years – post banking crisis – in terms of ownership, production capacity, technological change and profitability?**

Most respondents indicated they had been doing well pre 2008, with some suggesting that 2007/2008 was a record financial year. However, most companies said they had experienced a significant reduction in business at the end of 2008.

The companies, that seemed to be worst affected by the economic downturn, were in the iron sector.

The majority of respondents saw their sales turnover drop during the past 4-5 years, with the majority reporting associated reductions in profitability. Falls were in the 30% – 50% brackets with a few indicating even higher reductions in turnover.

The downturn had a major impact on production levels with some working at below 50% capacity in 2009. Many companies were forced to lay off staff, some by up to a third of their total pre-crisis headcount.

Many said they were forced by the poor economic/market conditions to focus on driving efficiency forward, introducing organisational restructuring and downsizing as well as seeking every cost-cutting opportunity.
In contrast, a few companies claimed to have emerged relatively unscathed by the economic downturn. Indeed the respondent from one large company said it had doubled in size over the past five years. The ‘positive respondents’ were executives whose markets, such as offshore oil and gas, remained fairly buoyant during the recession.

Although the majority of respondents’ organisations have now seen their business recover short term, not all have yet recovered to pre-2008 business levels.

2. **How do you rate current market conditions in terms of competitiveness, the level of market demand and sources of business?**

Respondents were practically unanimous in describing market conditions as; “difficult”, “challenging” “tough” and “very competitive”.

Many executives reported their markets were “flat” or “quiet” and that, after some business recovery during 2012, business had slowed down again.

With the notable exceptions of players supplying offshore oil and gas, automotive and aerospace market sectors, respondents indicated a lack of demand and a shortage of customer enquiries. Many players reported they had started to look for new customers and, for many, there is a lack of optimism for business growth in 2013.

The exceptions were a few larger specialist companies where respondents currently indicated good business conditions.

3. **What organisations do you consider to be your biggest competition – domestic/overseas? What do you consider to be the principal competitive issues?**

The majority of respondents reported continuing strong competition either with their ongoing home based and/or overseas competitors. The most serious competition was claimed to be from overseas, with countries such as China, Korea, India and Eastern Europe mentioned most. One respondent reported strong competition from North America.

Respondents, whose organisations claim to operate in very specialist and/or niche markets, and with a high level of specialisation in low volume/high value-added products, indicated they do not have serious local competition – and currently the threat from the Far East is not too serious or currently does not exist as far as they are aware.

In the case of significant competition, the main issue raised by half of the respondents was price. Where pricing was not mentioned the availability of labour, the cost of raw materials and rising energy costs were most widely highlighted. Many respondents stated that ‘product quality and ‘on time delivery’ are now seen as a ‘given’ by the customer, rather than considered as a competitive issue.
4. **Has your product offering changed in the past five years and, if so, how? How do you think this may change in the next five years?**

Twenty per cent of the executives responding indicated their product(s) offering had not changed. However, the majority stated their product(s) had been developed, refined or modified to meet more stringent standards, more demanding customer requirements, or to attract new customers and exploit new market opportunities.

A small number of respondents indicated they had introduced ‘many new products’ in the past five years.

The researchers felt there was evidence of a trend emerging towards greater product specialisation and to more new, technically advanced and complex products. Where the product has not fundamentally changed, most respondents thought their companies were offering better value-added services to the customer.

The majority of respondents suggested their recent and current product trends are likely to continue over the next five years – and beyond.

5. **Has your organisation already, or does it plan to increase the number of apprentices employed?**

Sixteen per cent of respondents said their companies do not currently employ apprentices. Most of these are smaller companies in the industry. Of these, several said they would like to take on one or two apprentices in future, but only when the businesses could afford it and when the economic situation improved.

The majority of respondents’ companies already employ apprentices. Most of these have a policy of recruiting apprentices annually and have recently recruited and/or are planning to increase the number of apprentices. The consensus was that recruitment of apprentices was necessary to ensure the continuity of a skilled workforce and to mitigate the effects of an ageing workforce and imminent retirees.

Some respondents said it was difficult to recruit unskilled labour and even harder to recruit skilled labour in their area, hence there is a need to ‘grow your own’ via apprentice recruitment and retention.

An example was also reported of a company’s failure to attract graduates for a confirmed placement. However, respondents from the larger companies seemed to have less trouble attracting and finding suitable applicants, especially in the traditional metal foundry locations of the West Midlands and South Yorkshire.

6. **Does your organisation plan to up skill its workforce?**

All respondents indicated their companies carry out ‘training’ within the business although the scale and nature appears to vary from company to company.
The majority of training was described as 'in house' and 'on the job', 'ongoing' or 'continuous' to meet specific individual job skills requirements or company resource needs.

In-house on the job training appeared to be the norm, especially within the foundry operational workforce.

Few respondents indicated their companies arranged for external staff training carrying validated qualifications, mainly because, it was claimed, appropriate courses do not exist at local colleges.

One executive, however, described how a local college has developed a suitable course with the business 'from scratch'. Another respondent claimed external courses were too expensive and unaffordable. A further respondent indicated his business is large enough to have its own central training function to support NVQs and management development.

7. **Has the focus of your business changed in the past five years/do you expect it to change in the next five years – for example, in terms of technology or end product?**

Most respondents reported their companies had needed to modify or change their business focus over the past five years. A snapshot of specific comments from respondents included the following:

- Switched the melting process from coke to electric to drive down costs.
- Pay more attention to and a greater focus on the market.
- We are looking at adding value for the customer.
- We have become much more export oriented as this is where our growth comes from and is likely to continue.
- We have become more aware of the need to introduce technical solutions, integrating business activities using technologies and competencies.
- The business is now producing a technologically superior product than in the past.
- There is an increased focus on machining, the next stage of the activity rather than just foundry operations.
- The organisation has sharpened its act on servicing and managing customers.
- The business has introduced a new and totally automated process.
- We have increased investment in the technology needed to satisfy customers’ ever more demanding requirements on product.
- More IT has become necessary to meet compliance, certification and documentation.
- We have broadened our product appeal through a range of activities.
The majority of respondents indicated they expect to have to embrace new technologies in future to continue to produce and supply competitive products, meeting customers’ seemingly ever-increasing and demanding requirements – at the same or lower prices.

Several respondents, particularly those whose businesses produce low volume/high-value products, said there had been no need to change business focus over the past five years. They indicated their current business direction would continue as at present.

8. What do you consider to be the most critical issue in your sector of the Cast Metals industry today – price, delivery time, capability, added-value services?

Respondents indicated that critical issues appeared to depend on, and be greatly influenced by, the individual company’s product offering and the customer/market sector in which it works.

'Price' was considered to be their most critical issue by most respondents, and was raised by a third of executives interviewed. (Note this is lower than the 50% who quoted price as the main competitive issue in a previous question 3.)

However, after price, the next critical issue raised by respondents was 'costs' including several references to energy costs, overall rising costs, and high overhead costs, all of which can have an adverse impact on the business.

Costs were followed in significance by 'overseas competition', 'lack of demand' and 'need more orders'. Other critical issues raised by respondents included mentions of 'access to cash/ cash flow', 'ageing workforce', 'the need for a stronger UK economy', 'squeezed profit margins', 'poor market conditions', 'space to expand', 'over demanding customers', and 'lack of direction on government energy policy'.

While researchers were given a masterclass in negatives, as noted in the previous paragraph, there was some surprise that delivery time/capability and value-added services were not raised or mentioned. However, this may be because they are now considered to be 'a given' – if you don’t have them, you will not be in business for long.

9. Has your organisation made significant investment in production/technology in the past five years – if so, what? Do you plan any future significant investments?

Eight per cent of respondents claimed their companies had made significant investments in the past five years although the word 'significant' means different levels of investment for different sizes of business. Respondents, whose organisations had not invested significantly were, with one exception, relatively small sized iron, steel and aluminium sector businesses.
A snapshot of the executives’ responses to investments made within the past five years included the following – the list is not exhaustive.

- £1m on a new resin and sand plant to reclaim and recoat sand
- £3m on new plant and machinery – not specified
- £5-£10m each year on new machinery – replacement and incremental
- £500k in foundry equipment
- £12m in past 5 years – big on new development and products
- £5m on a new despatch warehouse
- £800k in the machine shop
- £20m on a new Greenfield site foundry
- £150k additional heat treatment & efficiency
- £250K on coating preparation plant
- £50m invested over the past 5 years across the business.

It is clear from these details that, in total, significant levels of investment have been made and are continuing to be made in the cast metals industry in the UK.

In addition to the responses noted above, a range of other quotes regarding business development were made, but did not include actual numbers. Among those mentioned were the following;

- The business invests where needed
- Our investments have been about upgrading facilities, plant and machinery
- The organisation has installed a second-hand plant
- We have installed new furnaces
- The business has acquired a couple of furnaces
- We have invested in die casting equipment
- The business has invested in energy saving furnaces and also to increase our available capacity
- We have invested in a vacuum casting plant
- For investment the business has bought three new sand mixers and a large carousel unit.
Chapter 4 – Status of UK Cast Metals Industry

Given the economic situation of the past five years, researchers noted there were verbatim quotes that some 20 out of the 24 respondents’ organisations had invested during that period.

The majority of respondents indicated they plan to invest at similar ongoing levels in the future to support the needs of the business. However, the overall consensus was that significant investments have to be justified. One typical comment was 'we will always invest providing there is a return'.

One underlying message that emerged during the telephone exercise was that many respondents feel their organisations are well placed for the future – especially as it was claimed a number of times there is 'a huge barrier to entry' into the cast metals industry.

10. **How has your business changed over the past five years in terms of ownership; acquisitions; investment; headcount; markets; technology – or other issues?**

Around 40% of respondents said their business had not changed fundamentally over the last five years. The comment came from all sizes of companies and across all cast metals sectors.

The researcher’s notes for the question indicted a range of comments, among those which indicated no change the following comments were made;

- Our core business is still the same
- Nothing specifically has changed that one might notice
- No real change
- The business has been very stable for the last few years.

However, where respondents indicated their companies had changed, there had been some significant developments covering a wide range of management and business issues. These included;

- Business set up a new R&D Division to support offshore development
- The organisation acquired a number of competitors
- We increased our headcount
- Growth has come in part through acquisition
- The number of shareholders has been reduced.
- The business has been reorganized to become more sales focussed
- Headcount has been increased by 20%
- We have undertaken a management buy-out from our parent company
• The number of operating divisions has been reduced

• The business has acquired a steel foundry

• We have developed a more productive team

• The organisation has become much more export oriented

• We have acquired other non-foundry businesses

• There has been a drive to increase senior management.

Once again, the comments represent a broad range of activities within the cast metals industry to overcome recession and develop business to cope with changing market and business conditions.

11. What if anything, do you consider to be the biggest barrier/negative to short/medium-term growth within your organisation?

All of the respondents were able to identify a barrier or negative. External factors, largely out of the company’s control, were considered to be the biggest barriers to short and medium term growth.

Some of the principal issues identified included;

• The need for more customers, the lack of customer orders, the lack of demand, the difficulty finding customers and similar comments accounted for around a third of responses.

• It would appear, in the view of the respondents that, while there is a lack of market and customer confidence, companies affected find it hard to plan and take actions to grow their business.

• Third in terms of the number of mentions were those associated with a need for a stronger economy, whether UK, Europe or global.

• A similar number of companies highlighted the ability to borrow money/availability of sensible finance or difficulty in obtaining finance from banks.

With regard to internal company factors, respondents again highlighted a broad range of issues but the most widely quoted might be summarised as shown below;

• Lack of management succession in terms of personnel, experience and quality

• Serious shortage of management potential within the organisation

• Continuing difficulty in recruiting, developing, and retaining a skilled workforce even during as period of economic downturn

• Lack of space to expand was also raised by one company.
Overall, a broad range of negatives was raised by respondents and, in many cases, researchers felt the relevant organisations were tackling them, but elsewhere external support may be beneficial.

12. **How do you feel government could most effectively support development of your business?**

As might have been expected, a very wide range of comments and suggestions, both positive and negative were offered to the researcher,

- At the highest level, some respondents suggested the government needs to take more steps to stimulate growth in the economy – for example, through more infrastructure investment to ignite the economy to take off.

- Similarly, respondents felt the government could do more to promote British manufacturing in the UK and abroad.

- Further reductions in bureaucratic 'red tape' would be welcome; researchers did not pursue what specific items could be improved.

- One of the commonest responses were those associated with support through changes in government tax policy. Examples included improved capital project allowances, simplification of company tax structure, reduce corporation tax, encourage investment through the tax policy, reduce national insurance contributions and as low a tax rate as possible.

- A number of respondents suggested the government could help with training grants, the provision of 'decent external practical training', and financial help with apprentices.

- A further common wish was for a clear government direction on energy policy, energy procurement and ideally cheaper energy prices.

However, a small number of companies don’t believe the government can or will help. One respondent suggested the government doesn't understand manufacturing pressures and costs. Other comments included. 'We don’t need government intervention', 'there is little the government can do to help', 'we have to help ourselves'.

**A strong consensus**

The foregoing responses to questions indicate a strong consensus among respondents regarding the present status and potential development of the cast metals industry. Certainly, different parts of the industry are developing at different rates and have different levels of competition and profitability.
Census Results

This chapter sets out the results of the census of the cast metals industry undertaken in the second half of 2012.

The census was undertaken using a web-based questionnaire which revealed questions and options one at a time. Individual respondents cannot be identified from the findings. Members of the Cast Metals Federation and non-members were approached as part of the census – volumes and responses as noted below.

Figure 5.1; Census contacts and responses

<table>
<thead>
<tr>
<th></th>
<th>Contacted</th>
<th>Responded</th>
<th>% responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Members</td>
<td>99</td>
<td>75</td>
<td>75.8%</td>
</tr>
<tr>
<td>Non members</td>
<td>242</td>
<td>66</td>
<td>27.3%</td>
</tr>
<tr>
<td>Total</td>
<td>341</td>
<td>141</td>
<td>41.3%</td>
</tr>
</tbody>
</table>

A significant percentage of members of the Cast Metals Federation completed the extensive questionnaire and more than a quarter of non-members also responded, although not all respondents completed the entire questionnaire. Data shown in the report has been uplifted to reflect the best estimate of the total industry.

As with any such survey, there is always a risk that some major players, or integrated foundry operations may be missed.

The census is, essentially, a statistical snapshot of the industry and the following tables present the highlights. While the researchers have sought to compare the results with the data gathered in 1997, the industry has changed so much that any strict comparison could well be deemed misleading. Significant changes have occurred in end users, number of players, magnitude of the industry and technologies.

Number of key issues

The census results have focused on a small number of key issues to produce the snapshot. The tables shown in the following pages, with short interpretations, cover the following principal areas;

- Employment in the metal castings industry
- Sales value of the individual production methods
- Market segments by individual products
- Industry exports and imports
- Value-added Services
- Changes in Output 2010 – 2011
- UK castings industry employment.
**UK Cast Metals Industry; employment**

The first series of charts derived from the census show employment in the cast metals sector.

**Figure 5.2 Total employment**

<table>
<thead>
<tr>
<th></th>
<th>Shop floor</th>
<th>Tech, admin, field staff</th>
<th>Total employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand, Die, Continuous or Spun castings</td>
<td>77%</td>
<td>23%</td>
<td>100%</td>
</tr>
<tr>
<td>Sand, Die, Continuous or Spun castings &amp; Investment castings</td>
<td>80%</td>
<td>20%</td>
<td>100%</td>
</tr>
<tr>
<td>Investment castings</td>
<td>78%</td>
<td>22%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>77%</td>
<td>23%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total employment count</strong></td>
<td><strong>17,130</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Based on the uplift factor, it is calculated there are some 17,130 employees in the sector of which 77% are employed on the shop floor and 23% in technical, administration, management and field staff – Figure 5.2.

Figure 5.3 shows an industry projection, while the bar chart (5.4 overleaf) shows actual data from the respondents to the census.

**Figure 5.3; Industry employment; sand, die, continuous or spun castings**

<table>
<thead>
<tr>
<th>Numbers of Personnel Employed</th>
<th>Sand, Die, Continuous or Spun Castings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Iron</td>
</tr>
<tr>
<td></td>
<td>Count</td>
</tr>
<tr>
<td>1 – 10</td>
<td>103</td>
</tr>
<tr>
<td>11 – 50</td>
<td>22</td>
</tr>
<tr>
<td>51 – 150</td>
<td>20</td>
</tr>
<tr>
<td>151+</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>155</strong></td>
</tr>
</tbody>
</table>

Proportionally, the number of staff employed in the three segments is broadly similar. The question specifically sought responses to those directly employed, so it might be assumed that the number of staff from other disciplines may have greater or lesser inputs into the activity.

Figure 5.3 shows the number of employees employed in the various production methods associated with sand, die, continuous or spun castings. The principal message is that across the individual activities the majority of responses – 76% - employ 50 or fewer employees in the various activities. Equally important, there is a broad similarity of numbers across the whole table between the different sectors.
Players in the investment casting sector (Figure 5.5) appear to be larger than in the previous tables with the majority of organisations employing between 11 and 150 employees – 75% - compared with the preponderance of smaller players in the previous table. The nature of investment castings would bear out this conclusion.

**Figure 5.5; Employees in investment casting sector**

<table>
<thead>
<tr>
<th>Numbers of Personnel Employed</th>
<th>Superalloys</th>
<th>Non-ferrous</th>
<th>Ferrous</th>
<th>All Metal Types</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Count</td>
<td>%</td>
<td>Count</td>
<td>%</td>
</tr>
<tr>
<td>1 – 10</td>
<td>2</td>
<td>12%</td>
<td>2</td>
<td>4%</td>
</tr>
<tr>
<td>11 – 50</td>
<td>3</td>
<td>20%</td>
<td>11</td>
<td>65%</td>
</tr>
<tr>
<td>51 – 150</td>
<td>5</td>
<td>33%</td>
<td>4</td>
<td>24%</td>
</tr>
<tr>
<td>151+</td>
<td>7</td>
<td>47%</td>
<td>3</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td><strong>100%</strong></td>
<td><strong>17</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Overall, the industry has contracted considerably in terms of employment from the survey undertaken in 1997.
UK Cast Metal Industry; sales value

The following three tables present the estimated sales values of the products produced during 2011. The first two tables break down the responses by product type and metals, while the third presents the total sales value.

**Figure 5.6; Sand, die, continuous and spun castings; sales value; £m**

<table>
<thead>
<tr>
<th>Sand, Die, Continuous, Spun</th>
<th>£Value (m)</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron Castings</td>
<td>£510.72</td>
<td>206</td>
</tr>
<tr>
<td>Steel Castings</td>
<td>£353.21</td>
<td>70</td>
</tr>
<tr>
<td>Non-ferrous Castings</td>
<td>£557.65</td>
<td>140</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£1,421.58</strong></td>
<td><strong>416</strong></td>
</tr>
</tbody>
</table>

**Figure 5.7; Investment Castings; Sales value; £m**

<table>
<thead>
<tr>
<th>Investment</th>
<th>£Value (m)</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superalloys</td>
<td>£669.50</td>
<td>13</td>
</tr>
<tr>
<td>Non-ferrous Castings</td>
<td>£51.58</td>
<td>31</td>
</tr>
<tr>
<td>Steel Castings</td>
<td>£23.53</td>
<td>24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£744.61</strong></td>
<td><strong>68</strong></td>
</tr>
</tbody>
</table>

**Figure 5.8; All castings; sales value; £m**

<table>
<thead>
<tr>
<th>All Castings</th>
<th>£Value (m)</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand, die, continuous, spun</td>
<td>£1,421.58</td>
<td>416</td>
</tr>
<tr>
<td>Investment</td>
<td>£744.61</td>
<td>68</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£2,166.19</strong></td>
<td><strong>484</strong></td>
</tr>
</tbody>
</table>

The sales value of investment castings is about half the sales value of other products sold due to the greater complexity and value added of the products.

UK Cast Metal Industry, markets

The following sequence of charts from the census data present the markets into which cast metals products were sold during the review period. The analyses are divided into the estimated tonnage of product and the number of producers selling to the individual sectors.

The impact of recession is likely to impact on the different market sectors at different rates and with different intensities, issues probably too fine to be able to differentiate in a survey such as this.

Within the current sequence of findings, not only will there be differential rates of change compared with the 2000+ census, but there will also be significant variations in the value of metals cast.
One challenge is the importance of moving into a value-added business model whereby cast metal players seek to provide further services – whether finishing, assembling or logistics – to make their product higher value or unique and strengthen their position in the supply chain.
The next sequence from the census presents the output from investment casting producers which have been sold into the market segments identified. It will be noted that the numbers of suppliers working in the various speciality segments are fewer than in the previous charts.
The charts in the foregoing sequences present a detailed analysis of the users of cast metals products by volume. For commercial reasons, the researchers have not been able to obtain detailed values by sector.
Almost by definition, it is difficult, if not impossible, for all cast metal businesses to generate inventories of finished or semi-finished product as so many are one-off or unique to a specific player or industry sector.

**UK Cast Metals Industry; manufacturing output**

Figures 5.15, 5.16 and 5.17 present the tonnage of castings produced during the review period. The figures have been split between iron, steel and non-ferrous products.

**Figure 5.15; Iron castings; tonnage and value**

<table>
<thead>
<tr>
<th>Sand, Die, Continuous, Spun</th>
<th>Tonnes</th>
<th>£m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey Iron</td>
<td>111,148</td>
<td>£154.11</td>
</tr>
<tr>
<td>Ductile Iron</td>
<td>217,743</td>
<td>£301.10</td>
</tr>
<tr>
<td>Malleable Iron</td>
<td>871</td>
<td>£6.56</td>
</tr>
<tr>
<td>Alloved Iron</td>
<td>15,918</td>
<td>£46.85</td>
</tr>
<tr>
<td>Other Iron</td>
<td>991</td>
<td>£2.10</td>
</tr>
<tr>
<td><strong>Total All Iron</strong></td>
<td>346,671</td>
<td>£510.72</td>
</tr>
</tbody>
</table>

**Figure 5.16; Steel castings; tonnage and value**

<table>
<thead>
<tr>
<th>Sand, Die, Continuous, Spun</th>
<th>Tonnes</th>
<th>£m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Steel</td>
<td>8,339</td>
<td>£25.32</td>
</tr>
<tr>
<td>Low alloy Steel</td>
<td>22,954</td>
<td>£92.84</td>
</tr>
<tr>
<td>Stainless Steel</td>
<td>26,815</td>
<td>£205.32</td>
</tr>
<tr>
<td>Duplex Steel</td>
<td>660</td>
<td>£10.54</td>
</tr>
<tr>
<td>Other Steel</td>
<td>7,852</td>
<td>£19.20</td>
</tr>
<tr>
<td><strong>Total All Steel</strong></td>
<td>66,620</td>
<td>£353.21</td>
</tr>
</tbody>
</table>

**Figure 5.17; Non-ferrous castings; tonnage and value**

<table>
<thead>
<tr>
<th>Sand, Die, Continuous, Spun</th>
<th>Tonnes</th>
<th>£m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium</td>
<td>89,169</td>
<td>475.34</td>
</tr>
<tr>
<td>Magnesium</td>
<td>6,710</td>
<td>16.50</td>
</tr>
<tr>
<td>Brass/Bronze</td>
<td>3,969</td>
<td>44.51</td>
</tr>
<tr>
<td>Zinc</td>
<td>3,324</td>
<td>11.98</td>
</tr>
<tr>
<td>Other Non-ferrous</td>
<td>533</td>
<td>9.32</td>
</tr>
<tr>
<td><strong>Total All Non-ferrous</strong></td>
<td>103,705</td>
<td>557.65</td>
</tr>
</tbody>
</table>
UK Cast Metals Industry; manufacturing processes overview

The charts below taken from the census illustrate the castings outputs by the principal processes.

**Figure 5.18; Split of processes, iron foundries**

![Pie chart showing the distribution of processes in iron foundries.]

- Chemical Bond Sand: 32%
- Greensand: 64%
- Spun Cast: 1%
- Continuous Cast: 3%

**Figure 5.19; Split of processes, steel foundries**

![Pie chart showing the distribution of processes in steel foundries.]

- Chemical Bond Sand: 14
- Greensand: 17
- Spun Cast: 69

Legend: Chem. Bond Sand, Greensand, Spun Cast, Continuous Cast
Figure 5.20; Split of processes, non-ferrous foundries

- Chem. Bond Sand: 33%
- Greensand: 4%
- Gravity Die: 17%
- High Pressure Die: 22%
- Low Pressure Die: 4%
- Spun Cast: 4%

Figure 5.21; Split of processes, aluminium foundries

- Sand Cast: 49%
- Gravity Die: 4%
- High Press Die: 21%
- Low Press Die: 22%
- Spun Cast: 4%
The final chart (Figure 5.22) in this sequence presents an analysis of manufacturing processes split between iron, steel and non ferrous metals.

**Figure 5.22; Split of processes, all foundries**

**UK Cast Metals Industry; exports and imports**

The following census sequence sought to interrogate respondents regarding their export and import activities in the review period of 2011. Overall, the data suggests the industry is a serious net exporter.

Within the respondents to the export/import questions, 115 responses were received and 92 or 80% of those exported part of their output directly.

In terms of export markets, Figure 5.23 shows that over a third of output is exported, of which the bulk goes to the European Union. Given the current economic issues within the EU, one might expect this table to change.

**Figure 5.23 Cast Metals Industry; exports by %age turnover**

<table>
<thead>
<tr>
<th>Region</th>
<th>% Export Turnover</th>
<th>% Total Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union</td>
<td>69.0%</td>
<td>25.8%</td>
</tr>
<tr>
<td>Other European</td>
<td>4.3%</td>
<td>1.6%</td>
</tr>
<tr>
<td>North America</td>
<td>13.5%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Middle East</td>
<td>3.5%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>4.5%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Rest Of World</td>
<td>5.2%</td>
<td>1.9%</td>
</tr>
<tr>
<td>All Exports</td>
<td>100.0%</td>
<td>37.4%</td>
</tr>
</tbody>
</table>
On the other side of the equation, 20 (18%) of the 112 respondents import castings into their UK operations.

Imports represent a relatively small percentage of total castings turnover as shown by Figure 5.24. Of the respondents to the question, the European Union and North America are the biggest sources of cast metals imports.

**Figure 5.24; UK Cast Metals Industry; imports by percentage turnover**

<table>
<thead>
<tr>
<th></th>
<th>% Import Turnover</th>
<th>% Total Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union</td>
<td>43.9%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Other European</td>
<td>0.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>North America</td>
<td>43.5%</td>
<td>3.0%</td>
</tr>
<tr>
<td>Middle East</td>
<td>0.5%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Asia Pacific</td>
<td>11.2%</td>
<td>0.8%</td>
</tr>
<tr>
<td>Rest Of World</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>All Imports</td>
<td>100.0%</td>
<td>6.8%</td>
</tr>
</tbody>
</table>

In summary, the United Kingdom metal castings industry is export oriented, a third of its turnover is exported, and a much smaller percentage imported.

**UK Cast Metals Industry; added-value services**

Conventional wisdom suggests that, to expand their profit opportunities, organisations may well seek to add value through offering additional services – whether they are consultancy, design, development, machining, painting, assembly either in-house or out-sourced.

Respondents were quizzed regarding their value-added developments and the results are shown in Figure 5.25.

**Figure 5.25; Casting industry; value added services**

<table>
<thead>
<tr>
<th></th>
<th>Count</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>88</td>
<td>78%</td>
</tr>
<tr>
<td>No</td>
<td>25</td>
<td>22%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>113</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

The survey suggested that some 9.2% of turnover in the review period was related to value-added services.

**UK Cast Metals Industry; foundry locations**

The following two charts, compiled from information detailed in the 2012 Foundry Yearbook and Castings Buyers' Directory, illustrate the widely different locations of the UK Cast Metals Industry today, with traditional industry concentrated in the West Midlands and the investment castings industry more widely spread.
Some initial conclusions from the census

The census indicated that the UK foundry industry has contracted from the previous census. However, it has a wide range of markets and products and services offered. The census has not sought to measure profitability, although interesting insights can be gathered from the results of the telephone questionnaire shown earlier in the report.
Short, Medium-term Industry Developments

The cast metals industry is part of a complex, multi-industry sector, each of which may have different requirements and different levels of development. This chapter examines some of the higher-level issues associated with short to medium-term expectations and developments.

The industry census showed there has been growth in the cast metals sectors in the past few years despite changes elsewhere in manufacturing industry. Responses to the telephone questionnaire and comments on the census would suggest innovation, process management and investment are all critical to future development – which, in turn, suggests profit margins need to be at least protected at best enhanced.

Government policy is finally to encourage actively the development of manufacturing industry in parallel to financial services. The UK cast metals industry, must treat such policy focus with enthusiasm.

Supply chain development

Cost is a critical issue in all industries and cast metals is no exception. Given that many products are lower unit value, and may also have weight or bulk implications, supply chain management and logistics will be important in future development – even if they have not been top of the list in the past.

The castings industry forms an integral part of many industry sectors and needs to be treated as an element of the supply chain. Recently, there has been a growing focus on supply chain development and its role in enhancing productivity through greater flexibility and client sensitivity, lower costs, inventory minimisation and management. Supply chains and greater flexibility may well rise alongside price and quality in future.

The Japanese tsunami and growing climate change issues have led to many organisations reviewing supply and logistics issues. There are signs that businesses are repatriating manufacturing back to the United Kingdom and Europe from lower-cost production locations, so they can protect their ongoing activities.

Source: Buckingham for illustrative purposes
Supply chain development, proximity to clients and client management are becoming increasingly important, as global players grow and create supply chains with expanding levels of responsibility being passed down to tier one suppliers.

There is a continuing challenge as to whether specialist industrial goods producers are following the most effective marketing strategies and whether they are talking to the most appropriate members of the supply chain. Real decisions are being made further and further away from the operational area and such decisions may be made on a national, regional or global basis.

Customer development

With government policy becoming ever more positive towards manufacturing industries, one can only assume there will be increased opportunities for the cast metals industry for both current and new products. Consider some of the sectors likely to offer further development;

- Automotive Industry; the United Kingdom has re-established itself as a major manufacturing base for the industry even if it is largely foreign owned. The Japanese owned players developing UK manufacturing, Honda, Nissan and Toyota, have all indicated their intentions to develop manufacture in the UK.

While these players have their own integrated operations, there will be opportunities for development as production expands. One of the recent success stories has been the resurgence of Land Rover Jaguar with its rapidly growing range of new products, the bulk of which is exported much of this beyond the EU. Given the automotive sector is expected to manufacture more than two million units a year, there may well be opportunities for further castings and finishing. One component that appears to be imported are wheels. Could there be a real business opportunity for a UK caster to break into this sector in a big way?

There are continuing issues of global excess installed manufacturing capacity.

- The United Kingdom is the major engine manufacturing base for two global automotive companies – Ford and BMW. However, both players reputedly import significant volumes of parts to be machined, finished, assembled into engines in the United Kingdom – then exported again. While it may be difficult to break into such established supply chains, there may be opportunities. Vehicle manufacturers are major outsourcers and appear to be examining their supply chains critically.

- The supply chain and logistics costs may well be an Achilles’ Heel for overseas producers; save the cost of transport and make full use of the weakness of sterling and there could again be opportunities?

- The energy industry may well be even more global than the automotive industry in terms of material acquisition and quality issues. Its supply chain is tortuous and may well be one where consortia, with the strongest quality assurance protocols, have the most sway.
• The UK castings industry; as shown in the census, is a major player of high-value casting and investment castings. To pursue the locational theme, there are opportunities to be developed, for example, in aerospace, oil and gas and other capital industries which source their materials in the UK. Proximity to the end user with high-value castings can make real economic sense. Equally important, the UK castings industry has a reputation for service, quality and innovation.

• Government policy; with regard to infrastructure development, the planned expansion and updating of the national rail network, must surely offer significant opportunities for the metal casting industry. However, like the automotive industry, these infrastructure projects may require a different form of selling and working with clients to meet their specific needs and long lead times.

• New customers; may have different demands in terms of relationships with their suppliers. While such changes in approach to sales may take much longer than the traditional sales approach, the results can be much longer term and lead to ongoing contracts – even for small suppliers.

The phrase ‘singing from the same hymn sheet’ is becoming increasingly important in terms of customer relations. May this function demand a special kind of relationship or person in future?

New ways of doing business

The change in approach to business may demand more of a consultancy selling strategy, sitting beside the client rather than across the table. Such a strategy may require a different attitude and philosophy. Consider some of the issues and philosophies;

• Ability to sell a whole package rather than a single product to the client – this may mean looking to add value through either a stage before the casting or post casting – finishing, boring or drilling or new levels of quality control and assurance. The challenge is to become an integral part of the client’s operations so they look to you as the first port of call.

• Casting technology may become a part of customers’ purchase package – can the product be made more cost effectively – whether the product or the method, the design or materials? Such a step may not just apply to volume or investment castings, but all users are seeking to lift their game. The more providers become an integral apart of the team, the more secure business will become. While the traditional approach may well have been to offer the lowest possible price, many organisations are increasingly looking for best value for money – and that is wider than price.

• Value-added is perhaps an under used mantra, but it is important and can help the company, the castings producer, to move out from merely supplying a commodity to providing the end user with a complete package.
To be able to move to a higher level of selling, organisations may need to improve their quality and mix of staff – but this is a separate issue.

The UK is lifting its game in terms of the products it seeks to manufacture, an agenda that will require a higher level of skill at production, design and management within the business.

**Employment in the Cast Metals Industry**

The industry audit and telephone exercise have identified a number of issues regarding staff, staff development, recruitment and management succession – even during a period of economic downturn. While, in global terms, the industry may be relatively small, in terms of the numbers of employees, the range of employment issues are as complex and demanding as in industries many times its size.

Consider some of the issues raised;

- **At the top of the organisation;** issues of management succession have been identified in a number of cases. While there is no single solution, it is critical that businesses prepare, even informally, succession plans, ensure that nominated replacements gain experience and have a level of practical training before they are dropped into the jobs. All too many cases can be quoted where a key person has left and the organisation has been left to struggle. Regular staff audits and succession planning are important, even for smaller organisations. These smaller offenders may have more difficulty in recruiting larger businesses. Will future management be home grown or recruited externally? Does the organisation have a plan – and, as important, is it aware of just how long it can take to recruit and install new management?

- **Ongoing supervisory and management training;** how often do supervisory and middle management participate in external training, conference and trade association meetings? It’s all too easy to be ‘too busy’, but benchmarking and networking regarding the market and processes, while keeping abreast of changing practices and legislation, can be critical. Once again, planning may be important, not just to release time for training but to prepare staff for future roles so training can be undertaken ahead of the person being dropped into the new role.

- **Operational staff;** have training requirements which are just as important as those for senior management. Such training may be technical and it may lead to formal qualifications and awards. Whatever form it takes, it is important to develop all staff. A reputation for personnel development can help build a business and ensure quality staff are recruited. Remember, employees are increasingly undergoing training and education – not just health and safety or process – but wider issues are also increasingly important to boost business quality and productivity.
Apprenticeships; apprenticeships have finally come back into vogue, and are critical for the future of any industry – and metal foundries are no exception. Apprenticeships need to be formally set up with duties and responsibilities on both sides and the progress of apprentices carefully monitored. While apprentices will not earn their keep to start with, they are an investment and there will be a return on that investment.

Employee quality and their motivation are a critical part of any business and cast metals requires skilled production and management. Given the cast metals industry is increasingly developing its international activities, so it will need to look for staff with a growing international outlook.

Export opportunities

The telephone questionnaire and the census indicated a positive attitude to exports; some 80% of respondents already export and the analysis from the census suggests some 37% of turnover goes abroad.

In order to enhance their export opportunities, against a backcloth of global competition, foundry companies have clearly had to look at niche markets driven by demand for high-quality and high-integrity castings.

With regard to future developments, short-to medium-term, the European Union, which accounts for 69% of export turnover, may need further review and perhaps players looking further afield for business.

Other inputs to the review suggest that automotive components beyond the EU may be an area of development. It is likely that the further the exports have to go, then the more high value will be those products. Thus, the message for the future may be ‘high value-added’ or ‘high-value’ components and even further development of specialist foundry products.

Financial issues

The census and telephone survey, and discussions within the cast metals industry have indicated that financial requirements together with a shortage of capital on acceptable terms from banks may be slowing down the rate of development. There can certainly be issues if a foundry is a part of a larger organisation, if it has to fight other parts of the company for investment funds.

However, if one looks at a wider perspective, there may be other sources of finance than banks that can be used to resource development. Consider some of the alternatives and observe the range of finance sources that competitors in countries like Germany utilise. In some countries, bank finance is almost considered the last option.
For starters, examine;

- Grants and government backed loans
- Private equity sources
- Bank funds
- Mergers and acquisitions
- Client funds.

Each may sound innovative but there can be a place for each of these sources, among others, to provide funds in addition to the more conventional banks.

**Role of the Cast Metals Federation**

In many industries the trade association can be of considerable assistance, in terms of lobbying government and making broader industry and end-users aware of the products and services offered by members of a specific industry or interest group.

It is important to stress that industry associations are important for both smaller and larger players. Indeed, many informed observers would claim the trade association is more important to smaller members than larger players,

Increasingly, the trade association will have a federal role to play in linking with other European and wider jurisdictions to compare best practices. Also, a role in negotiating with Brussels in terms of regulation and any sectoral guidance that may be planned.

Trade associations used to consider their independence to be important in terms of dealing with Whitehall, but an increasing amount of work, once undertaken there, has been transferred to Europe – and the association needs to be represented at these discussions.

The cast metals industry has come through the financial crisis as a slimmer, leaner industry and now has to face new challenges of changing supply chains, globalisation and new technologies.
Implications and Conclusions

The foregoing report has sought to put the cast metals industry in context through presenting a census of the industry and presenting the findings of a telephone survey of some 24 senior executives working in the sector.

The principal conclusions and implications emerging from this review might be summarised as follows;

- The cast metals industry has contracted significantly over the past decade, and as reported, today, employs some 17,500 people and has a turnover in excess of £2 billion. The industry is divided between traditional casting processes – about two-thirds of the industry and a third which is investment castings.

- The cast metals industry has slimmed down and may be entering a period of growing business opportunity in the United Kingdom and abroad, albeit these international opportunities may well exist in the growing economies of the far East, South America and the Middle East. However, they may demand new methods of doing business which, in turn may mean using third parties to help, or even piggy backing on other organisations.

- A third of the industry's turnover appears to be exported, principally to the European Union, with a smaller amount, less than 18%, currently imported – although there are indications the UK market is being targeted.

- Developing export business may demand funding and slower payment for products, so players may need to review structures, staff profiles and experience.

- Respondents to the census and the telephone questionnaire report a highly-competitive industry which has come through the recession and is investing and innovating hard to remain competitive, despite the current economic, financial and market conditions.

Cast metals is a £2 billion pound a year industry employing over 17,000 people in the UK. It is of a magnitude that global players may seek to be more involved. Equally, it is an industry where UK users, that have outsourced looking for lower prices, may, given changing business practices, be willing to repatriate business to the UK. Are you set to pursue that business?

Professor Peter N C Cooke
Professor of Automotive Management
The University of Buckingham

June 2013
Appendix 1 – Research Methodology

The research methodology used in preparing the report has been a multi-faceted one which might be described as follows;

- Based on Cast Metals Federation membership plus known contacts with non-members an electronic mailing list was developed. The names included were, wherever possible, the chief executive or the person responsible for cast metals industry relations. It was accepted these respondents would often involve others in collecting an collating the data requested.

- All data to be gathered was to be anonymous and would be consolidated into the main report.

- A ‘drop down’ questionnaire was developed to take respondents through the data collection exercise and enable researchers to collect as much data as possible in a common format. Developing the questionnaire and battle testing it was a mammoth task and the overall document was fine tuned numerous times to achieve the desired result. Members were emailed the questionnaire a number of times to maximise returns of either completed or ‘useably completed’ data. The proportion of members returning useable data was very satisfying.

- A second exercise was undertaken to interview 24 senior executives in the industry. This was undertaken over a number of days in early 2013 against a list of ‘pre-warned executives’. Once again, the willingness of respondents to answer questions candidly and to debate and expand on their responses was very gratifying. Results for the sets of responses have been consolidated and no individual respondents can be readily identified.

- A considerable amount of background reading, discussion and analysis was undertaken by the research team during the development, analysis and preparation of the report.

- While the final report has taken considerably longer than originally planned, it is hoped the results justify the extended time frame.

In conclusion, The University of Buckingham Business School research group would like to offer thanks to members and non-members of the Cast Metals Federation for the time they have offered in the development of this census and report.
Appendix 2 – Additional Statistics

Iron castings split by alloy (%)

- Ductile: 63%
- Grey: 32%
- Alloyed: 1%
- Other: 4%

Steel castings split by alloy (%)

- Stainless: 40%
- Low Alloy: 13%
- Carbon: 12%
- Duplex: 1%
- Other: 1%
Appendix 2 – Additional Statistics

Non Ferrous castings split by alloy (%)

- Aluminium: 82%
- Magnesium: 10%
- Zinc: 5%
- Copper Alloy: 2%
- Other: 1%

Investment casting – metal split (% turnover)

- Superalloys: 1%
- Aluminium: 3%
- Ferrous: 7%
- Non Ferrous: 89%
Appendix 2 – Additional Statistics

Metal split by tonnage (%)

Metal split by foundry (%)

Census and Expectations
Appendix 2 – Additional Statistics

Census and Expectations

### Castings export (%)

- European Union: 69%
- North America: 13%
- Asia / Pacific: 5%
- Other European: 5%
- Middle East: 4%
- Rest of World: 4%

### Casting imports (%)

- European Union: 44%
- North America: 43%
- Asia / Pacific: 11%
- Rest of World: 2%