

ECONOMIC BULLETIN



A quarterly update from Franklin + Andrews

Volume 10.3 | December 2007

The UK economy – remains sound

The UK's economy has performed well into the 3rd quarter of 2007 with growth still taking place but at a slightly slower pace than earlier quarters. This follows on from 2006 which was generally robust, with GDP growth at 2.8%, from a growth of 1.8% in 2005, mainly underpinned by an upturn in consumer spending, solid fixed investment and a healthier contribution from net trade as exports benefited from a stronger Eurozone demand. The pace of GDP growth is expected to remain near trend in 2007 but slowing down in 2008. Overall, the UK's GDP is expected to grow by no more than 2.9% in 2007, with growth of the UK economy forecast to increase by just 2.1% in 2008 and 2.5% in 2009.

Consumer spending, the key driver of UK growth, has slowed in 2007 after picking up in 2006 following a sluggish performance in 2005. With recent reports on the slowdown in house price movements and sluggish industrial figures, expectations are that the economy is slowing rather more quickly than first hoped.

CPI annual inflation, the Government's target measure, was 1.8% in September, unchanged from August. The largest downward contribution came from housing and household services. RPI inflation fell to 3.9% in September, down from 4.1% in August, due mainly to average mortgage interest payments. The CPI rate is expected to edge back to 2% in

2007 with forecasts of 1.7% in 2008 and 1.6% in 2009.

Recent indicators suggest that the UK housing market is cooling. House prices in the UK fell in October, the first time in two years, and could drop further over the coming months, according to a leading property research specialist. The figures come after problems at the crisis-torn bank Northern Rock, increasing concerns for consumer confidence and the property market as the global credit crisis continues to impact.

The construction industry, a vital component of the UK economy, contributes around 8% to GDP. The industry is performing well with few signs of a slowdown in UK construction activities. Year-on-year output for first quarter 2007 was 3% higher, worth a record quarterly level of £20.6 billion in real terms. It is envisaged that total construction output will maintain growth at 2.2%, followed by a further 2.5% growth in 2008 and 2.6% in 2009.

New works in public housing and private commercial sectors are expected to be the key contributors to growth over the next two years. The offices sub-sector is expected to benefit from a major upswing in activity in the London market and there is also scope for the private sector to take an even bigger role in delivering health and education facilities. By mid 2008 work on the main Olympics stadium and other iconic 2012 facilities is due to be underway.

Work on large road schemes, a rise in activity in the electricity sector, greater spending by water companies and the installation of necessary infrastructure for the 2012 Olympics will all contribute to the infrastructure sector's recovery this year.

The Crossrail project, the proposed east to west rail link in London, has secured Government backing (included in its 2007 Comprehensive Spending Review), and is scheduled to start in 2010. It is expected to cost up to £16 billion and this will be met by Government, businesses and farepayers, each contributing around one third. The Government will contribute by means of a grant from the Department for Transport of over £5 billion during Crossrail's construction. A more detailed analysis of the impact of Crossrail is included within this edition of the Economic Bulletin.

Announcements in the 2007 Pre-Budget Report and Comprehensive Spending Review (CSR07) include spending in the NHS increasing by 4% per year in real terms, from £90 billion in 2007-08 to £110 billion by 2010-11 with education financing increasing from £77.7 billion to £92 billion.

The Government's spending plans for construction brings

considerable funding to some departments' capital investment including:

- £6.5 billion investment over three years in social housing to deliver 45,000 new social homes per year by 2010-11, a 50% increase in comparison with 2007-08
- £1.7 billion over 3 years of targeted funding for infrastructure in growth areas, the Thames Gateway, new growth points and eco towns, including a £300 million Community Infrastructure fund
- £500 million over three years for a new Housing and Planning Delivery Grant, to help deliver the Government's target of 2 million new homes by 2016

In addition, the CSR07 confirms the first phase of central Government investment of £3.6 billion over the next three years to deliver the foundations for a successful 2012 Games. An increase in construction activity is placing a strain on construction resources that will see construction costs and prices rise above the level of general inflation over the next three years. Table 1 below highlights the movement expected for tenders and cost of construction projects compared to the general retail price inflation.

Table 1 Franklin + Andrews' National TPI and BCI forecast (annual % change)

	2007	2008	2009	2010
Tender Prices	4.6%	5.5%	6.5%	5.8%
Building Cost	5.1%	3.8%	4.0%	3.5%
Retail Prices	4.1%	3.0%	2.6%	2.4%



A view from the Managing Director

by Andrew Williams

The world economy

Asset values are at the heart of our global economy and when they cease to grow relentlessly markets start to lose their confidence very quickly. As can be witnessed from the current US housing sub prime mortgage market situation, sudden and dramatic impact on stock markets and bank lending rates has had a global resonance. The hedging and subsequent migration of risk associated with the US housing market slowdown that has permeated the global markets has meant we may feel the unwelcome tightening of monetary control, be it reduced pension values or higher borrowing costs to some extent although this will depend on the exposure that the markets we operate within are experiencing.

The main risk to our economic activity is the threat of a deflationary spiral in asset values. Most economic forecasters seem comfortable with the view that timely action with monetary policies in the US and elsewhere will contain the fallout from the US housing market but others are not so sure that the corrective actions in the US will avoid a period of recession. My own view is that the damage likely to be done due to poor risk management in this market place can be prudently managed to limit the fallout and minimise the economic implications generally. In short, the global economy I believe will escape relatively unscathed from the over zealous lending into sub prime high risk investments.

On the home front it really has been a summer of bad news stories, with the floods in June hitting over 27,500 UK homes

and 7,000 businesses and an aftermath of clear-up operations and repairs stretching well into next year for many thousands. The storms highlighted the problems of the 5 million people living at risk of flooding in the UK. One thing is for sure, the insurance companies will not continue paying out on claims for these areas without some amelioration measures and changes in our design and infrastructure will be required to ensure that homes and businesses are adequately protected from the extreme weather that now appears to be affecting us. Of course these issues are facing not just the UK but across the globe, significant climate changes are impacting upon every country, with extremes of dry and wet weather all generating their own kind of trauma for the resident population.

With our global perspective Franklin + Andrews is involved in many regions and countries undertaking major infrastructure projects along with our parent company Mott MacDonald. This activity provides not just experience of different climates, but a perspective of alternative and sustainable construction design strategies, combined with innovative solutions to global problems, with the emphasis upon reducing carbon emissions wherever we operate. These issues are featured in this bulletin and indicate the importance we place upon carbon-footprinting and changing our solutions towards ever more sustainable options. Our cost management services allied to management consultancy enables us to provide in-depth risk assessment and develop

locally sourced, timely and appropriate mitigation strategies. The growth of the global economy continues in Asia, particularly China and India, with strong activity also in the Arabian Gulf region set to continue. Our offices in these regions report dynamic business activity with strong economic growth and full order books for many businesses in the construction sector. Primary concerns still exist on the supply of resources – both human and physical – as well as the long term asset values in some of the faster developing locations.

From our perspective China's appetite for raw materials of all categories is somewhat alarming given the growth predictions for its economy. The economy is growing at circa 10% per annum and already it is consuming circa 50% of the resources available in the world. The impact leading up to that scenario is potentially continued increasing world commodity prices for the rest of the world looking for its share of the resources. Clearly, the world must therefore take on board sustainable development initiatives to mitigate the impact of diminishing resources. Increased emphasis is already being placed upon recycling of materials and other eco-friendly strategies. Much of this is being stimulated by the industry itself and reference is made to some initiatives elsewhere in this bulletin.

Forecasts for 2007 suggest World GDP growth of between 2 and 2.5%, Eastern Europe at 5.0%, India at 8%, and China at 9% with the OECD at just 2.3%. The US economy is however cooling, with many economists

now expecting growth of just 2.5% in 2007. GDP Growth in the Euro-zone is expected to be 2% during 2007. The UK economy GDP growth for 2007 has stabilised around the region of 2.5%.

The Bank of England's MPC has recently cut interest rates following evidence of a slowdown in the economy. Consumer confidence can be fickle and negative press coverage can quickly become self prophesying. Our economy is slowing but it is still growing, just not as quickly. Major projects such as the 2012 games and the Thames Gateway £9 billion development will undoubtedly keep construction activity levels at a high pace for the foreseeable future.

Best wishes for 2008.



Spotlight on sustainability

Sustainability – renewable energy

Sustainability is an environmental concept which embraces social and economic issues. In theory it is a way of configuring human activity so that society can meet its needs whilst preserving biodiversity and ecosystems for future generations, coupled with providing a comfortable, energy-saving and human-friendly environment.

Sustainability is increasingly accepted as a guideline for improvement and innovation in future development within the global construction sector. It is also becoming a more important issue as consumers become more ethical along with the requirement to meet increasingly stringent building legislation.

There are a number of sustainable solutions which are currently being researched and increasingly being adopted in society today. This is the first in a series of articles where we will look into various ways of implementing sustainability in the construction of a notional domestic facility.

Forthcoming bulletins will focus on the sustainable ways of constructing walls and roofs, along with exploiting natural resources such as the sun by introducing photovoltaic (PV) panels, solar hot water systems, roof lights and sunpipes. Domestic rainwater recycling will also feature in subsequent bulletins.

This bulletin focuses on methods of procuring renewable energy and provides budget costs, which are based on a domestic facility occupying four people. All costs exclude grants and maintenance.

Forms of Renewable Energy

There are various ways of generating renewable electricity, this bulletin focuses on costs for heat pump installations and wind turbines. Photovoltaic (PV) panels may also be considered under this subject and will be discussed in a future bulletin which focuses on 'Roofing Systems'.

There are two different types of heat pump, the most common of which is a Ground Source Heat Pump (GSHP) which is also referred to as a geothermal exchange heat pump.

In heating mode GSHPs use the earth as the heat source, whereas in cooling mode they use it as the heat sink. They work on the same principle as a refrigerator i.e. transferring heat from inside to outside the unit.

Heat pumps feature two loops both containing refrigerant; the external loop which is linked to the source and the internal loop which is linked to the sink. The heat pumps can provide heating or cooling directly via these loops or via secondary loops which are connected to heat exchangers. Secondary loops tend to be popular as they require less refrigerant and don't need to be pressurised and can therefore be made of plastic tubes which are more economical.

Air Source Heat Pumps (ASHPs) work on the same principle as GSHPs but extract heat from the air rather than the ground. Costs for the

ASHPs include provision for the unit and controller and the GSHPs include provision for the unit and associated pipework. GSHPs are approximately 60% more efficient than ASHPs at present, however ASHPs do not require piping. ASHPs are less established and viewed as an emerging solution as they are being further developed.

Wind turbines, also referred to as wind generators and as wind energy converters (WEC), convert kinetic energy produced by the wind into mechanical energy which can be utilised or harnessed to create electricity.

There are two types of wind turbine, these can be differentiated by the orientation of the axis the turbine rotates on and thus labelled a Horizontal-axis wind turbine (HAWT) or a Vertical-axis wind turbine (VAWT).

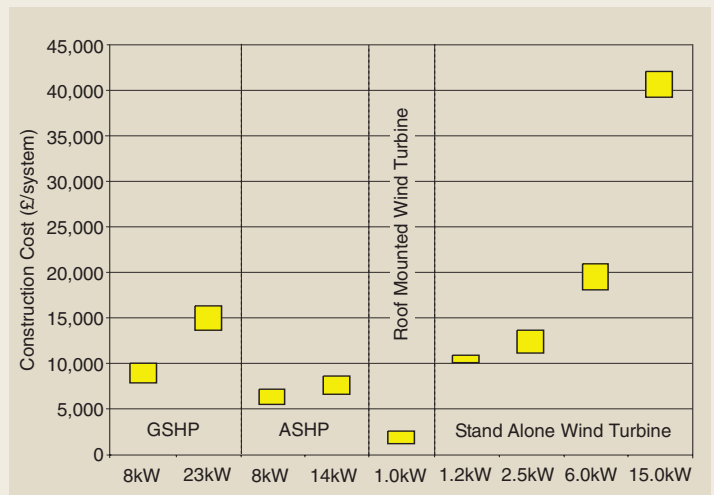
HAWTs need to be pointed towards the wind and the turbine tends to be pointed upwind of the structure to best cope with potential turbulence. Both the electricity generator and rotor shaft are usually accommodated at the top of the structure.

VAWTs do not need to be pointed toward the wind and accommodate the main rotor shaft vertically. The electricity generator is positioned at the bottom of the structure and consequently the structure does not need to support it.

HAWTs are far more common than VAWTs and are typically around twice as efficient. They are, however, more expensive and more costly to maintain. In this bulletin we will focus on two variations of HAWT; roof mounted and standalone wind turbines.

Roof mounted wind turbines are significantly cheaper than standalone wind turbines; however they have a longer payback period as they are considerably less productive. The life expectancy of the systems below range between 25-30 years as referred to in Figure 1.

Figure 1 Construction Cost (£/System)





Spotlight on South Africa

Country profile

South Africa is the economic powerhouse of southern Africa covering over 1.22 million square kilometres and located on the extreme southern tip of Africa. It is bordered by the Atlantic Ocean on the west and the Indian Ocean on the south and east. Along its northern border, from west to east are Namibia, Botswana and Zimbabwe, to the northeast Mozambique and Swaziland. Wholly enclosed by South Africa, and situated in its eastern central plain, is the independent kingdom of Lesotho.

Full name: Republic of South Africa

Population: 45.3 million (UN, 2005)

Capital: Pretoria. Cape Town is the legislative capital

Largest city: Johannesburg

Area: 1.22 million sq km (470,693 sq miles)

Major languages: 11 official languages including English, Afrikaans, Sesotho, Setswana, Xhosa and Zulu

International dialling code: +27

Currency: South African Rand (ZAR)
 £1 = R13.77, US\$1 = R6.85, €1 = R9.70 (currency equivalents are approximate)

Economy at a glance

South Africa is by far the leading economy in Africa, with a gross domestic product (GDP) four times that of its Southern African neighbours and comprising around 25% of the entire continent's GDP. The country leads the continent in industrial output (40% of total output) and mineral production (45%) and generates most of Africa's electricity (over 50%). Its major strengths include its physical and economic

infrastructure, natural mineral and metal resources, a growing manufacturing sector, strong growth potential in tourism and higher value-added manufacturing and service industries. South Africa's economy has been in an upward phase of the business cycle since 1999, the longest period of economic expansion in the country's recorded history. During this upswing – from 1999 through to 2005 – the annual economic growth rate averaged 3.5% compared to the decade prior to 1994, where economic growth averaged less than 1% a year.

There is no sign of this period of expansion coming to an end. GDP growth was recorded at an annualised 4.9% in 2006. South Africa's growth is forecast to pick up to around 4.8% in 2007 before accelerating to 5.1% in 2008.

Consumer price inflation has been on a downward trend since 2002 when prices increased by an average 9.3% following the supply constraints caused by the September 11 tragedy in New York. Consumer inflation averaged 4.6% in 2006, however it is expected that the consumer inflation will increase to 6.0% and 5.7% in 2007 and 2008 respectively.

Construction Industry

Economic growth has been boosted by a substantial expansion in the construction sector that has grown at 14.4% in the second quarter 2007. South Africa's construction industry has recorded a very strong growth since 2004 and this trend is expected to continue over the next seven years as the Government rolls out its R416 billion (£30 billion) infrastructure programme.

A significant proportion of the budget is being spent through the energy sector with electricity utility Eskom building power stations to increase the country's capacity to meet soaring electricity demand. Also through logistics group Transnet, which is focused on regenerating much of the country's ageing rail infrastructure.

A major rail project helping to fuel the current construction boom is the R20 billion plus Gautrain Rapid Rail Link, which will connect Johannesburg, Sandton, Pretoria and the OR Tambo International Airport (formerly Johannesburg International) by high-speed train.

The South African Government has committed spending of almost R17.5 billion on preparations for hosting the 2010 FIFA World Cup with over R5 billion going towards building five new stadia around the country. The remaining R9 billion is being spent on upgrading five existing stadia across the country. In addition, R3.8 billion has been set

Figure 2 GDP growth, consumer price and building tender price inflation

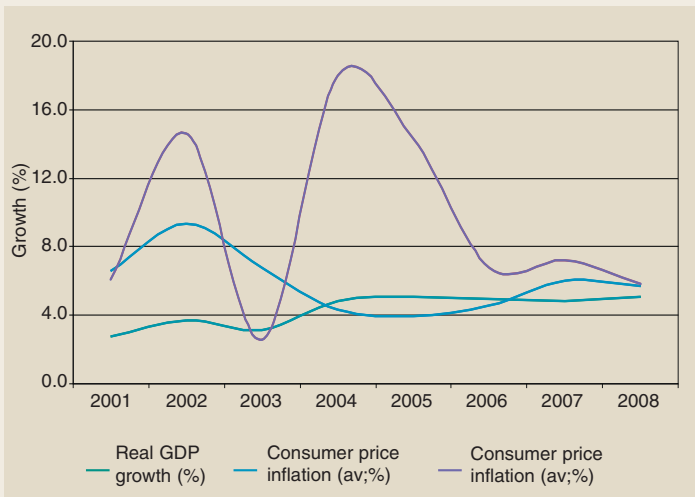


Table 2 Key indicators

	2001	2002	2003	2004	2005	2006	2007	2008
Real GDP Growth (%)	2.7	3.7	3.1	4.8	5.1	5.0	4.0	5.1
Consumer Price Inflation (av;%)	6.6	9.3	6.8	4.3	4.0	4.6	6.0	5.7
Building Tender Price Inflation (%)	6.1	14.6	2.6	18.0	14.3	6.8	7.2	5.8

aside to improve public transportation and related infrastructure in the host cities.

The construction sector in South Africa is sophisticated and well developed in the commercial and industrial sectors and has a good complement of home grown talent to help fulfil the growing skill demands placed upon it. Nonetheless, major infrastructure activity the world over always attracts international players and South Africa is no exception, with a number of major international organisations playing their part in the delivery of the nation's infrastructure growth not least the Mott MacDonald Group and Franklin & Andrews's construction economics team helping to deliver a number of significant projects.

The impact of South Africa winning the Rugby world cup so dramatically against England in Paris is expected to have a significant impact on the nation's enthusiasm for sport in general and to act as a stimulus to the preparation for the 2010 FIFA World Cup. The ANC Government of the country has taken on the responsibility for developing not just the stadia required but also committed itself to major related infrastructure activities (as our examples mentioned above) right across South Africa.

The nation is galvanised into construction activity and this is creating labour disputes that may threaten the delivery timescale for some of these major projects. Militant union activity is beginning to raise its head on these projects with demand for increased labour payments for those involved. At the time of writing, the South African Government have announced that construction costs could increase by up to 20% more than first budgeted due to price increases in key building materials such as steel and cement coupled with escalating labour. The major contractors undertaking these projects will no doubt be aware of the national desire for completion on time and will have strategies in place for ensuring the stadia required for the 2010 FIFA World Cup are delivered on time and to budget.

To assist our readers with understanding current construction costs in the region we have provided opposite an example of typical current cost indications for a range of different facility types with costs shown in local currency and based on average South Africa costs.

Figure 3 Construction cost - offices (Rands/m²)

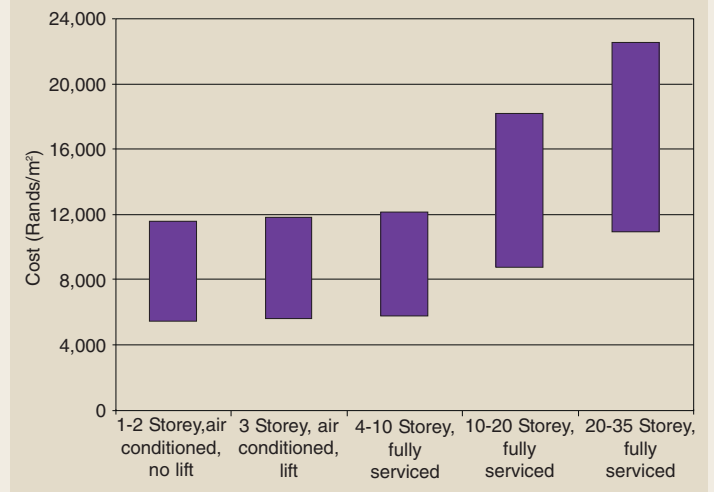
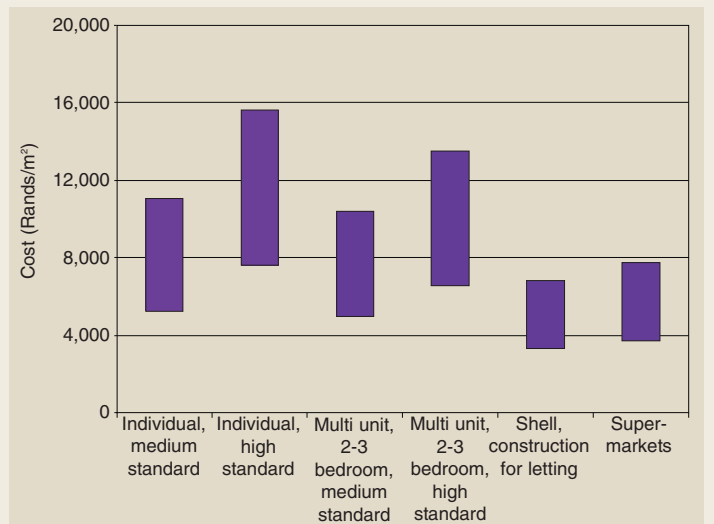


Figure 4 Construction cost - hotels & industrial (Rands/m²)



Figure 5 Construction cost - residential and retail (Rands/m²)



Construction resource analysis

The impact of Crossrail on the UK construction industry

Whilst the 2012 Olympic Games continues to dominate industry headlines, another recently approved project which is approximately three times the value of the Olympics proposed spend, could have a significantly higher impact on the availability and price of UK construction resources.

The Crossrail project, which incorporates 41.5 km of tunnels, is scheduled to start in 2010 and last for seven years. Situated in the heart of London, the multi-billion pound project will inevitably have an impact on the availability of the specialist resources required for infrastructure projects.

Here we focus on the potential impact of the Crossrail project on the UK infrastructure construction market. We pay particular attention to Greater London as this region is most likely to endure the greatest impact.

Infrastructure Construction Market

Greater London's infrastructure output is expected to be the best-performing sector from 2007 to 2011, averaging almost 11% annual growth. This reflects massive existing and planned projects such as Heathrow Terminal 5, the East London and Docklands line extensions, the Victoria Underground station expansion, the Olympics construction and, of course, the Crossrail project.

Tables 3 and 4 highlight the total value of current and planned infrastructure projects in two locations, the UK and Greater London. It is clear from the analysis of the tables that the Greater London area

currently shares around 36% of the total current projects and around 41% of total forecast projects from 2007 to 2011. This, in itself, highlights the sheer volume of infrastructure activity in the region and amplifies the potential resource availability issues.

The Tunnelling Market

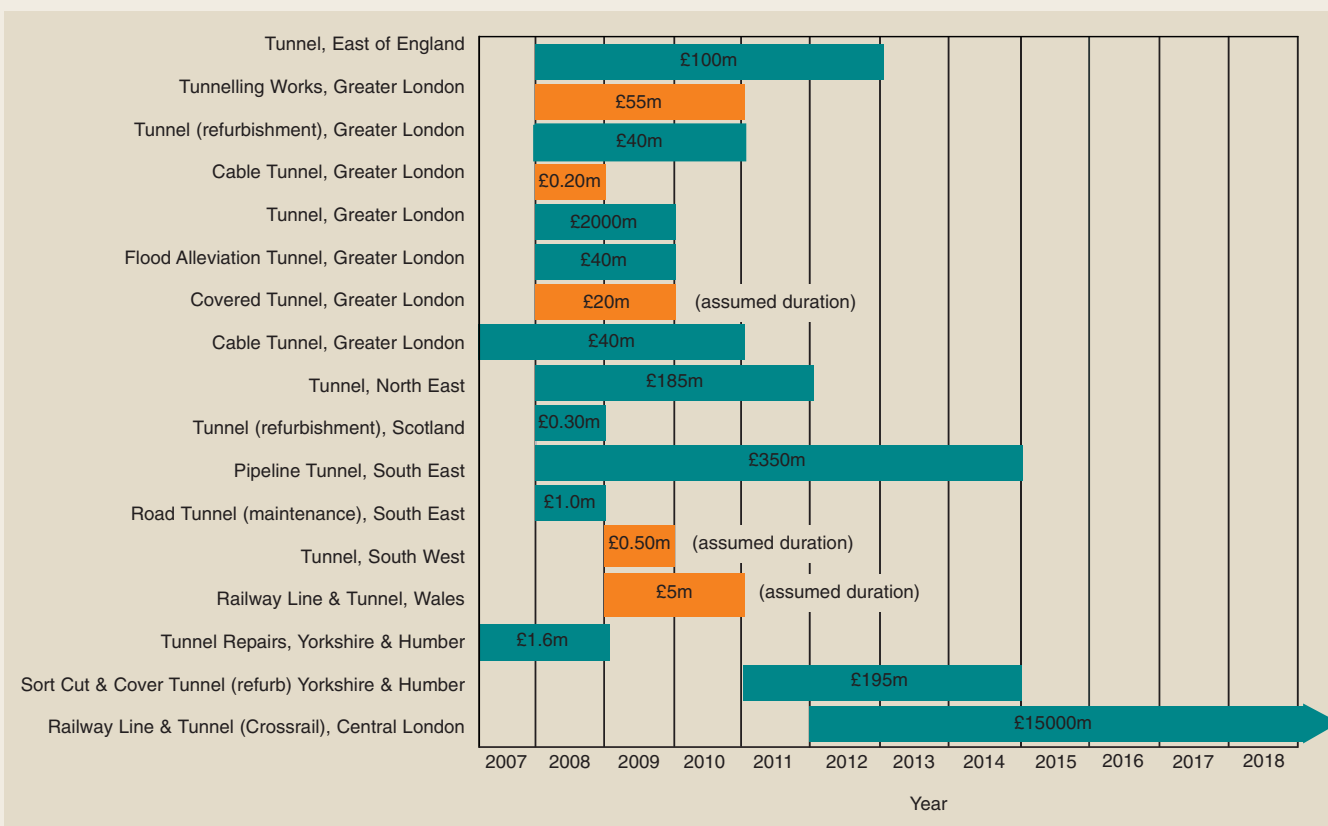
The UK tunnelling market currently includes a number of projects, refer to Figure 6 below, for both new work and repair & maintenance with an output value of approximately £2 billion at current prices. The Greater London region is currently experiencing a relatively high degree of activity in the tunnelling market. According to the data analysed, tunnelling output is set to increase dramatically from the levels witnessed at present. If the planned tunnelling project totals for the five-year forecasted period are annualised the resultant figure would double the current projects' recorded output.

By assuming that an equal amount will be spent within each period, a cash-flow forecast has also been produced in figure 7 in order to demonstrate peak activity periods.

Labour

In order to understand the levels of labour resources available in the Greater London and South East region, we attempted to research statistics that would enable us to understand the capacity for the market to populate the required resource levels from what was obviously going to grow at high levels over the forthcoming years. Figures recorded by

Figure 6 Planned Tunnelling Projects in the UK



the Government-affiliated Construction Skills Network highlighted our concerns for the availability of labour.

In the Labour Market Intelligence report published by the Construction Skills Network, total construction employment of 304,330 in 2005 in Greater London is forecast to rise by 17% to 356,560 by 2011. To meet this demand, after taking account of those entering and leaving the industry, Greater London will require an extra 12,880 workers each year. Construction Professionals & Technical Staff has the largest annual requirement, although annual requirements for Civil Engineering Operatives and Plant Operatives are also significant.

In the report, total construction employment in the South East was estimated at 327,650 in 2005 and forecast to rise by 17% to 382,200 in 2011. To meet the growing demand the South East requires an extra 13,560 workers each year. Figure 8 plots a comparison of total average annual employment requirement by regions. It can be seen from the table that Greater London and the South East indicate the greatest need for skilled construction workers between 2007 and 2011.

This resource constraint issue becomes more compounded when considering more specialised work. The tunnelling labour market will become more resource constrained with regard to professional and management staff. It is envisaged that the global tunnelling market will allow supply of the additional requirements but at a premium.

Materials

The materials market is likely to face similar pressures to labour as tunnelling projects, by their nature, require vast quantities of key construction materials such as concrete and steel. The Crossrail project will be no different and it is forecast to require over one million cubic metres of concrete, 140 thousand tonnes of steel for structural works and 140 km of steel rails.

Although no official statistics have been published, estimates suggest that the current annual consumption of concrete falls around the 50 million cubic metres mark. Crossrail are anticipating a requirement of over one million cubic metres of concrete, which equates to an

additional 2% consumption demand. Initial research suggests that the industry should be able to cope with satisfying this need.

Plant

Pressure is expected to be placed on the supply of specialist plant. Crossrail has earmarked a need for nine Tunnel Boring Machines (TBM) plus an additional requirement of Earth Pressure Balance Machines (EPBM). Tunnel machine manufacturing is also a global market and early indications suggest that sufficient capacity exists to meet the planned demands.

Summary

In summary, with 41% of the UK's planned infrastructure, the major pressure on the industry will obviously emanate within Greater London. Our initial research suggests that the Crossrail project will inevitably place a significantly higher strain on the supply of required resources, however the capacity of the global tunnelling market will enable the supply to be achieved, albeit at potentially higher premiums.

There will be a need to identify any potential shortfalls in resource, both consultant and contractor, and to procure those with the ability to overcome these pinch points by using their experience and expertise. The commitment to collaborative working and effective supply chain management will be vital. Without such strategies in place, the industry will no doubt experience an increase in price pressures.

Table 3 Total value of current infrastructure projects

	£ million	% share
United Kingdom	24,294	
Greater London	8,644	36%

Table 4 Total value of planned infrastructure projects (2007-11)

	£ million	% share
United Kingdom	91,955	
Greater London	37,895	41%

Figure 7 Cash-flow forecast

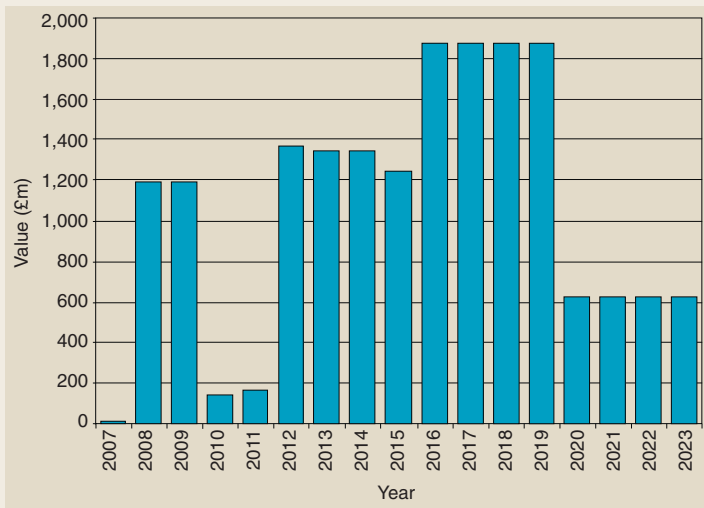
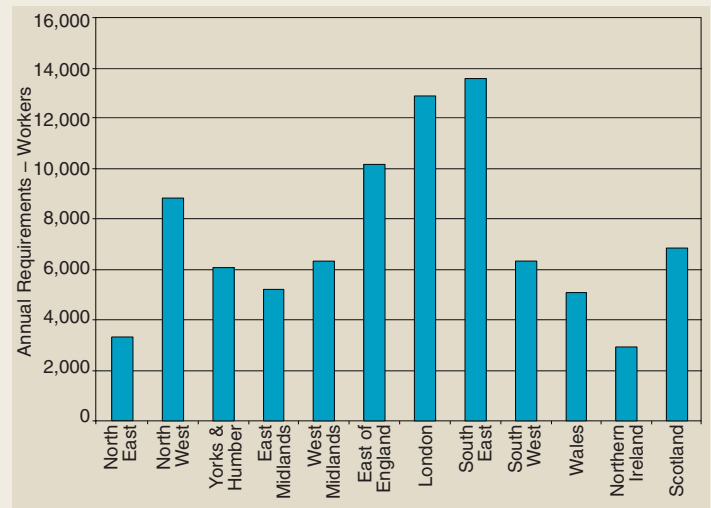


Figure 8 Total Average Annual Requirement by Region 2007-2011





Spotlight on carbon footprinting

Are your buildings costing the earth?

With life cycle costing datasets and methodologies at our fingertips for some time we have been able to calculate the likely true cost of selecting an asset in a design over the life of the building. This has enabled us to select a specification no longer just based on the cost of the initial construction but on an improved awareness of how long the assets will last and how often one would need to maintain them.

In an era where the damage that we are making to the environment is becoming a reality and is more focused, a procedure is evolving to help us quantify what impact our design choices are costing, not just the building end users, but also the planet itself.

The measure of environmental impact is known in many different terminologies the most publicised of which is the 'carbon foot-print'. The procedure for measuring the impact, or carbon footprint, is known as a Life Cycle Assessment (LCA).

The LCA is a study that examines the environmental impact of selecting a material or component in a building's design. The process takes into account every step of the materials manufacturing process; transportation, installation and use and its eventual disposal or recycle. Environmental impacts are considered for the use of energy, production of greenhouse gases, generation of waste and even consideration to

the availability and demand of the raw resources used.

The constituent parts of the LCA vary depending on where the line of study is drawn. It is of course possible, time and patience permitting, to calculate the environmental impacts of processes connected to that of the material you are studying. For example the environmental impact of the materials that you are using could also include the transportation of the labour to the manufacturing plant, the manufacture of the components of the transportation vehicle, the repair of the roads that the transport is running on, etc.

The balance between obtaining sufficient detail and spending extra time with only minor improvements on accuracy is of course a project specific issue, we would however recommend that the use of trended data rather than precise data in many cases provides enough detail to make an improved specification choice. In any case it is also highly recommended that the line of study is understood and drawn before any assessment commences.

During the LCA, one of the measurements to quantify the carbon footprint of an asset or a building is that of recording its embodied energy. Typically, embodied energy is measured as a quantity of non-renewable energy per unit of building material, component or system. For example, it may be expressed as MegaJoules (MJ)

or GigaJoules (GJ) per unit of mass (kg or tonne) or area (square metre).

Although embodied energy can vary dramatically depending on the distance of transportation required and whether the component has been made from

recycled materials, figures 9 and 10 have been produced to demonstrate typical embodied energy for common building materials. The charts were produced in order to illustrate trend, rather than precise data.

Figure 9 Typical Lower Embodied Energy Materials (MJ/KG)

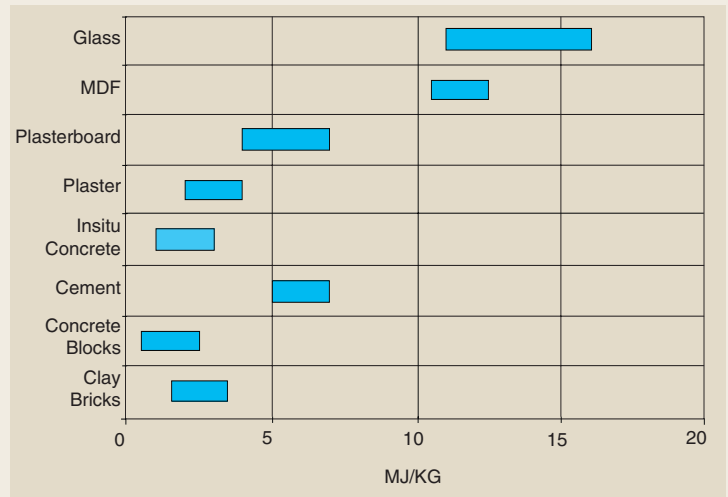
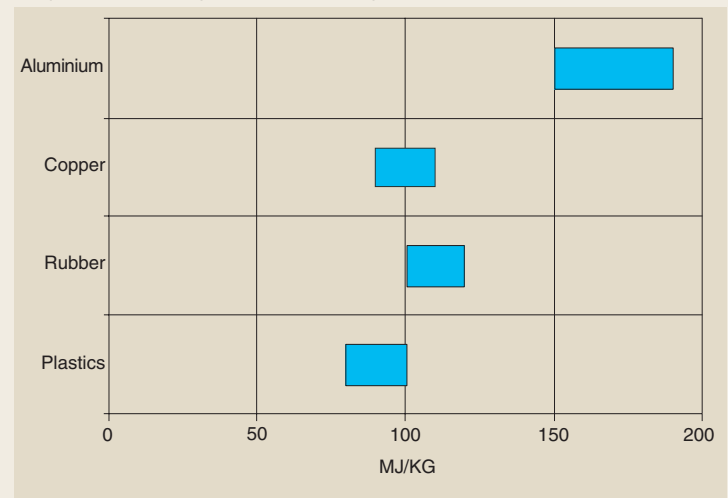


Figure 10 Typical Higher Embodied Energy Materials (MJ/KG)



SPECIAL REPORT



Economic Bulletin

December 2007

Railway cost driver analysis

Franklin + Andrews has developed a unique set of indices to reflect both cost and tender price movements of railway construction.

Analysis and discussion with leading specialists within the sector established a need for the indices. The indices are offered as an alternative to the existing use of the Retail Price Index (RPI) to inflate and deflate projects budgets. A regular

review and updating of the indices with forecasts for future cost and tender movements will be published on a regular basis.

Cost components

The following were established as being typical of cost significant components of railway projects:

- Signalling
- Telecommunications

- Electrification
- Permanent way
- Stations and civil engineering

Through use of weighting existing public domain indices for historical movements and trending and survey for predictions, cost indices have been created for each of the cost components from a base year of 1995. These indices

have been weighted to replicate a typical major infrastructure project in order to generate a Railway project cost index.

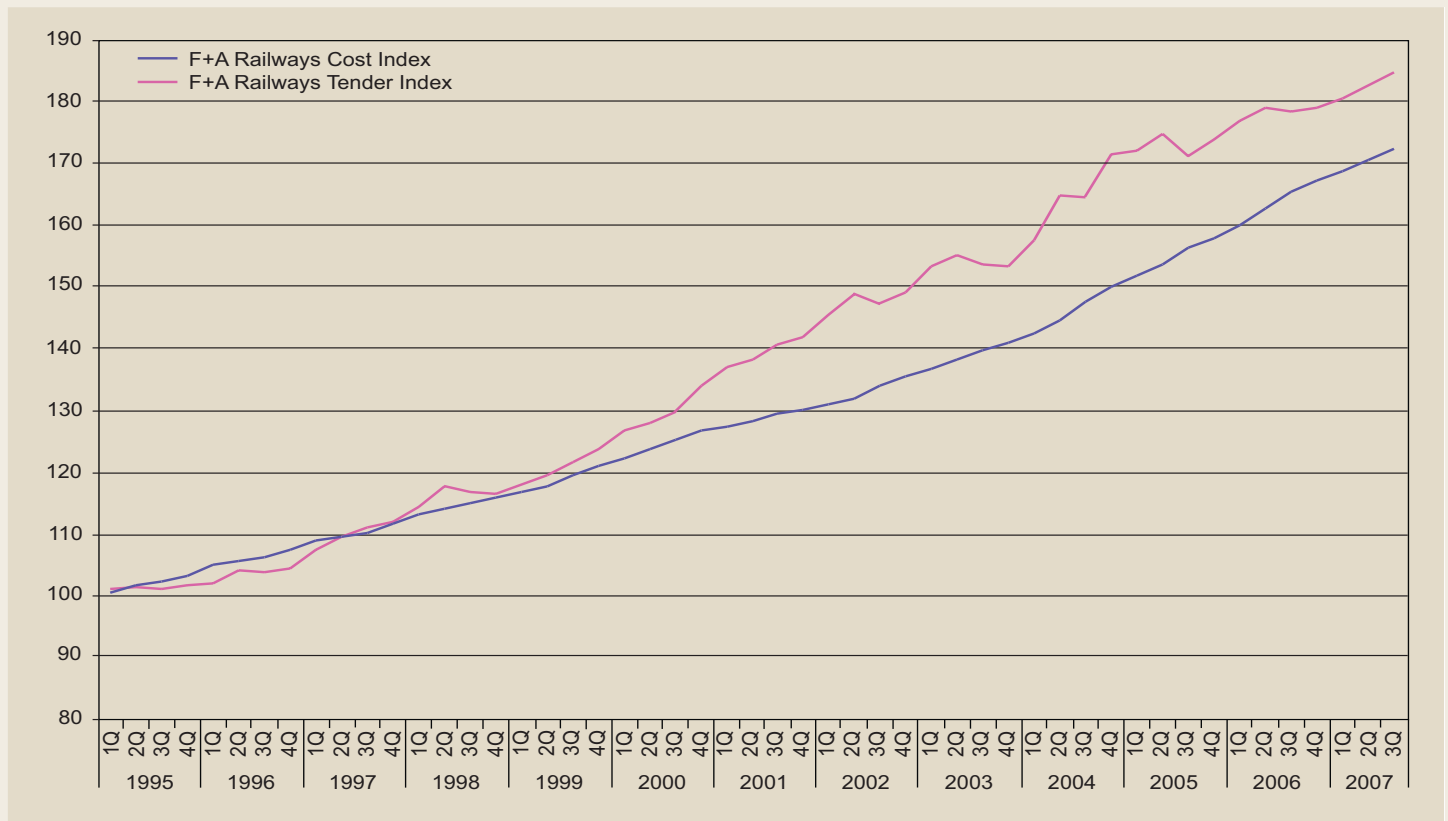
As a number of the cost components are subject to market forces, a series of tender indices have also been included. These tender indices have been weighted to produce a Railways project tender index.

Cost indices													
	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07
Signalling	164.2	163.9	164.6	165.2	165.8	166.5	167.1	167.7	168.3	169.0	169.6	170.2	170.9
Telecoms	164.6	164.4	164.9	165.4	165.9	166.4	166.9	167.5	168.0	168.5	169.0	169.5	170.0
Electrification	164.7	164.5	165.0	165.6	166.1	166.7	167.2	167.7	168.3	168.8	169.4	169.9	170.4
Permanent way	172.8	173.2	173.8	174.4	175.0	175.6	176.2	176.8	177.4	178.0	178.6	179.2	179.8
Stations and civils	166.1	166.4	167.0	167.7	168.3	168.9	169.6	170.2	170.9	171.5	172.1	172.8	173.4
F+A railways project cost index	167.3	167.4	168.0	168.6	169.2	169.8	170.4	171.0	171.5	172.1	172.6	173.2	173.8

Tender indices													
	Nov-06	Dec-06	Jan-07	Feb-07	Mar-07	Apr-07	May-07	Jun-07	Jul-07	Aug-07	Sep-07	Oct-07	Nov-07
Signalling	179.0	178.5	179.1	179.8	180.5	181.2	181.8	182.5	183.2	183.9	184.6	185.2	185.9
Telecoms	179.4	178.9	179.7	180.5	181.3	182.1	182.9	183.7	184.5	185.3	186.1	186.9	187.6
Electrification	179.5	179.1	179.7	180.3	181.0	181.6	182.3	182.9	183.6	184.2	184.8	185.5	186.1
Permanent way	188.3	188.6	189.3	190.1	190.9	191.7	192.5	193.3	194.1	194.9	195.6	196.4	197.2
Stations and civils	181.0	181.1	181.9	182.8	183.6	184.4	185.2	186.1	186.9	187.7	188.5	189.4	190.2
F+A railways project tender index	179.1	178.9	179.6	180.3	181.0	181.8	182.5	183.2	183.9	184.5	185.2	185.9	186.6

Base jan 1995 = 100

Railway cost driver analysis



Cost indices annual inflation	2007	2008	2009	2010	2011	2012
Signalling	4.94%	4.09%	4.82%	5.29%	4.78%	4.24%
Telecoms	4.06%	4.84%	4.54%	5.28%	4.78%	4.23%
Electrification	4.25%	3.75%	5.13%	5.29%	4.99%	4.24%
Permanent way	4.45%	3.61%	5.02%	5.31%	4.81%	4.26%
Stations and civils	4.96%	3.97%	4.45%	4.84%	4.34%	3.81%
Typical railways project cost index	4.48%	3.86%	4.44%	4.88%	4.61%	4.33%

Tender indices annual inflation	2007	2008	2009	2010	2011	2012
Signalling	5.06%	7.91%	6.95%	6.74%	5.31%	4.38%
Telecoms	5.88%	8.95%	7.03%	6.74%	5.31%	4.37%
Electrification	4.80%	7.94%	7.21%	6.74%	5.31%	4.37%
Permanent way	5.57%	8.91%	7.42%	6.77%	5.34%	4.41%
Stations and civils	6.04%	8.39%	6.68%	5.63%	4.90%	4.62%
Typical railways project tender index	5.21%	7.59%	6.53%	6.20%	5.10%	4.46%

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