

## 7. Route-wide impacts: Direct employment impacts

### 7.1 Introduction

7.1.1 This section examines the route wide impacts of Crossrail in terms of:

- construction employment;
- operational employment;
- jobs at risk due to land take; and
- multiplier impacts.

### 7.2 Construction employment

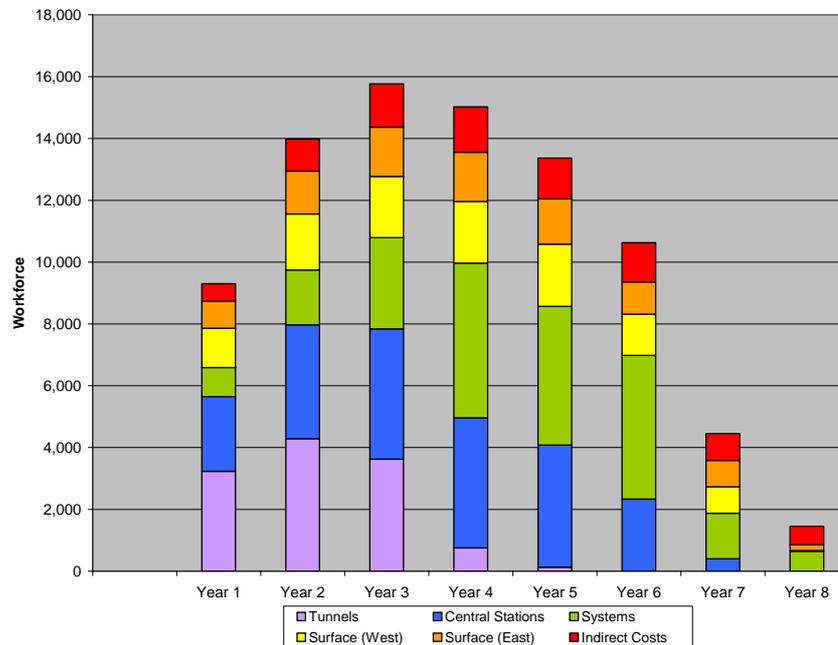
7.2.1 Crossrail is a massive construction project covering a seven year period. The exact cost and inputs will not be finalised until the scheme is tendered. The estimation of construction employment is, therefore, a top down approach based on best estimates of the cost of the project as estimated at the end of 2004.

7.2.2 The project costs for the scheme are split into eight broad categories: land and property, tunnels, route infrastructure, trackworks at surface, stations, railway systems, depots and stabling, project team. The cost of each of these elements has been estimated by Crossrail based on inputs from the relevant project engineers and advisers.

7.2.3 Based on previous similar projects labour costs account, on average, for around 41% of project costs. To turn labour costs into employment numbers, estimates need to be made of average employment costs. To do this, employment is split between four categories: office labour, site labour, project team and land and property. Each category has been allocated an average employment cost.

7.2.4 Crossrail assumptions for construction activity combined with assumed labour costs give an employment profile for the project as shown in *Figure 7.1*. This shows employment peaking at around 16,000 jobs during year 3 and being in excess of 10,000 for a five year period.

**FIGURE 7.1: CONSTRUCTION EMPLOYMENT BY YEAR**



7.2.5 Total direct labour requirements for the construction of Crossrail over the period are estimated at 87,000 employment years. Based on the convention that 10 employment years is the equivalent to one permanent job this means that the construction of Crossrail will generate the equivalent of 8,700 permanent full time jobs.

7.2.6 Given the nature of the project and the specialist labour required these jobs are likely to be filled from both the London and wider UK or even international labour market.

### 7.3 Operational employment

7.3.1 Once Crossrail is in operation it will employ a large number of staff to operate the service and to maintain the infrastructure and rolling stock. While Crossrail replaces some existing services it also provides a considerable volume of additional services. So while a proportion of these jobs will be filled by transfers from existing rail companies, especially on the suburban lines, a significant number will be new positions.

- 7.3.2 Based on the proposed service pattern the following estimates of operational employment have been reached:
- train drivers: 270 (150 of which will be new posts);
  - on train revenue protection staff: 65 posts (all new);
  - station staff: 175 new posts and 250 existing staff transferred at existing suburban stations on Shenfield, Dartford and Maidenhead lines;
  - head office staff: 110 new posts (including route control staff);
  - depot staff (maintenance and administrative workers): 375 new posts;
  - infrastructure maintenance: 115 (all new).
- 7.3.3 This gives a net increase in employment of over 990 full time jobs.
- 7.3.4 Depot and route control staff are all expected to be located in Romford. The new positions for station staff would mainly be at new central stations from Paddington to Whitechapel, in an approximately even split between these sites, which leads to between 25-30 jobs per station.

## 7.4 Employment at risk through land take

- 7.4.1 The construction of Crossrail requires the acquisition of a number of properties and land along the line of route. The majority of these land and buildings are presently in commercial use and hence the acquisition will lead to the displacement of businesses and the possible loss of employment.
- 7.4.2 The initial task of identifying land and properties to be acquired was undertaken by Crossrail. Surveys were then undertaken to identify both owners and occupiers of these premises. This included visiting each of the properties concerned.
- 7.4.3 Having identified occupiers a questionnaire was sent to all businesses affected by land take. The purpose of the questionnaire was to identify the number of people employed at the site, the ease with which the business may relocate and the level of linkage with the local area in terms of customer and supplier base. That is, what proportions of both are local to the area or come from a wider geographic base.
- 7.4.4 To maximise responses follow up telephone calls were made to businesses that did not respond. A 20% response rate was

achieved which is in line with expectations for a postal survey, followed up by telephone calls. This data was supplemented by the standard process of using average jobs per given floorspace.

- 7.4.5 For each site affected by land take the footprint of the buildings concerned was calculated either from the Valuation Office's Rating List data or by using the Ordnance Survey's ProMap software. In the latter case a field survey was then undertaken to assess the number of floors in use. Multiplying the footprint area by the number of floors provided an estimate of the total floorspace in the building. Research by OffPAT (Office of Project Appraisal Training) on job density provides average figures of square metres per employee in office and retail work. Thereby, the floor space of the buildings demolished can be translated into an approximate number of jobs by using the following formula:

$$\text{Total floorspace (sqm)} / \text{average sqm per employee} = \text{number of employees}$$

- 7.4.6 These methods enable an estimate to be made of the total number of jobs that will be displaced by land take associated with the construction of Crossrail. The result is that an estimated 5,000-7,000 jobs will be displaced. It should be stressed these are not job losses but the number of jobs that may be displaced if all the buildings required by Crossrail are occupied at the time of acquisition. On the whole vacancy rates for office, retail, industrial and warehousing within the areas served by Crossrail can easily absorb this level of displacement. Where it is anticipated that specific occupiers would experience difficulty in relocating due to the nature of the business and/or size and space requirements, this is highlighted in the relevant route window text in chapters 8-12.

## 7.5 Mitigation

- 7.5.1 The Secretary of State will seek powers to compulsorily acquire the freehold interest of land required for the Crossrail works. These powers are contained in the Bill. Powers to acquire land for the relocation of businesses are generally not contained in the Bill. Instead, impacts will be mitigated through the payment of compensation for land compulsorily acquired in accordance with the general statutory framework incorporated within the Bill, the Crossrail Land Acquisition Policy and the Crossrail Disposal Policy.

## 7.6 Indirect and induced employment: the multiplier effect

- 7.6.1 Besides the direct employment effects of the construction and operation of Crossrail, there are secondary impacts. These are termed indirect and induced employment.
- 7.6.2 Indirect employment results from expenditure on supplies and services necessary for the construction of Crossrail. For example, the purchase of rolling stock is a capital item for Crossrail but it results in the employment of workers to produce that rolling stock.
- 7.6.3 Induced employment results from the spending of incomes earned by those directly employed on the construction of Crossrail and by workers employed by suppliers to Crossrail.
- 7.6.4 In the case of business closures resulting from land take, there will also be secondary impacts which will be negative: fewer employees mean lower spending in the local economy which in turn can put other jobs at risk. This is referred to as a “reverse multiplier”. This will be offset by any additional jobs housed by the over station developments and their multiplier effect.
- 7.6.5 However, any indirect loss of jobs due to a reduction in spending associated with the temporary displacement of businesses and jobs has not been assessed. This is due to the nature of London’s economy with considerable potential for businesses to relocate within the area and/or for local competitors to take up demand.
- 7.6.6 Multipliers are a standard concept to quantify the indirect and induced effects resulting from a specific investment project e.g. a multiplier of 1.2 means that for every 1 construction jobs directly generated by the project 0.2 indirect or induced jobs will also materialise. Differentiating indirect and induced impacts is a complex and uncertain process which would not add value to this project.
- 7.6.7 Depending on the spatial scope of the impact study, various levels of multipliers can be used: local, regional or national. The more localised the multiplier, the smaller it will be (because a larger share of income will be spent outside of the area under analysis). As far as this study is concerned, only a national multiplier is considered. Therefore, there is no need (in this particular case) to consider leakages from the local or regional economy into other regions (i.e. whether supplies / services are purchased locally or not is irrelevant). However, the purchase of material or equipment from suppliers abroad is a leakage that will need to be taken into account.
- 7.6.8 Thameslink 2000 and Channel Tunnel Rail Link are two other large scale projects that can be used as benchmarks for

Crossrail. The multipliers for these projects are listed in *Table 7.1* below (these are regional multipliers).

**TABLE 7.1: MULTIPLIERS USED IN OTHER MAJOR RAIL SCHEMES**

	Multiplier	Reverse multiplier
Thameslink 2000	1.5	1.1
Channel Tunnel Rail Link	1.4	n/a

7.6.9 Another quantitative source of information on employment multipliers is a table created by the Scottish Executive in 1996. It is one of the few attempts at quantifying multipliers by sectors. *Table 7.2* lists multipliers for a variety of industries relevant to Crossrail:

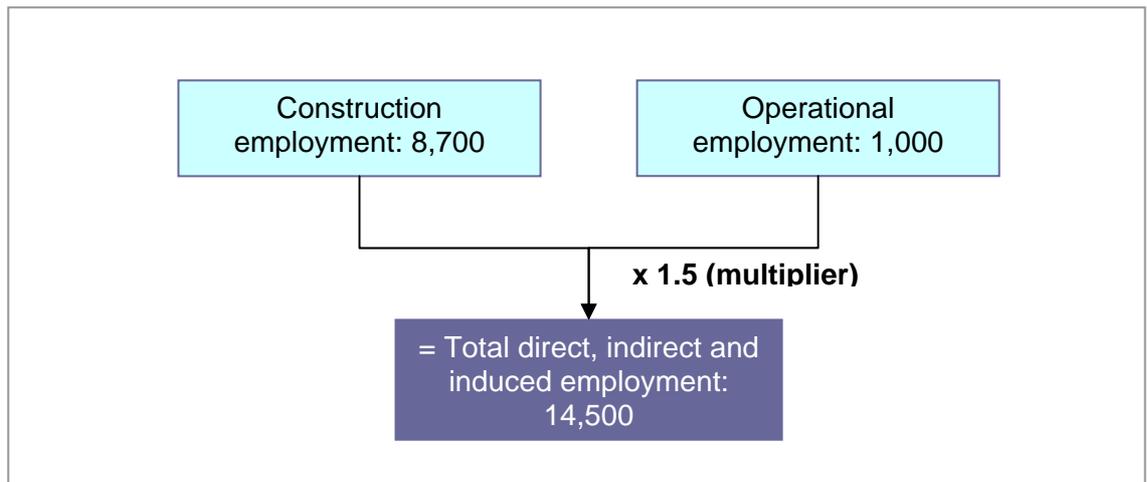
**TABLE 7.2: MULTIPLIERS FOR CONSTRUCTION PROJECTS**

Sector	Multiplier
Manufacture of structural metal products	1.52
Manufacture of other general purpose machinery	1.51
Manufacture of special purpose machinery	1.63
Manufacture of other transport equipment	1.33
Construction	1.86

7.6.10 Based on these benchmarks, an employment multiplier of 1.5 is suggested for Crossrail. As a national multiplier it might be expected to be higher than the regional multipliers mentioned previously, however, Crossrail is likely to source a significant proportion of equipment and materials abroad, somewhat limiting its impact on the employment market. Altogether, this possibly conservative estimate is deemed safer.

## 7.7 Results

7.7.1 Bearing these limitations in mind, the figures reached through the method highlighted earlier are as follows:



7.7.2 Crossrail is, therefore, expected to create around 14,500 jobs, during its construction and operation, in the UK, although as mentioned earlier these will not all be brand new jobs; there will be a degree of redistribution and displacement.