Chapter 2
Route Window C1
Royal Oak portal
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Royal Oak Portal

Introduction

2.1 The Crossrail route runs as a surface railway within the existing rail corridor through the western part of this route window. The route then passes into a cut-and-cover tunnel at the Royal Oak portal before passing into twin bored tunnels at Westbourne Bridge. The permanent works will consist of:

• a train reversing facility at Westbourne Park and track alterations to the Great Western main line;
• the Royal Oak portal, tunnel eye and approach ramp;
• the Westbourne Bridge shaft consisting of emergency escape and ventilation facilities;
• an extension to Westbourne Park bus garage.

2.2 There will be two worksites in this route window:

• Royal Oak Worksite West;
• Royal Oak Worksite East.

The Paddington Central Worksite in Route Window C2 will be contiguous with the Royal Oak Worksite East and will be used for storage and offices.

2.3 The maps provided at the end of this chapter present the main features of the route window and the assessed construction lorry routes.

Baseline conditions

2.4 This route window lies partly within the Royal Borough of Kensington and Chelsea and partly within the City of Westminster, but both worksites are wholly within Westminster. Land uses within this part of London are predominantly residential properties, the elevated A40 Westway and the Great Western Main Line and the London Underground rail corridor to Paddington station. To the north of the railway, where the worksites will be situated, there are a number of commercial land uses, including a concrete batching plant, transport-related uses (including Westbourne Park bus garage and a taxi servicing area and café) and workshops, including artists’ studios. There are residential areas further north (containing high-rise and medium-rise blocks), south of the railway corridor and east of Bishop’s Bridge Road. The Westbourne and Bayswater Conservation Areas to the south consist mainly of eighteenth- and nineteenth-century terraced housing. The Crossrail tunnels pass under the Grade II listed Westbourne Bridge.

2.5 The local area is served by the Westbourne Park Underground station and a number of bus routes running along Harrow Road and Great Western Road.

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built extension to the Westbourne Park bus garage. Of the other existing users the concrete batching plant will be replaced at the end of the work period.

**Westbourne Park reversing facility**

2.9 Her Majesty’s Railway Inspectorate requires that all trains are emptied of passengers before they run out of service. Crossrail must provide means whereby trains terminating at Paddington can be checked. To ensure that following services are not significantly delayed, it must be possible for a train that is being checked to be overtaken, or for two trains to be checked simultaneously. This would not be possible at Paddington without constructing more platforms than are proposed, which would add significantly to the cost of the station. A reversing facility will therefore be constructed at Westbourne Park, west of the Royal Oak portal. It will consist of four tracks and two island platforms 210 m long, and will have emergency access to and from the street via footbridges.

2.10 Track alterations to the Great Western Main Line will be needed to accommodate the reversing facility and the two Crossrail running lines used by services to Heathrow and Maidenhead and movements to Old Oak Common depot. The present six-track layout between Ladbroke Grove Junction and Paddington will be altered so that it begins about a mile further east at Subway Junction.

**Royal Oak portal and approach ramp**

2.11 An approach ramp will descend into the portal, which will be situated west of Lord Hill’s Bridge. The approach ramp will be constructed within a retained cutting. A cut-and-cover tunnel will be constructed between the portal and the bored tunnel. Escape stairs and a safe holding area for evacuated passengers will be provided at the portal.

**Westbourne Bridge shaft**

2.12 To the east of Ranelagh Bridge, a shaft at the tunnel eye will provide ventilation and emergency intervention facilities. The shaft will include a surface-level structure. West of Westbourne Bridge, a new access road will be constructed to connect with the Estate Road through the Paddington Central development. A hard standing area will be provided for emergency vehicles.

**Running tunnels**

2.13 Two 6 m diameter running tunnels will descend from existing track level to a depth of about 15 m at Westbourne Bridge shaft. From here the tunnels will continue to descend to a depth of 24 m at Paddington station. The tunnel eye at the start of the bored tunnel will be between Ranelagh Bridge and Westbourne Bridge at the bottom of the Westbourne Bridge shaft.

**Worksite assessment (group 1)**

**Royal Oak Worksite West**

2.14 The Royal Oak West worksite will occupy the land directly south and east of the First Group Bus Garage between the Great Western Main Line and the Grand Union Canal. The Westbourne Park reversing facility will be in this area. The main entrance to the Royal Oak Worksite West will be a ramp down from Great Western Road, which is owned by First Group. It lies between the Westbourne Park Bus Garage, also owned by First Group, and a bridge over the railway. There will be a supplementary access from Alfred Road, which has parking bays operating between 0830 and 1830 hours, Monday to Friday.

2.15 A temporary railhead will be provided on this site; it will be used for the delivery of tunnel segments and other bulk items and for the removal of excavated materials from the Royal Oak East Worksite (Westbourne Bridge shaft), the Eastbourne Terrace Worksite (Paddington station box) in Route Window C2, and the western half of the central London running tunnels. At the start of the project, all movements to and from Paddington station and the Westbourne Bridge shaft will be made by road to and from the tip or depot. Later, when the railhead is brought into use, material excavated from these sites will be moved to the railhead by lorry on the local road network. As work on the tunnel eye progresses it will become possible to reduce local lorry traffic by constructing a conveyor to link the West worksite and the East worksite, but it will not be feasible to provide such a connection to Paddington station. Materials excavated from the central London running tunnels will be transported through the tunnel eye to the railhead and will not use the road network after the conveyor has been constructed. The various stages of work are described in more detail at 2.23 ff.

2.16 Most existing users on the Royal Oak Worksite West use the ramp from Great Western Road. The users include overspill parking and servicing from the bus garage and a ready-mix concrete batching plant that will be demolished at the start of the works to allow the other works to proceed. At a later date, a new concrete batching plant will be constructed. The ramp is also used for access to the car park under the bus garage, which will remain in use during Crossrail’s works; but the bus storage and servicing area on the Royal Oak site will be relocated before construction works start, in consultation with relevant stakeholders.

2.17 Alfred Road is currently used for access to a contractor’s site and other facilities, which will be closed before work starts.

**Royal Oak Worksite East**

2.18 The Royal Oak portal and the Westbourne Bridge shaft will be constructed on the Royal Oak East worksite. Vehicles will enter and leave this worksite through the Paddington Central Worksite, which falls within Route Window C2.

2.19 Within the Royal Oak East worksite boundary there is a café and filling station used by taxi drivers (black cabs). The filling station and café will be closed or, if appropriate, relocated before construction works start, in consultation with relevant stakeholders.

**Lorry routes assessment**

2.20 The only permanent Crossrail construction works that will take place in the Royal Oak West Worksite are for the Westbourne Park reversing facility. This will generate considerably less lorry traffic than the railhead, which will receive excavated materials from other worksites.
2.21 The lorry route to the Royal Oak West Worksite enters the route window in the east, on Harrow Road, and follows it to Chippenham Road and then Elgin Avenue, which are used as the alternative routes to the banned left and right turns at the junction with Great Western Road. Lorries will then use Great Western Road as far as the site access immediately south of the Westbourne Park bus garage. Alfred Road, which connects the western end of the Royal Oak West Worksite to Harrow Road, will be a secondary access. Use of this road will be light and no existing parking will be lost. The situation would be similar to the existing, in which the road gives access to a contractor’s depot.

2.22 The lorry route to the Royal Oak East worksite will be through the Paddington Central worksite (see Route Window C2).

**Generation of construction traffic**

2.23 In terms of the generation of construction traffic, the works will be carried out in five main traffic phases:

1. A shaft will be constructed at the tunnel eye at the Royal Oak East worksite, followed by the start of the cut-and-cover box. When tunnel driving begins, the excavated material will be hoisted out and carried by lorry to the railhead loading facility at the Royal Oak West worksite. Tunnel lining segments will also be delivered to the shaft by road lorry. Material excavated from Paddington station will be hauled by road to the railhead.

2. As soon as the approach ramp is completed at the portal, a conveyor will be installed to carry excavated material from the Westbourne Bridge shaft into the railhead loading facility at the Royal Oak Worksite West. Excavated material will no longer be hauled on the local road network from either of the Royal Oak worksites, but it will continue to be hauled from Paddington station (Eastbourne Terrace worksite) to the railhead by road.

3. When the running tunnels are completed as far as the Paddington station box, all remaining movements of material excavated from the station site will be transported to the railhead through the tunnels.

4. When the railhead is no longer needed for removing excavated material it will be removed and the Westbourne Park reversing facility will be built on the site.

5. The final stage will be the construction of a replacement concrete batching plant on the Royal Oak West worksite. The traffic and transport impacts should be comparable to those of a normal construction project, so this stage of the project has not been considered in this assessment.

There will also be a final fitting-out stage, but it is not expected that it will have any significant impact.

2.24 The estimated construction traffic loads that will be carried by the local roads in the vicinity of the worksite will be as shown in Table 2.1. For each local road that will carry Crossrail construction traffic, the table shows the additional traffic load for both the period when that construction traffic will be heaviest (the period of peak construction traffic) and the average flow for the rest of the time that the road will carry construction traffic (the period of non-peak construction traffic). The impact of the additional traffic on these roads in terms of the transport assessment criteria is given in the next section.

### Table 2.1 Estimate of construction traffic on local roads

<table>
<thead>
<tr>
<th>Road link</th>
<th>Peak construction duration (weeks)</th>
<th>Peak construction lorry movements per day</th>
<th>Non-peak construction movements per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Western Road, Elgin Avenue, Chippenham Road, Harrow Road</td>
<td>10</td>
<td>220</td>
<td>43</td>
</tr>
<tr>
<td>Lorry route to and from Royal Oak Worksite East (each way)</td>
<td>24</td>
<td>60</td>
<td>32</td>
</tr>
<tr>
<td>Western Gyratory (one-way)</td>
<td>10</td>
<td>170</td>
<td>38</td>
</tr>
</tbody>
</table>

**Mitigation and temporary impacts**

2.25 As a result of the traffic generated by the Royal Oak worksite the assessment has highlighted the possibility of delay for drivers and vehicle passengers on the part of Chippenham Road that is the diversionary route for the banned turns at the junction of Harrow Road and Great Western Road. This is due to the increase in the number of lorries as a proportion of the existing lorry flow, which is comparatively low and in practice traffic delays are not expected.

2.26 The assessment has also highlighted the reduced amenity and increased risk to cyclists brought about by the additional lorry traffic in Chippenham Road; but this road is wide and for many years it has been the signed route for all vehicles, including lorries, that are banned from turning left or right at the junction of Great Western Road and Harrow Road. Additional reassurance can be given to cyclists by additional signs and road markings, so it is proposed that cycle lanes or similar features will be provided, if agreed by the highway authority, at the time that the works are carried out.

2.27 The formal assessment criteria do not highlight potential problems at the junction of Great Western Road/Harrow Road. But although, technically, there is spare capacity at the junction, some delays occur in Great Western Road as a result of vehicles stopping close to the traffic signals. So during the peak ten-week period during which construction traffic will be heaviest, the extra lorries will lead to some additional delays for other vehicles using this junction. Before the works start, a review will be undertaken with the highway authority and TfL to minimise any problems by optimising the signal timings to the volume and pattern of traffic current at the time.

2.28 The need for retaining the banned turns at the junction of Harrow Road and Great Western Road was reviewed, given that they will oblige construction traffic to use Elgin Avenue and Chippenham Road. It was found that because of the limited width in the junction, turning vehicles would cause significant delays to all vehicles. The review therefore supported maintaining the banned turns.

2.29 Towards the end of the construction period it will be necessary to impose a two-week blockade on trains entering and leaving Paddington station. Some services will terminate at Ealing Broadway and others will be diverted to Waterloo. For a week before and a week after the full blockade there will be reduced services into Paddington. During this four-week period passengers will experience significant delays and inconvenience.
Mitigation and permanent impacts

2.30 No significant permanent impacts are expected.

2.31 Only occasional maintenance access will be required at the Royal Oak Portal. There are no operational traffic impacts anticipated with this activity.

Table 2.2 Route Window C1 – Temporary impacts

<table>
<thead>
<tr>
<th>Works and potential impact</th>
<th>Traffic levels and delays to vehicle occupants</th>
<th>Committed mitigation</th>
<th>Residual impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT1d</td>
<td>The lorry traffic generated by the Royal Oak worksite (including the road transfers between the different parts of the site) will add around 220 vehicle movements to the junction of Great Western Road/Harrow Road during the peak ten week period during which construction traffic will be heaviest, of which, as a worst case, some 20 per cent are forecast to use the junction during the peak morning hour. The formal assessment criteria do not highlight this junction as the number of lorries is less than 30 per cent of the existing lorry and bus numbers. However although the junction is theoretically not overloaded, queues do occur because of parking and other problems so the additional lorries will result in some delays to other vehicles using this junction.</td>
<td>Significant</td>
<td>Review of traffic signal timings in consultation with the highway authority and Transport for London. These amendments do not form part of the works authorised by the Bill and so will require further consents. The nominated undertaker will work with the local authority and stakeholders to bring about the necessary changes. In line with the approach set out in Volume 8 an assessment of the impact of Crossrail has been carried out assuming that such measures are in place.</td>
</tr>
<tr>
<td>CT1a</td>
<td>Chippenham Road (between Elgin Avenue and Harrow Road) will experience a significant increase in lorry traffic for the ten week period during which construction traffic will be heaviest. The increase is defined as significant because the additional traffic occurs against a background of comparatively low lorry traffic in the baseline.</td>
<td>Significant</td>
<td>No mitigation required.</td>
</tr>
<tr>
<td>CT1d</td>
<td>Alfred Road would be a secondary access only. It already serves as an access to the businesses on the site.</td>
<td>Significant</td>
<td>Alfred Road is lightly used, but already acts as an access for existing users to parts the Royal Oak site. The additional traffic can be accommodated in the running lane between parked vehicles and so should not cause delays or a significant reduction in amenity.</td>
</tr>
</tbody>
</table>

Vulnerable road user delay and loss of amenity

<p>| CT5a | The lorry traffic generated by the Royal Oak worksite may result in loss of amenity for cyclists on Chippenham Road (between Elgin Avenue and Harrow Road) but should cause few delays for these road users. | Significant | Chippenham Road is a wide road already used as a formal diversion route for traffic banned from making certain manoeuvres at the junction of Harrow Road and Great Western Road. Cyclists should not be seriously affected by the additional lorry numbers but consultation with the highway authority on the need for the provision of cycle lanes, possibly mandatory and/or segregated, and associated adjustments to parking facilities will be undertaken before works start. These amendments do not form part of the works authorised by the Bill and so will require further consents. The nominated undertaker will work with the local authority and stakeholders to bring about the necessary changes. | Cyclists provided with protection appropriate to the circumstances. | Not significant |</p>
<table>
<thead>
<tr>
<th>Public transport delay</th>
<th>Significance</th>
<th>Committed mitigation</th>
<th>Residual impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT2d</td>
<td>Significant</td>
<td>This could be mitigated by the measures for general traffic referred to above. There is no scope for specific bus priority measures.</td>
<td>Delays to public transport users could be minimised by re-timings resulting from traffic signal review, subject to the agreement of the Highways Authority and Transport for London</td>
</tr>
</tbody>
</table>

Lorries travelling to and from the Royal Oak worksite may lead to some increases in delay for bus users and operators on routes that use the junction of Harrow Road and Great Western Road. However the lorry numbers do not formally trigger the assessment criterion (see ‘Traffic Levels...’ above). The current delays are irregular, and relate to the frontage activities.

Significant This could be mitigated by the measures for general traffic referred to above. There is no scope for specific bus priority measures.显著

Delays to public transport users could be minimised by re-timings resulting from traffic signal review, subject to the agreement of the Highways Authority and Transport for London.

Significant