



Royal Oak Portal (1)

Crossrail's tunnels through central London will surface near Royal Oak. The tracks will rise to join the existing railway at ground level before continuing west.

A temporary worksite will be located wholly within the railway corridor and enclosed by hoardings and safety barriers during the construction period. When the portal works are complete, excavated material and tunnel linings will be transported by rail rather than road.



New portal – Architect's impression



Existing area



Royal Oak Portal (2)

Traffic and Access

The worksite will be accessed via an east and a west entrance. Access to the west entrance will be via Harrow Road, Chippenham Road, Elgin Avenue and Great Western Road. Lorries will use the existing ramp off the Great Western Road (A420T) to enter the site. Access to via the east entrance will be from Harrow Road under Westbourne Bridge.

A new access road will be constructed to the Paddington Central development to enable the Westbourne Bridge shaft to be maintained. Parking space for maintenance and emergency vehicles will be provided between the ventilation terminal and the shaft.

Westbourne Park Reversing Facility

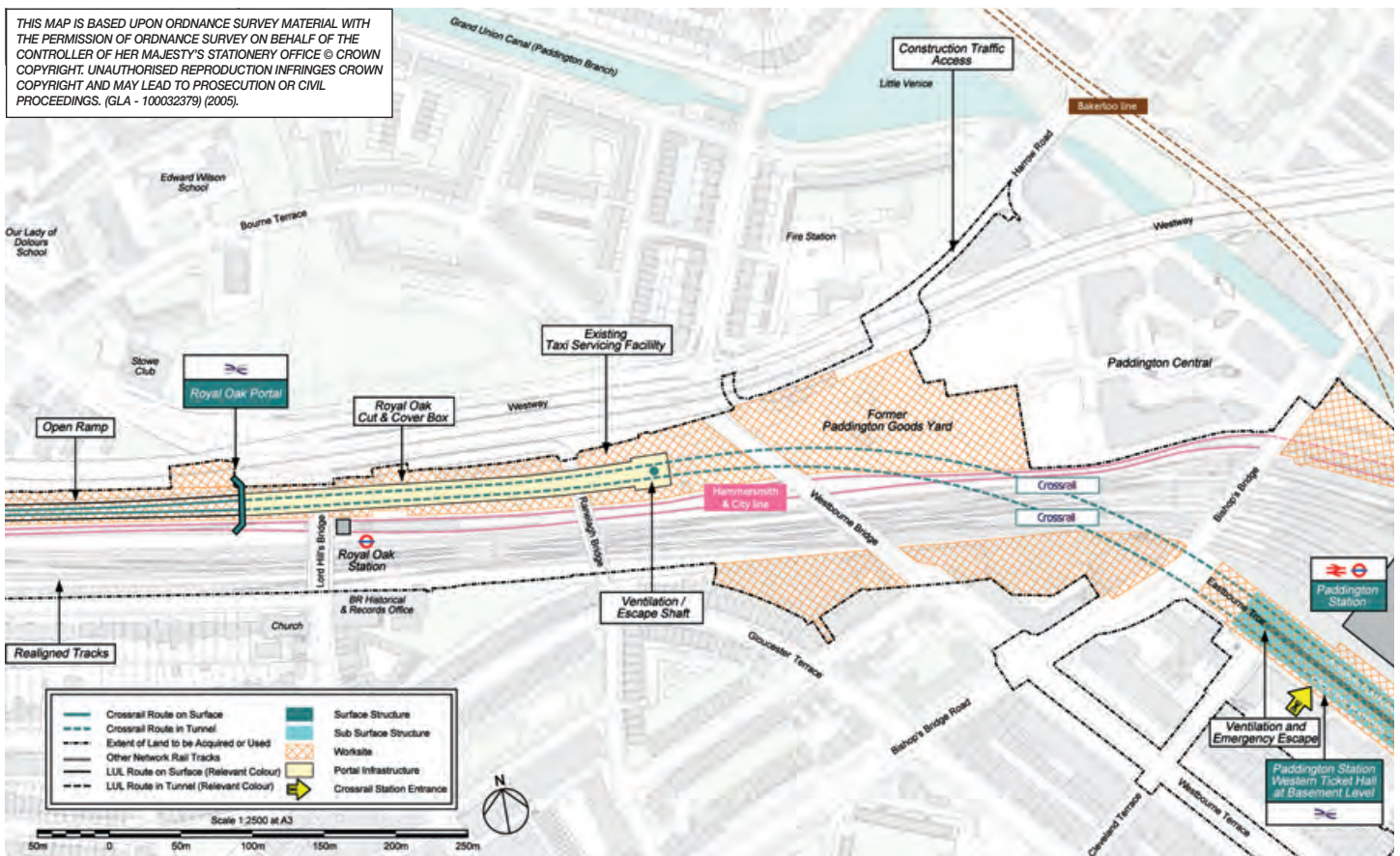
At the start of Crossrail services, westbound trains will terminate at Paddington.

As there is insufficient space to provide reversing facilities at Paddington, trains would continue empty to Westbourne Park where a purpose built reversing facility is proposed.

During the construction of the reversing facility, provision would be made for future through services towards Heathrow and Maidenhead.

Taxi Area

The existing buildings on the taxi area will be demolished to make way for the portal worksite.





Royal Oak Portal (3)

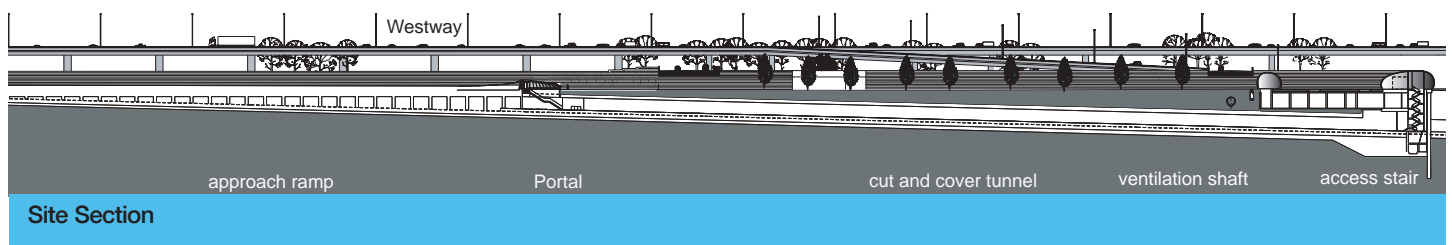
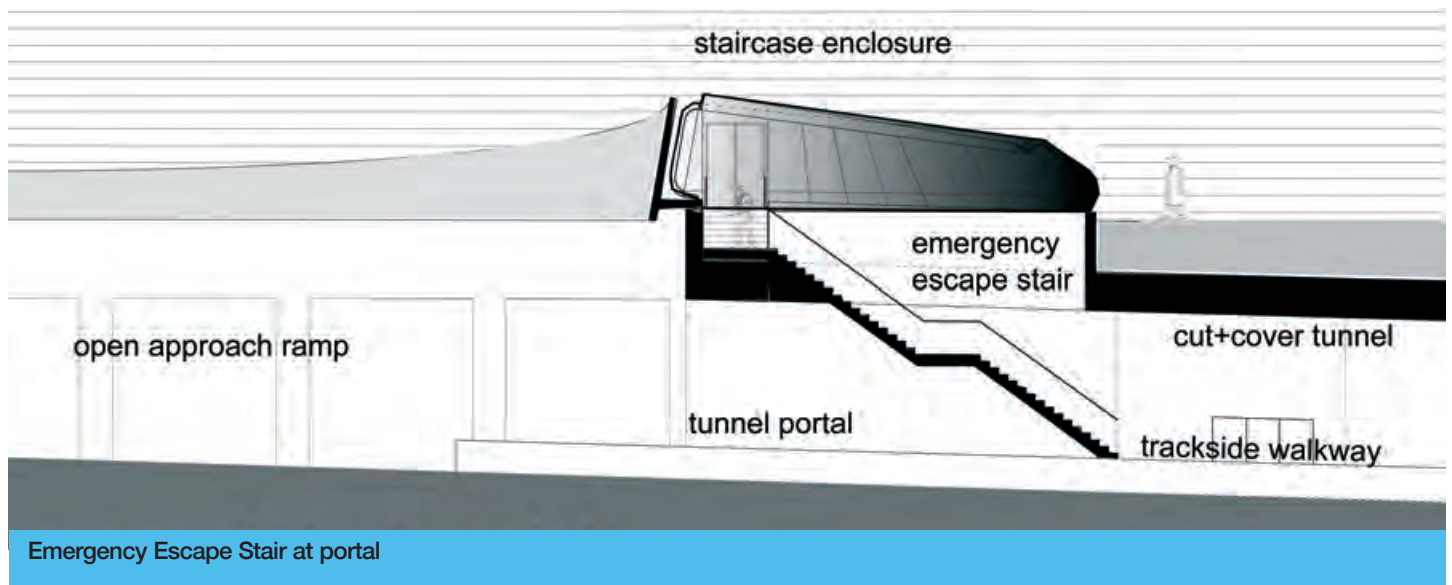
The Royal Oak/Westbourne Bridge Portal will consist of three elements.

- A ramp to take the Crossrail tracks down from ground level to the tunnel portal
- A 270 metre long cut-and-cover box section
- A shaft at the tunnel entrance

On completion of the tunnelling, the shaft will be fitted out as a ventilation and emergency intervention shaft in accordance with London Fire and Emergency Planning Authority requirements.

Emergency escape stairs will also be provided at the tunnel portal.

When tunnelling commences, it is anticipated that the excavated material will be brought out of the shaft by hoist and transferred by road, or possibly conveyor, to the railhead to be loaded onto trains for onward disposal.





Royal Oak Portal (4)

The shallow cut-and-cover tunnels will occupy the space between Lord Hills Bridge and Ranelagh Bridge north of Royal Oak Station. A road to the escape stairs at the tunnel portal will provide access to this space. Following completion of work the area will be landscaped.

The surface structures associated with the ventilation outlet and the emergency access stairs will be constructed in the area between Ranelagh Bridge and Westbourne Bridge and accessed from Harrow Road under Westbourne Bridge. The lightweight metal buildings are designed as sculptural objects to be seen from passing trains on the approach to Paddington Station and from overlooking properties to the south.



Projection of new site



Existing Site



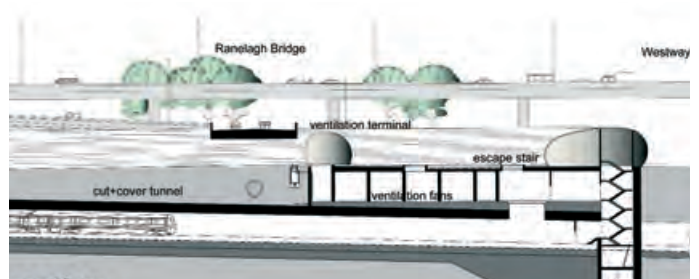
Existing Site



Cross Section



Projection of new site



Section of Portal



Paddington (1)

Building Crossrail Paddington Station

Paddington Station is a Grade I listed building. The wall and the railings on Eastbourne Terrace and the departures road canopy (which form part of the listed structure) will be removed for construction of the Crossrail Ticket Hall. The railings will be carefully dismantled and carefully examined to see how the railings will be reused. The canopy would be dismantled.

Crossrail recognises the architectural and historic importance of the existing Main line station and will create a design that is appropriate to the location.

The main worksite will be on Eastbourne Terrace, including the departures road. A box structure for the station will be excavated from within this worksite.

Site offices, storage and delivery areas will be established within the car park behind the Great Western Railway parcels office, off Bishops Bridge Road. Smaller worksites would be located during the construction period at Praed Street and on the London Underground District and Circle line platforms.

Traffic and Access

Two-way traffic and access to buildings in Eastbourne Terrace will be maintained throughout construction. Eastbourne Terrace will be reduced to one lane of traffic in each direction and subject to a number of phased diversions. Praed Street will have short-term closures at its intersection with Eastbourne Terrace. Vehicle access to the properties on the southern side of Eastbourne Terrace will be from Eastbourne Mews or Chilworth Mews.

New pedestrian links will be provided between the existing Main line station, across Eastbourne Terrace, through to a "light spine". The departures road would be reinstated, accommodating taxis and general traffic as required by the long term proposals for the area.

Taxis and Buses

To enable the station to be built, it will be necessary to temporarily relocate taxis currently using Eastbourne Terrace Departures Road to the site of a parcels depot to the north of the station. Buses will need to be relocated during the period of the Crossrail works. Crossrail will continue to develop proposals in consultation with Westminster City Council, Network Rail, the local community and other stakeholders.



Paddington (2)

Ticket Halls

The Crossrail station will be located in a large box beneath Eastbourne Terrace. It will contain two ticket line halls with links to the existing station. A predominantly glazed “light spine” will run the length of the box allowing natural light into the station. Escalators and lifts will provide access to the Crossrail platforms.

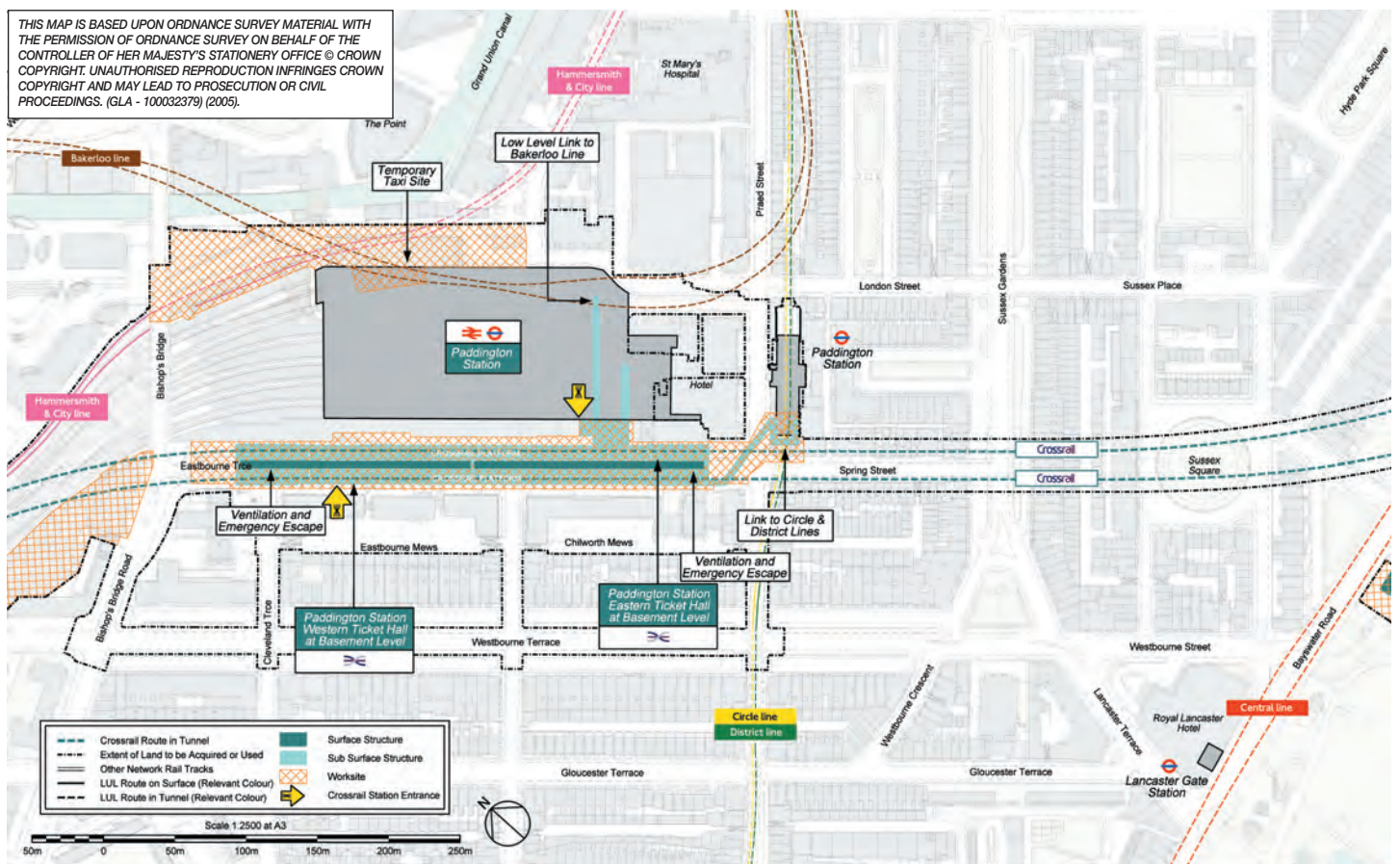
Interchange with the Bakerloo line will be provided by a new passageway between the Crossrail and Bakerloo line platforms. Access to this passage will be provided by a staircase at the Bakerloo line end.

Interchange with the District & Circle line will be provided from the eastern end of the Crossrail station by a short passage at

basement level. This passage will provide level access to the northbound District & Circle lines, with access to the southbound District and Circle lines from a new footbridge and lifts.

Provision will be made to enable future interchange with the Hammersmith and City line to be provided from the Crossrail western ticket hall.

Ventilation will be incorporated within the station box at both ends of Eastbourne Terrace. The station ventilation will provide draught relief and assist in maintaining passenger comfort within the station.



Paddington Station



Hyde Park Shaft (1)

To ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided at no more than 1 kilometre apart.

Hyde Park Shaft will be used for ventilation as well as emergency intervention.

The shaft will be located between the Crossrail tunnels where they pass beneath North Carriage Drive. This location will reduce disturbance to the park and the nearby residential neighbourhood.

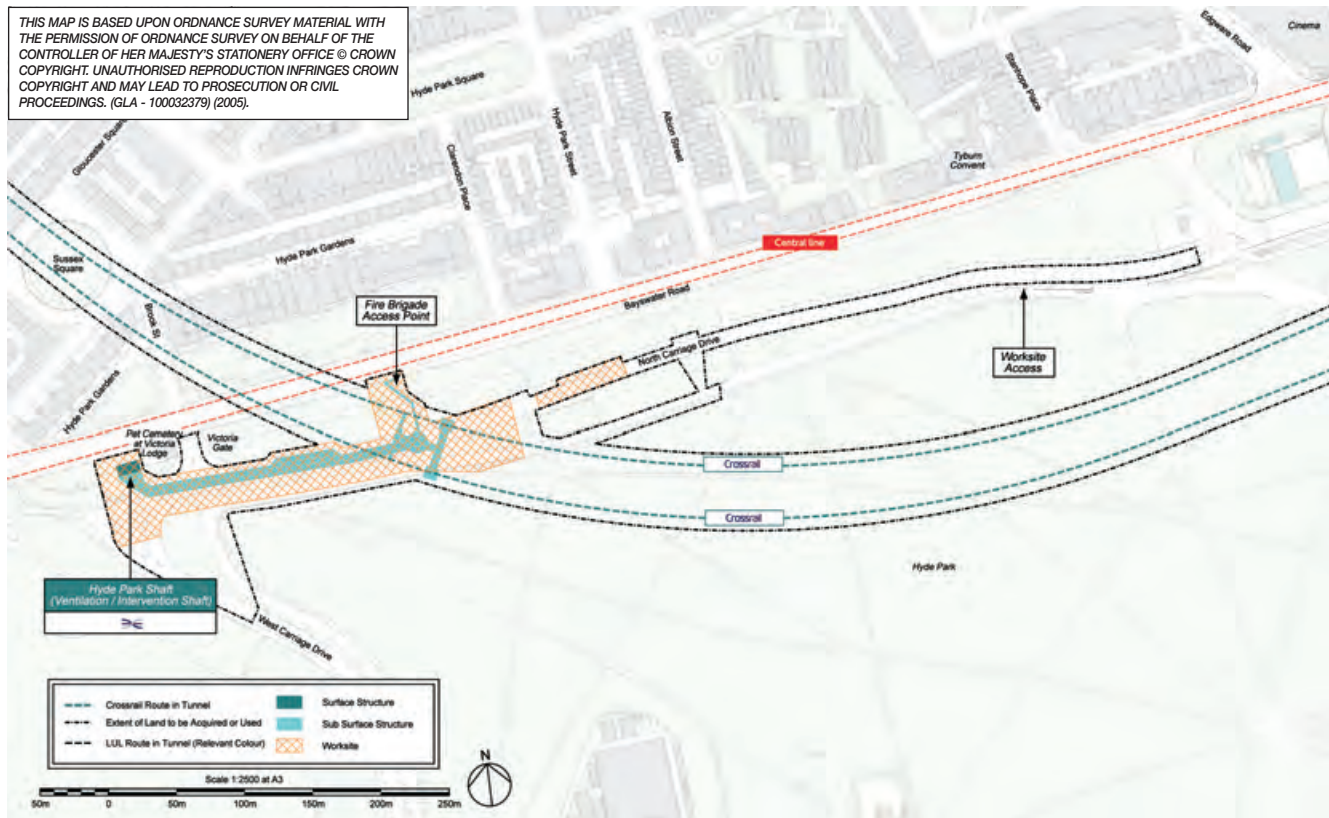
The shaft will be connected to a ventilation outlet by a duct under North Carriage Drive. The ventilation outlet will be at ground level in a duct behind the Pet Cemetery at Victoria Lodge. It will be protected by a grille, fence and shallow ditch to prevent unauthorised access.



Existing Site



Duct and Shaft Section Looking North



Hyde Park Shaft



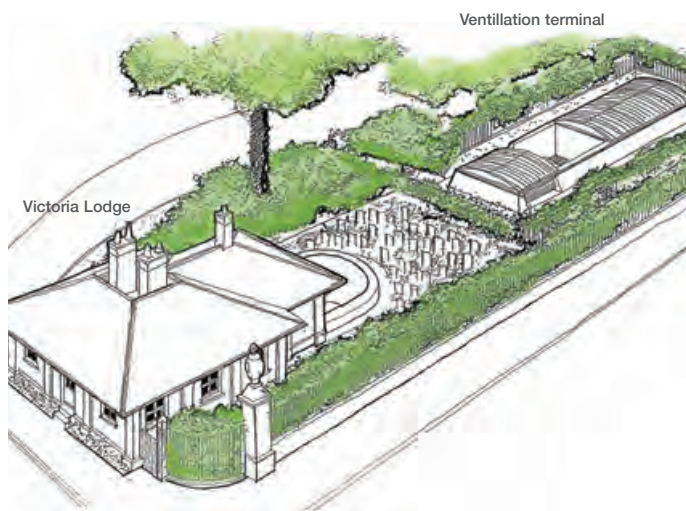
Hyde Park Shaft (2)

Shaft Design

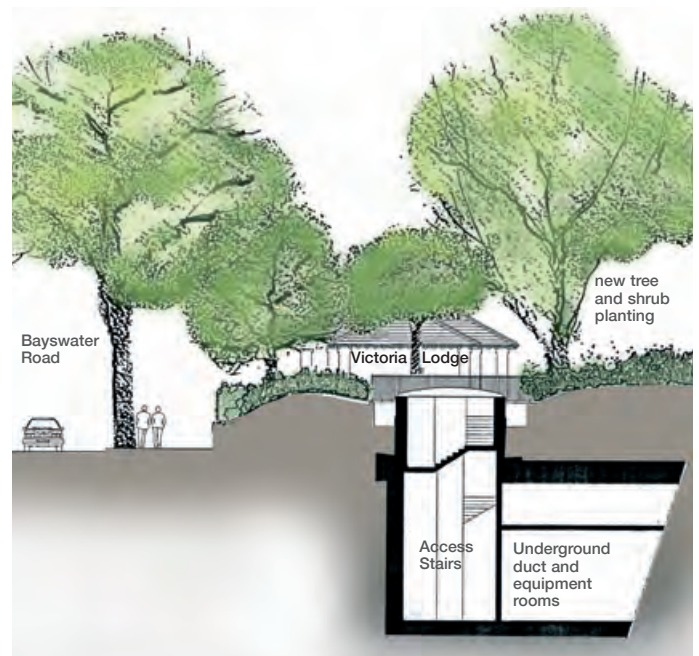
An access hatch beside Bayswater Road and a short subway will give 24-hour access for emergency services to the staircase leading to the tunnels. The hatch will be located behind the railings on Bayswater Road.

It will be necessary for the trees in the immediate vicinity of the shaft site to be removed. The reinstatement of landscaping and trees affected by the proposals is being discussed with the Royal Parks.

The shaft will be within the Royal Park, designated as a Grade I Historic Park and Garden and a Site of Metropolitan Nature Conservation Importance, and in the vicinity of the listed Gate Lodge buildings. The shaft design has sought to limit any intrusion upon the landscape.



Artist's Impression – Hyde Park Shaft



Hyde Park Shaft Section



Hyde Park Shaft Section



Hyde Park Shaft (3)

Shaft Design

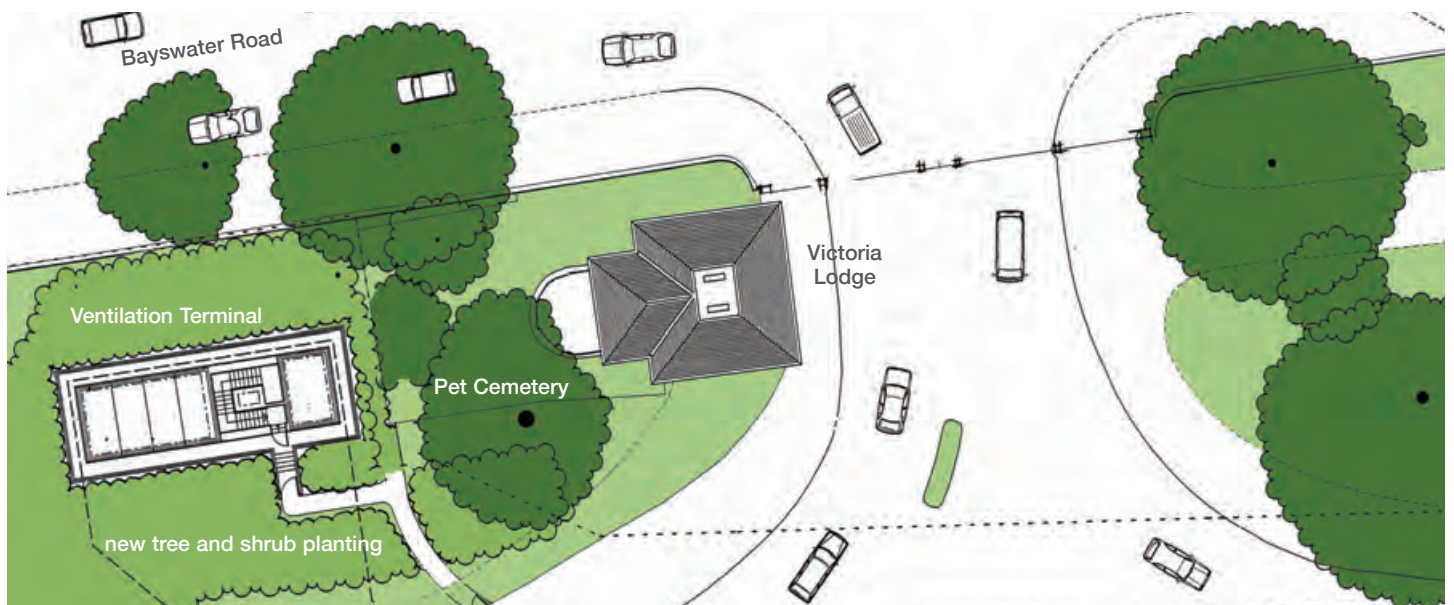
Traffic and Access

Part of North Carriage Drive will be closed and used for lorry holding during the works. Access via Victoria Gate to West Carriage Drive will be maintained during the works.

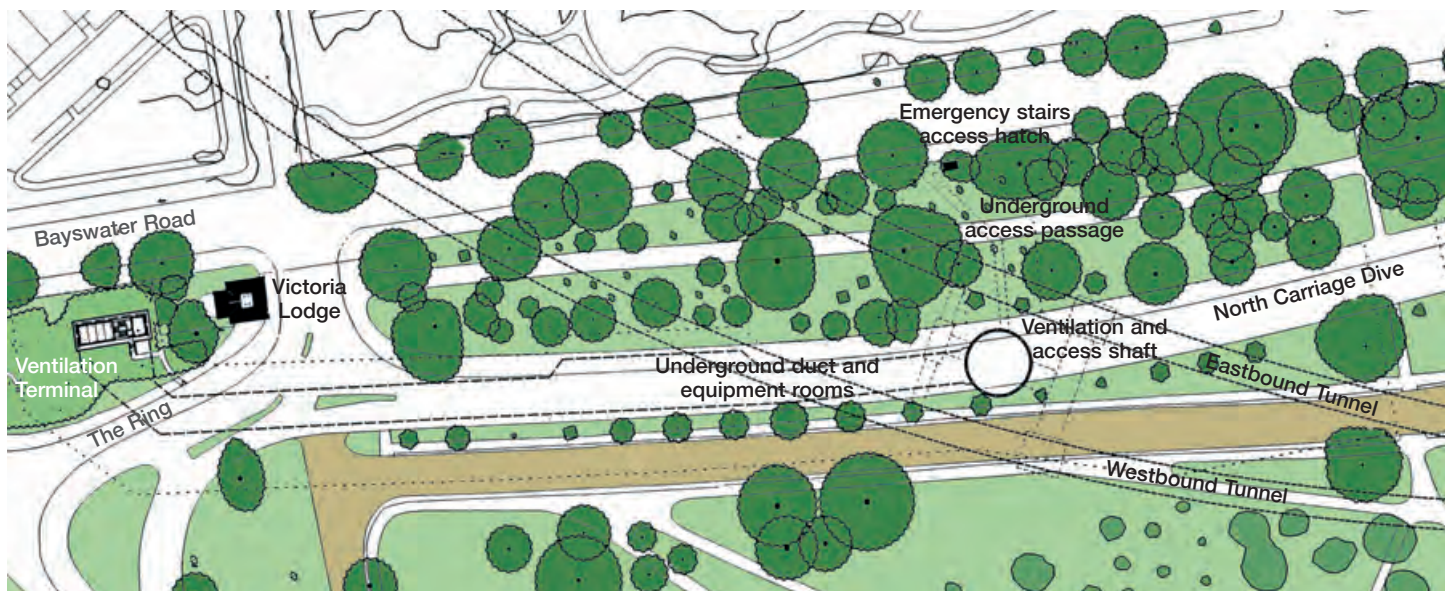
Part of North Ride will be used as a worksite. An alternative route for horse riders currently

using North Ride and alternative safe pedestrian routes will be established.

The excavation for the cut and cover tunnels across West Carriage Drive will reduce the width of the road close to its junction with Bayswater Road. This is expected to result in increased traffic delays and queuing.



Detailed Site Plan at Victoria Lodge



Plan View of Shaft



Park Lane Shaft (1)

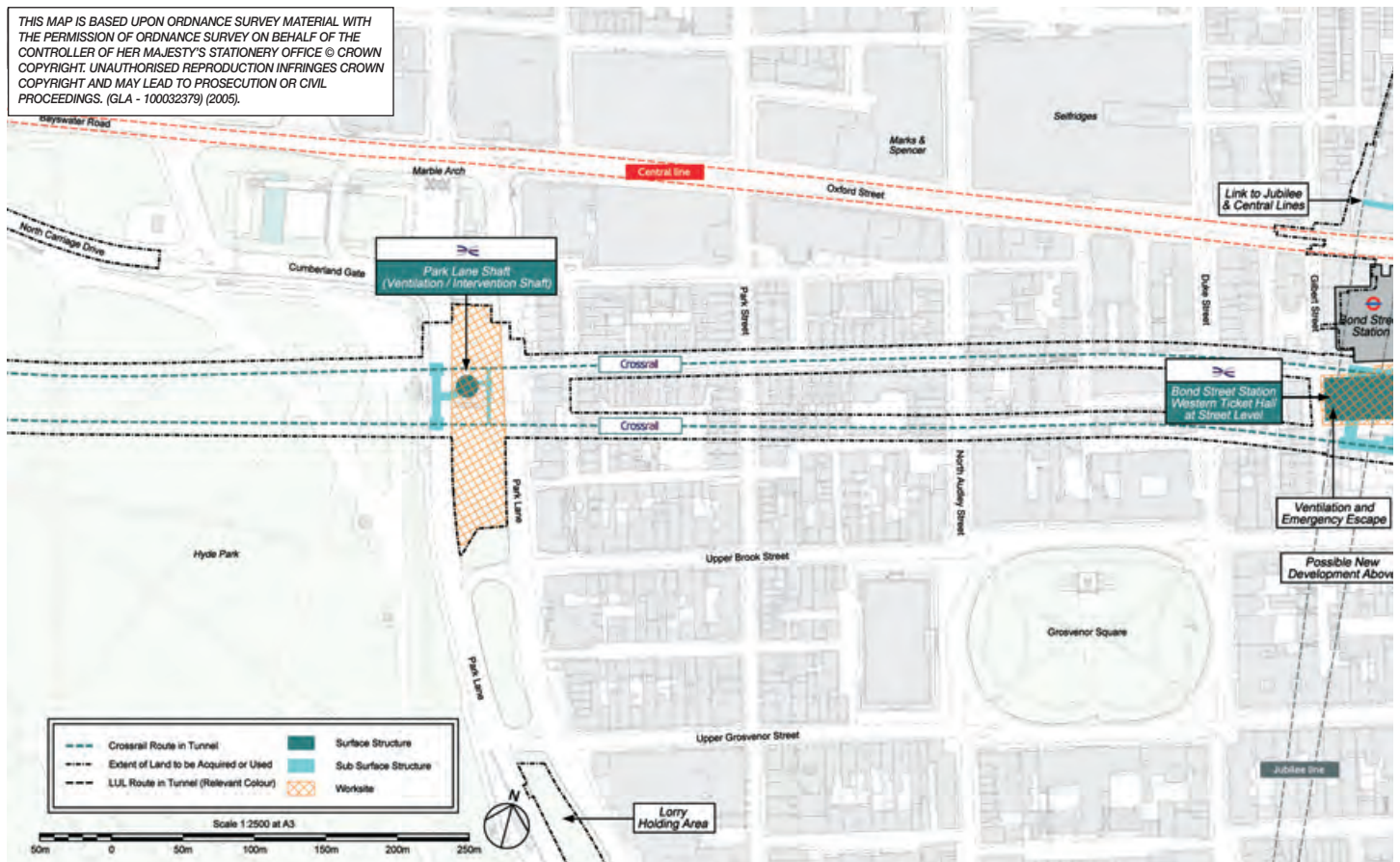
To ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided at no more than 1 kilometre apart.

The shaft will be located in the central reservation of Park Lane and will be used for ventilation as well as emergency intervention.

Operating equipment will be concealed in basement rooms beneath the ventilation terminal. The basement is planned to avoid higher quality trees, which will be protected during construction. The new landscape will include a hard standing area, new benches and additional planting.



Existing Site



Park Lane Shaft



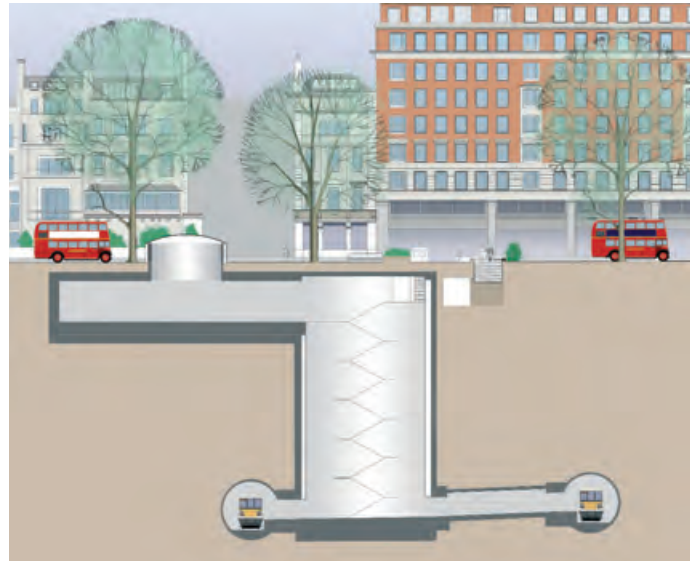
Park Lane Shaft (2)

Shaft Design

The ventilation outlet will be stone clad to match buildings in the surrounding area. Air intake and outlet would be through a bronze grilled roof. It is possible that one tree could be lost as a result of the proposals. Crossrail will consult Royal Parks on any appropriate landscaping and replanting.

Traffic and Access

Work sites will be located in the central reservation during construction. Following construction, vehicular access for maintenance would be from the southbound carriageway.



Park Lane Shaft – Section



Park Lane Shaft – Projection



Bond Street (1)

Building Crossrail Bond Street Station

Two main worksites are proposed.

Davies Street Ticket Hall

The western worksite will be within the block bounded by Davies Street, St Anselm's Place, Gilbert Street and Weighhouse Street and would require demolition of the existing building.

Hanover Square Ticket Hall

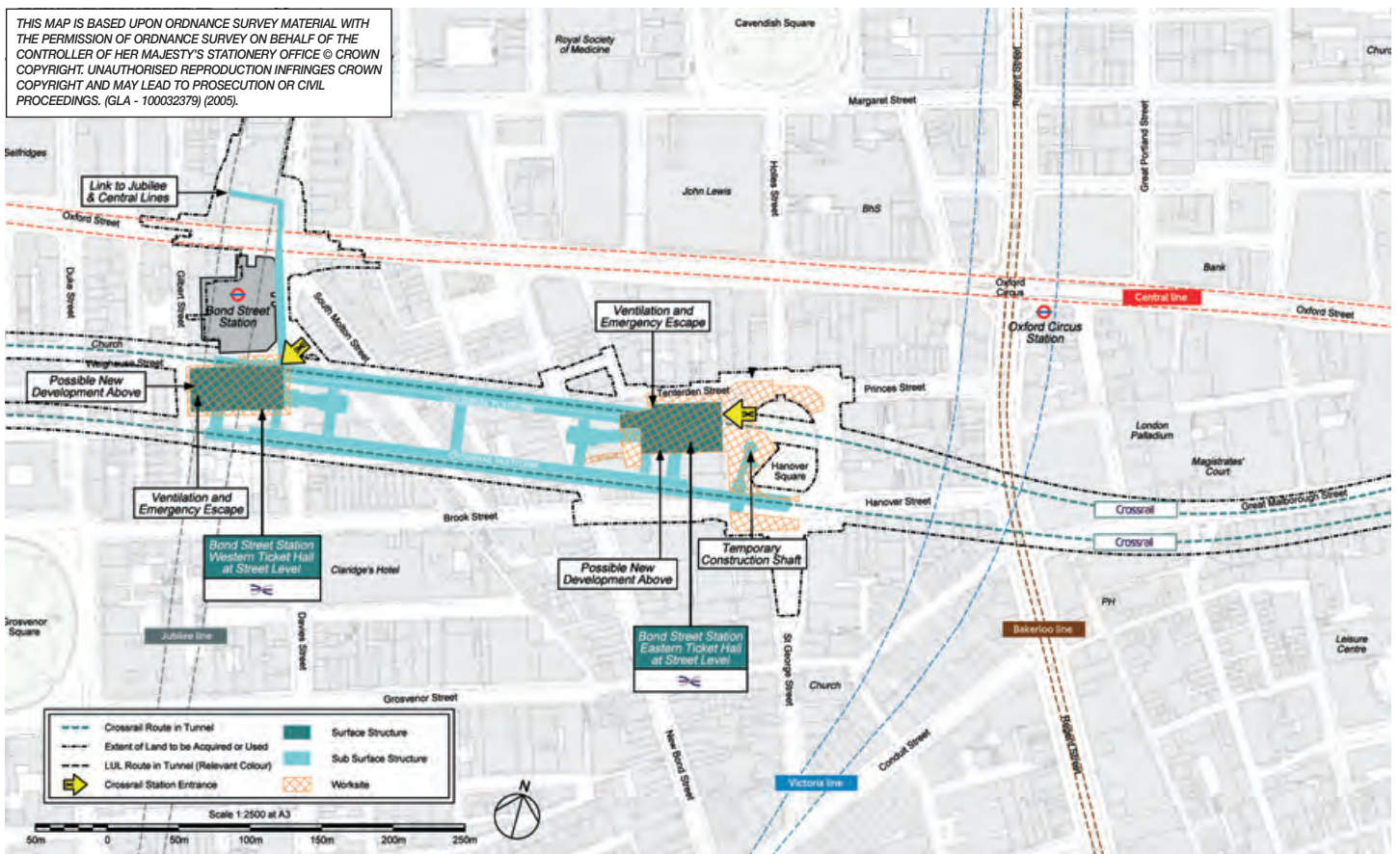
The eastern worksite will be at 18/19 Hanover Square and will require the demolition of existing buildings. This worksite will extend over the western side of Hanover Square and partly into the Gardens. Two temporary construction shafts will be located in a part of the Gardens to construct the station tunnels.

Site accommodation (for storage and offices) will be within the Hanover Square worksite and will extend into and over the road for the duration of the works.

Hanover Square Gardens is a protected London Square. It is currently anticipated that construction work in the Gardens will result in the loss of 3 mature trees. Following completion of the works, the Gardens will be reinstated and the trees replaced.



Hanover Square at present



Crossrail - Bond Street Station



Bond Street (2)

Ticket Halls

Crossrail Bond Street station will be located approximately 100 metres south of Oxford Street. It will provide two new street level ticket halls.

Lift access from the street to platforms will be provided at both ends.

The western ticket hall will occupy the block bounded by Davies Street, St Anselms Place, Gilbert Street and Weighhouse Street with the station entrance on the corner of Davies Street and Weighhouse Street.

From the Davies Street ticket hall, two flights of three escalators will provide access to the Crossrail platforms via an intermediate concourse.

Provision will be made for a low-level connection between Crossrail and the London Underground Jubilee and Central lines.

The eastern ticket hall will occupy the site of 18/19 Hanover Square. From there, one flight of escalators will provide access to the Crossrail platforms.

At the Davies Street ticket hall, ventilation systems will be incorporated within the west side of the station building adjacent to Gilbert Street. At the Hanover Square ticket hall, ventilation systems will be incorporated at the western end of the station box just south of Tenterden Street. The station ventilation will provide draught relief and assist in maintaining passenger comfort within the station.



Bond Street (3)

Traffic and Access

It will be necessary to restrict access to Davies Street, Weighhouse Street, Tenterden Street, the north and west sides of Hanover Square and the north side of Brook Street during construction.

Davies Street Ticket Hall

Construction traffic will arrive from Park Lane, via Grosvenor Square, west along Brook Street and north along Davies Street. Traffic will exit the proposed ticket hall site from its north side, travelling along Weighhouse Street to Duke Street and back to Park Lane via Grosvenor Square.

Weighhouse Street south of the junction will operate two-way. St Anselms Place will be closed at its junction with Gilbert Street. Lorry holding areas will be located at Baker Street and Park Crescent. Crossrail will maintain access to business and residential properties during construction.

Hanover Square Ticket Hall

Construction traffic for the Hanover Square Ticket Hall will arrive from Oxford Street, south along New Bond Street and east along Brook Street into Hanover Square. Traffic will exit Hanover Square via Harewood Place, cross Oxford Street to Cavendish Square, before travelling north along Portland Place. Tenterden Street will be closed at the junction with Hanover Square. Access to the buildings on the north side of Tenterden Street will be maintained.

The western side of Hanover Square Gardens will be closed for a period while the works are undertaken.

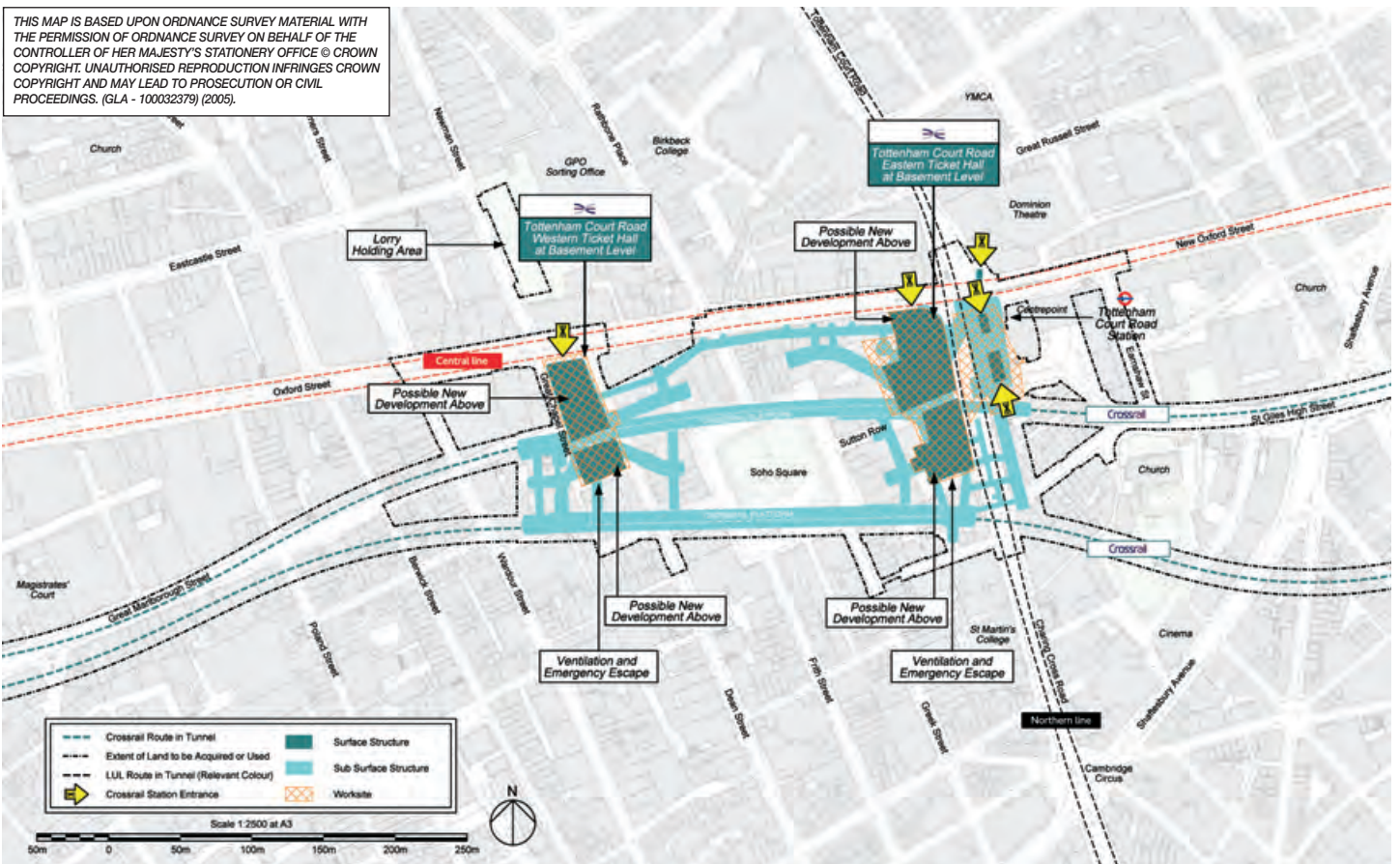
Some temporary road closures will operate during the construction period at both worksites. The Davies Street, Weighhouse Street, St Anselms Place and Gilbert Street will be temporarily closed. The Hanover Square worksite, section of Tenterden Street and Hanover Square will be temporarily closed.



Tottenham Court Road (1)

Crossrail Tottenham Court Road station would be located on the south side of Oxford Street, between Dean Street and Centre Point providing a key interchange with London Underground. Two ticket halls would be provided at Dean Street and Charing Cross Road.

Sites at Goslett Yard and north of Sutton Row will be used to construct underground circulation areas, ventilation and emergency intervention facilities. They could subsequently be the site of new commercial developments.



Crossrail Tottenham Court Road Station



Tottenham Court Road (2)

Ticket Halls

Building Crossrail Tottenham Court Road Station

There will be two main worksites.

The western site will be the block bounded by Oxford Street, Dean Street, Diadem Court and Great Chapel Street. For the duration of the station construction, the junction with Oxford Street will have traffic control to ensure lorry access is safe and separated from traffic on Oxford Street. Fareham Street will be closed during the construction of the ticket hall, as the road falls within the worksite boundaries.

The Royal Mail Newman Street car park, north of Oxford Street, will provide site accommodation, storage and lorry holding facilities for the construction of the Dean Street Ticket Hall.

Buildings in Dean Street will be demolished to build the ventilation shaft adjacent to the western Ticket Hall.

The eastern worksites will be in the area bordered by Oxford Street, Charing Cross Road, Goslett Yard and Falconberg Court for the construction of two new entrances and a ticket hall. Sutton Row will be closed for the duration of the works and Falconberg Mews will be closed for part of the construction period for the ticket hall. Andrew Borde Street will be closed and used for the diversion of traffic. On completion, this area will be pedestrianised.

Traffic and Access

Crossrail are consulting local authorities on any proposed traffic routes for construction purposes. Footway closures and localised road narrowing will be necessary around both worksites. Temporary footways will be provided around the perimeter of the site where necessary.

Construction traffic for the western ticket hall will arrive from the Newman Street holding

area, enter the site from Great Chapel Street and exit from Dean Street. Lorries will reach the Newman Street holding area from Mortimer Street via Berner Street and Eastcastle Street. To facilitate the access, the section of Newman Street between Eastcastle Street and Oxford Street will be changed to 2-way operation during construction. Great Chapel Street will revert to southbound operation only. Lorries will exit the site from Dean Street via Tottenham Court Road, to reach Tottenham Court Road.

Construction traffic for the eastern ticket hall will access the site via Bloomsbury Street, St Giles High Street and Andrew Borde street. The main lorry holding area will be at Andrew Borde Street.

Owing to the permanent closure of Andrew Borde Street, a traffic scheme has been designed to accommodate the displaced vehicles. This will include the opening of St Giles High Street to general traffic between Andrew Borde Street and New Oxford Street. At the junction of Oxford Street, Tottenham Court Road, New Oxford Street and Charing Cross Road, the 3 turns that are currently banned will be reinstated.



Charing Cross Road Ticket Hall - subway connection



Fisher Street Shaft (1)

To ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided at no more than 1 kilometre apart.

The shaft will provide ventilation as well as emergency intervention to the Crossrail tunnels.

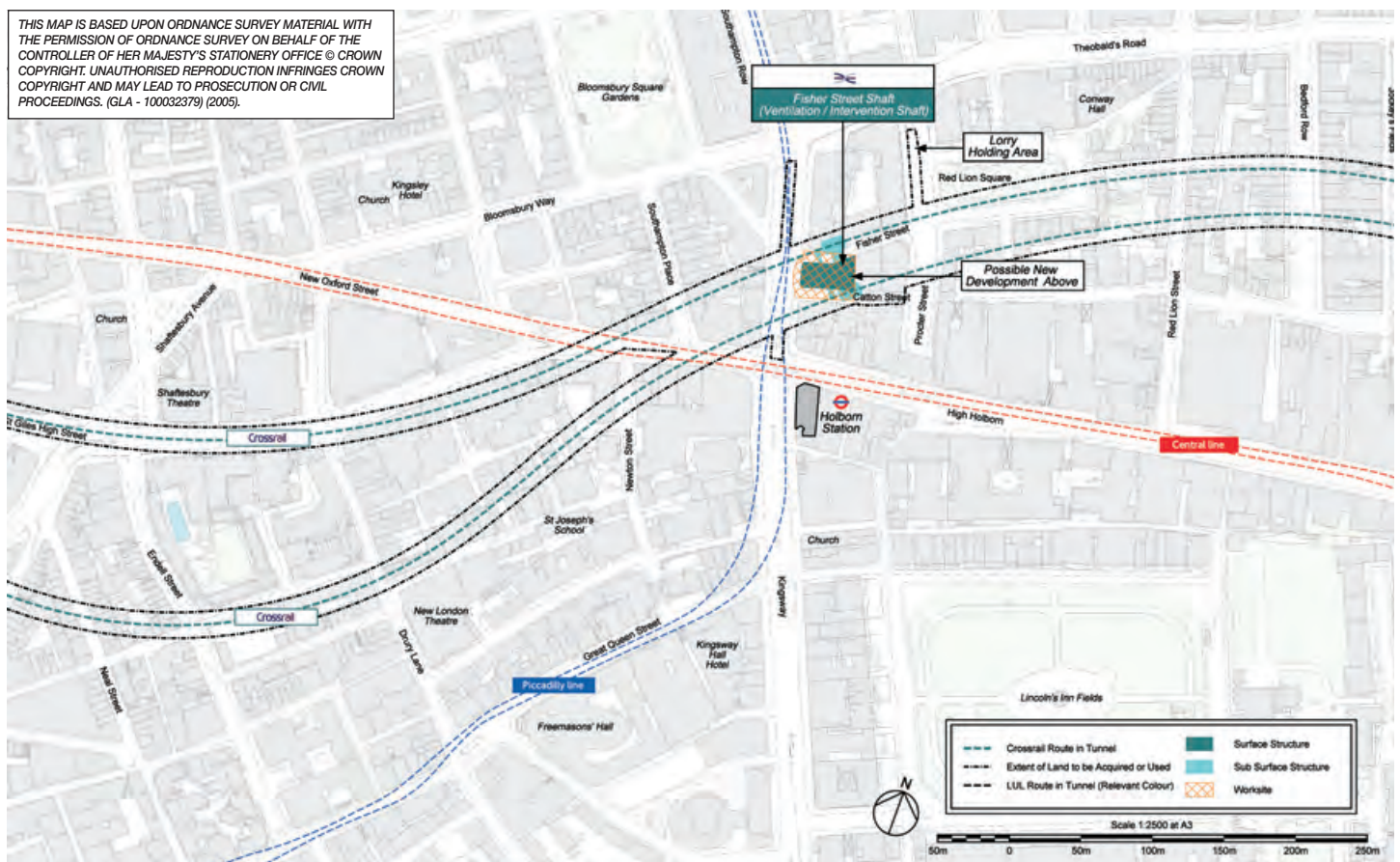
The proposed location for this shaft will be in the block between Southampton Row, Fisher Street, Catton Street up to the adjacent electricity sub-station.

The internal access stairs will provide access for emergency services in the event of an incident in the tunnels.

Access for emergency services and maintenance will be from Fisher Street, with provision for a two-van loading bay to reduce disruption during maintenance of the ventilation fans and plant.

The Fisher Street shaft will not be used for the evacuation of passengers. However, there will be provision for assisted evacuation of disabled or injured passengers by stretcher from track level to street level.

The tunnel boring machines from the tunnelling from Hanbury Street will be dismantled and removed from this site by low loader.



Fisher Street Shaft



Fisher Street Shaft (2)

The façade of 8-10 Southampton Row, a Grade II listed building, will be retained. A future development could be constructed behind the façade. Measures will be taken to protect the Kingsway Tram Tunnel, a Grade II listed structure, adjacent to the worksite for the Fisher Street Vent Shaft.

Traffic and Access

Crossrail is consulting local authorities on proposed traffic routes. Lorries will access the site from Southampton Row using a lorry holding area on Proctor Street.

Temporary road and pavement closures on the western section of Catton Street and Fisher Street adjacent to the site will be required. Both roads will temporarily become two-way at their eastern ends to allow access to car parks on Catton Street and Fisher Street. The lorries that will be used to remove the tunnel boring machines will be parked in either Fisher Street or Catton Street for the period over which the removal operation takes place. A holding area for lorries that will not directly enter the site will be located on Drake Street. These lorries will reach the site via High Holborn, Southampton Place and Vernon Place. There is not expected to be any significant impacts on road users, pedestrians or cyclists during the period when these access routes for construction are in place.



The Fisher Street Shaft will be located behind the existing Southampton Row Frontage



Farringdon (1)

Crossrail's Farringdon station will be located between Farringdon Road and Charterhouse Square, to the south of the existing London Underground Farringdon station. Two Crossrail ticket halls will be provided.

The location of the Crossrail ticket hall at the western end of the station will be provided at the junction of Farringdon Road and Cowcross Street, on the current site of Cardinal House.

The ticket hall will be at street level and will provide interchange between Crossrail and the proposed Thameslink 2000. A bank of three escalators will provide access to the Crossrail platforms at the western end. Lift access at street level will also be provided.

It is anticipated that the area between London Underground and Crossrail station entrances at Cowcross Street will be pedestrianised.

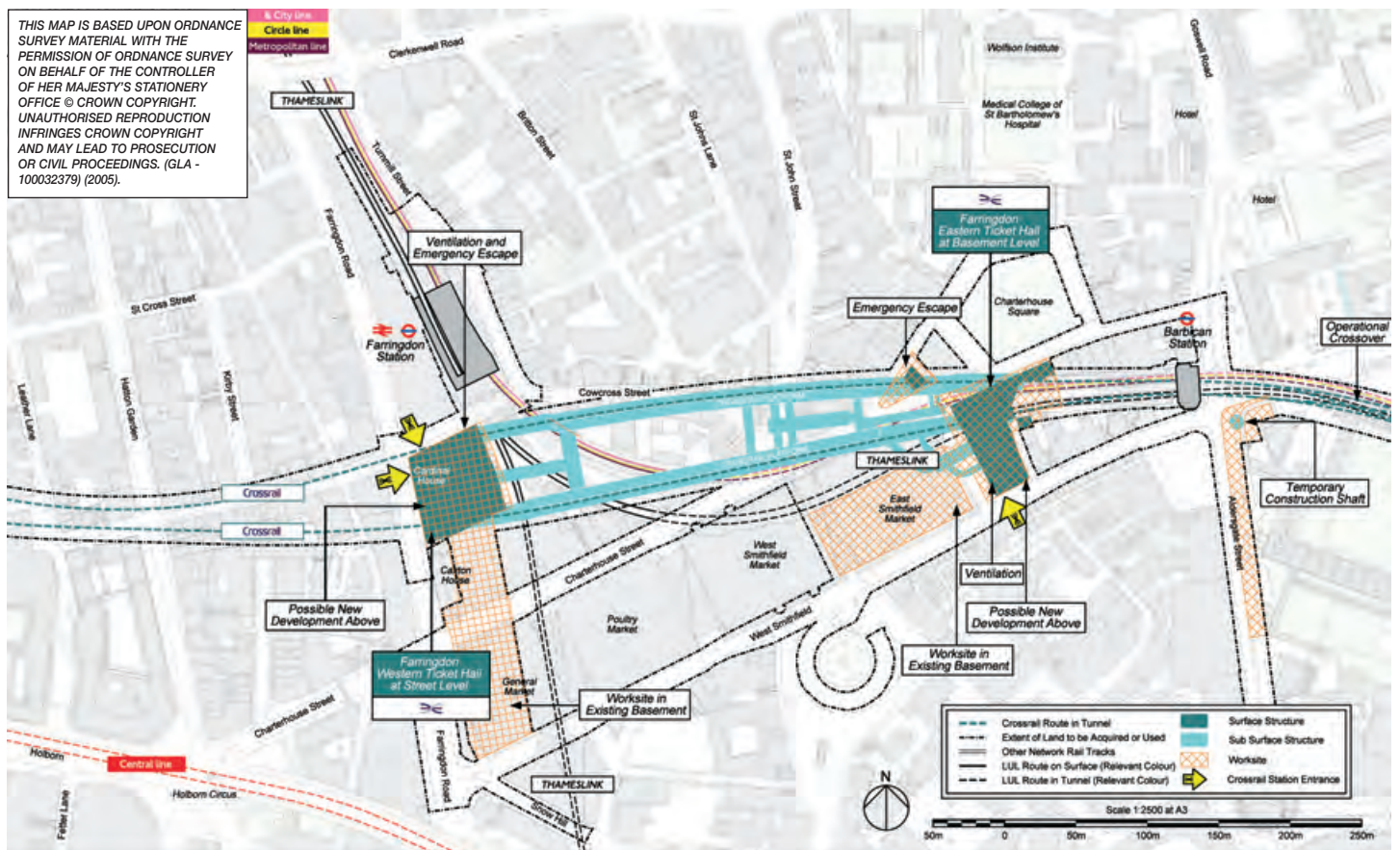
The eastern ticket hall will be situated at street level on the block bounded by Charterhouse Street, Hayne Street, Long Lane and Lindsey Street (east of Smithfield Market) and will provide interchange with the Barbican station. Three banks of three escalators and lifts will provide access to the Crossrail platforms at the eastern end.

Two 210 metre long platforms will be constructed between the east and west ticket halls to accommodate operation of 10 car trains. Capacity will be provided for the platforms to be extended to 245 metres to enable possible future operation of 12 car trains.

At the western ticket hall, station ventilation systems will be incorporated into the ticket hall structure. At the eastern ticket hall, station ventilation systems will be incorporated within a new structure on Hayne Street.

The station ventilation will provide draught relief and assist in maintaining passenger comfort within the station.

It is anticipated Crossrail Farringdon will take approximately four years to build.



Farringdon Station Development



Farringdon (2)

Building Crossrail Farringdon Station

Two main worksites will be required. The western worksite will be on the site of the proposed ticket hall at Farringdon Road, with Cardinal House being demolished.

The eastern worksite will be on the land bounded by Lindsey Street, Charterhouse Square and Hayne Street with the buildings currently on this site being demolished.

The basement mezzanine floor which forms part of the curtilage of East Market will be demolished in order to provide sufficient headroom to construct the escalators for the east ticket hall.

The Thameslink services to Moorgate will not be affected by the Crossrail proposals.

A site between Fox and Knot Street and Charterhouse Street will provide emergency escape provision.

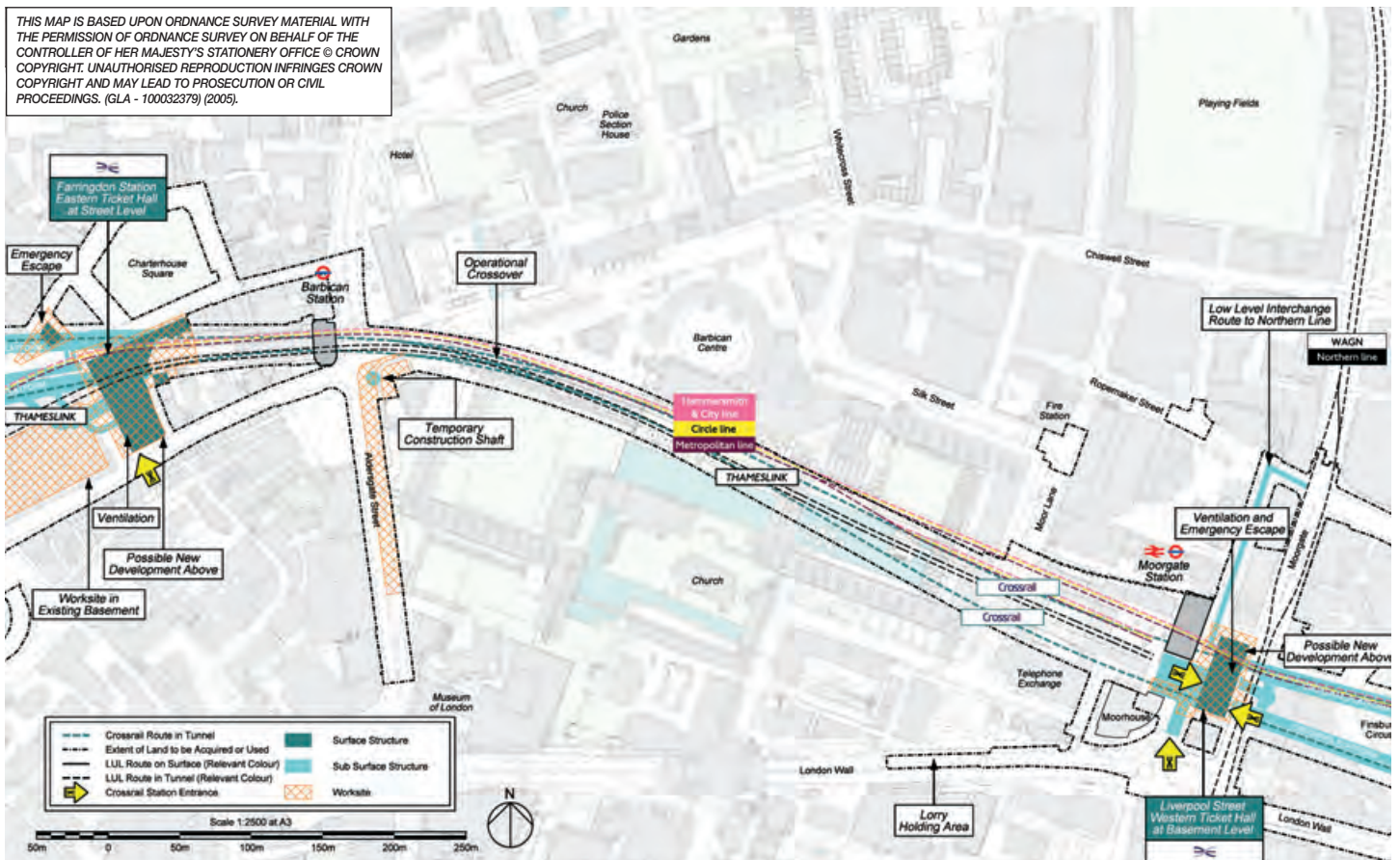
A 150m long railway crossover will be constructed from a site at Aldersgate Street. The crossover will enable train services to continue running in the event of service disruption or during emergencies.

It is anticipated that the police control point in Aldersgate Street will be relocated and revised temporary traffic management measures put in place. The construction of the crossover will require a temporary construction shaft to be constructed in Aldersgate Street.

Traffic and Access

It is anticipated that construction traffic access will be from the junction of Snow Hill and West Smithfield, through General Market (Snow Hill), Cardinal House and Caxton House basement car parks. This basement area will also be used for temporary storage, site accommodation and lorry holding.

Charterhouse Street will remain open to traffic throughout the works. However parts of the foot and carriageway in Charterhouse Street will need to be closed.



Farringdon Station Development



Liverpool Street (1)

Eastern End

Crossrail Liverpool Street station will be located between Moorgate and Old Broad Street.

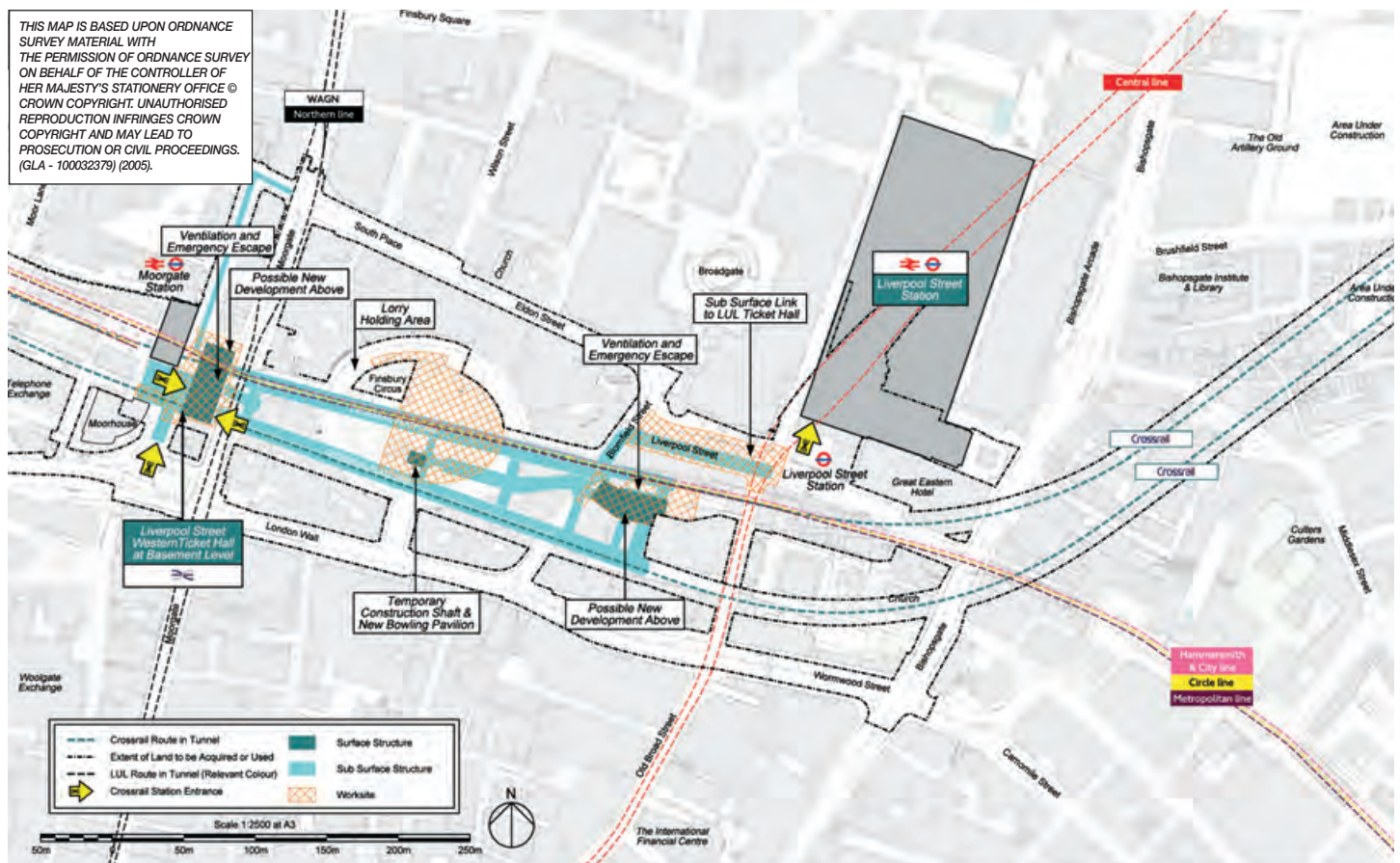
Liverpool Street

At the Liverpool Street (eastern) end of the Crossrail station, new escalators from the Crossrail platforms will link directly into the existing London Underground Liverpool Street ticket hall, giving access to the existing main line concourse.

A shaft containing station ventilation and escape stairs will be constructed on the site of 11-12 Blomfield Street. This shaft will contain a lift from Metropolitan Line platform level to Crossrail platforms.

A low level interchange passage, which will contain lifts between levels, will be provided between the Crossrail and Northern Line platforms.

Passenger modelling studies have shown that the Arcade ticket hall formerly proposed will no longer be required and is therefore not included in the current scheme.



Crossrail Liverpool Street Station



Liverpool Street (2)

Western End

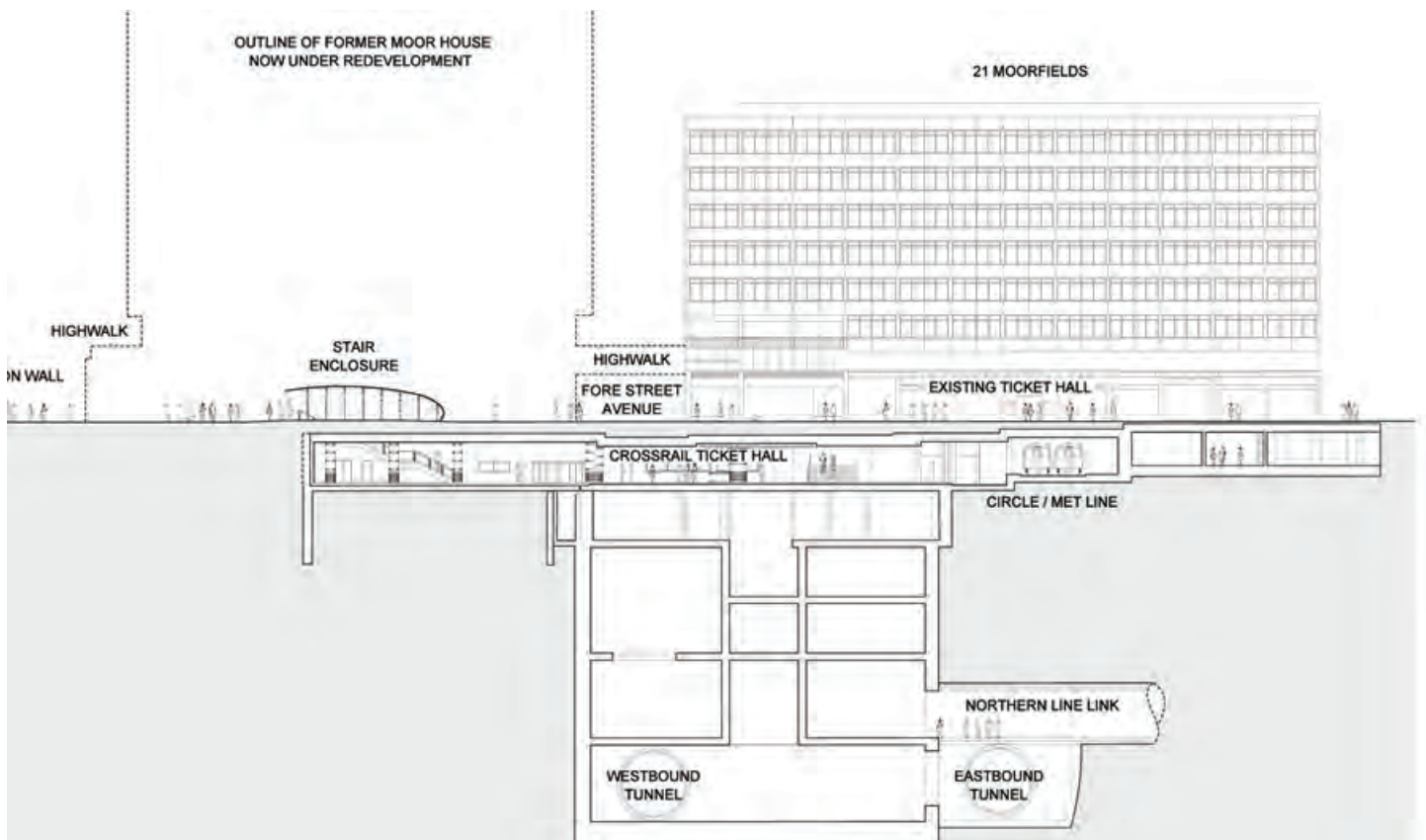
Moorgate Ticket Hall

At the western (Moorgate) end of the Crossrail station, a new basement level ticket hall will be provided, adjacent to the existing London Underground station. It will have access from a newly pedestrianised area in front of Moorhouse as well as a main ticket hall entrance off Moorgate.

The ticket hall will be situated partially under the northern part of the block bounded by Moorfields, Moorgate and Keats Place. Access from Crossrail platforms to street level will also be provided by lifts. A single flight of escalators and a lift will provide access from here to the Crossrail platforms.



Architect's Impression of Liverpool Street Western Ticket Hall



Crossrail Liverpool Street Station – Section



Liverpool Street (3)

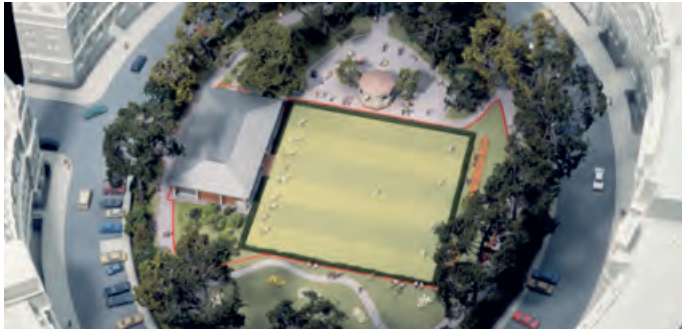
Finsbury Circus

Finsbury Circus

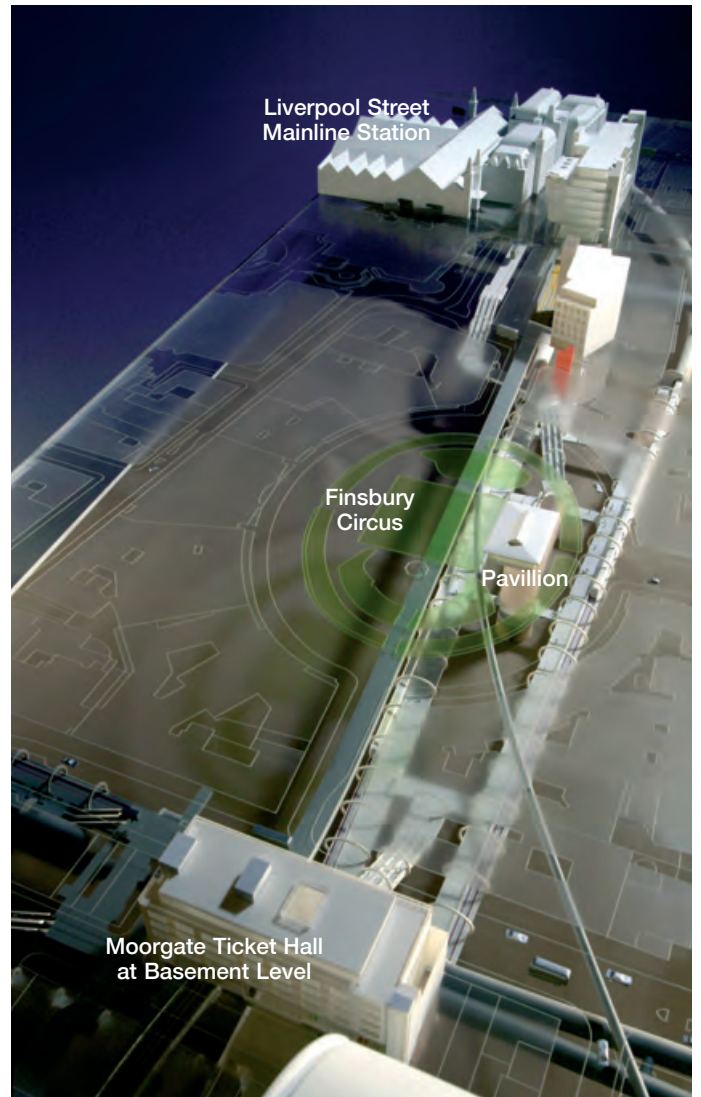
Finsbury Circus Gardens is designated as an Historic Park of Special Historic Interest and is located within a conservation area. The Grade II listed gazebo currently located in the gardens will be temporarily dismantled to clear the main worksite for the construction of a temporary access shaft. Following construction, the gardens will be reinstated, the gazebo reassembled, and a new bowling green pavilion constructed.

Traffic and Access

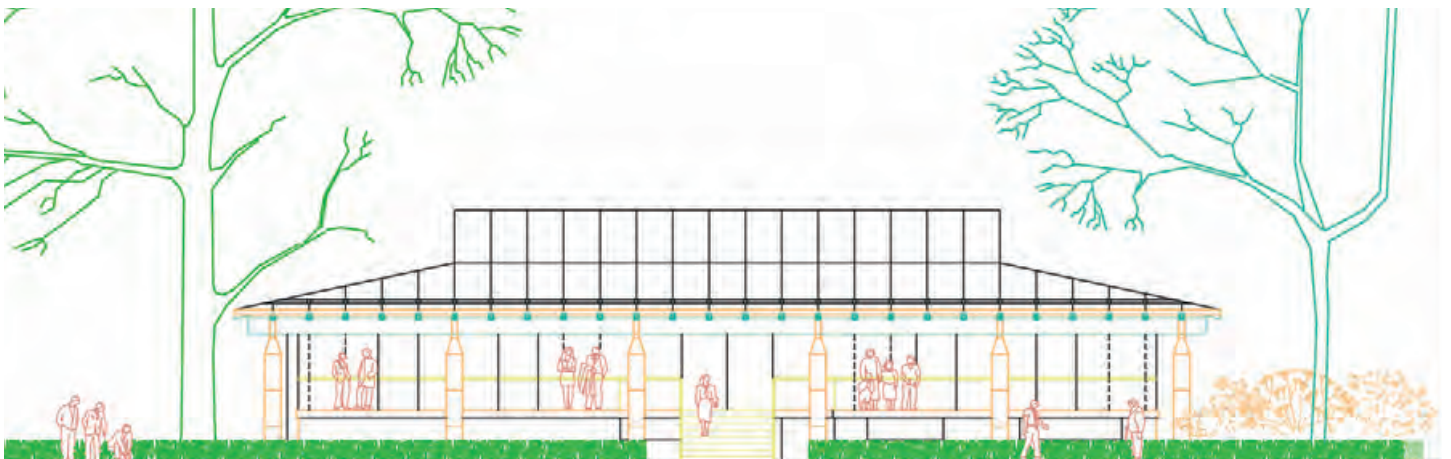
It is currently anticipated that traffic for Finsbury Circus will head east along London Wall where it will approach the entrance in a clockwise direction. Traffic for Moorgate will follow a similar route, but will travel slightly further west before heading north along Bishopsgate. Traffic leaving the site will continue north along City Road rejoining the A501 arterial route at Old Street roundabout.



Architect's Model of Reinstated Finsbury Circus



Architect's Model of Crossrail Liverpool Street Station showing Finsbury Circus



New Pavilion in Finsbury Circus - Projection



Liverpool Street (4)

Building Crossrail Liverpool Street Station

Prior to the main construction works, a sewer that runs through the middle of the station will be diverted southwards to connect into the existing sewer in Fore Street. The London Bridge sewer will be diverted temporarily and reinstated to its existing alignment.

The escalators that will connect the Crossrail platforms with the London Underground Ltd, Liverpool Street station will be constructed from Liverpool Street.

The work site access and egress to Finsbury Circus and a lorry holding area will result in the loss of some on-street parking, principally motorcycle bays. As mitigation it is proposed that under-used pay and display parking in the vicinity will be converted to replacement motorcycle parking.

The Liverpool Street worksite will occupy the width of Liverpool Street between Old Broad Street and Blomfield Street, including the footways. The junction of Liverpool Street and Old Broad Street will be within the worksite, with access to the bus station being provided by a temporary deck.

Pedestrian diversion routes will be provided on adjoining forecourts. The loss of the taxi rank currently located in the area of Liverpool Street west of Old Broad Street will be mitigated by the extension of an existing rank to the east, outside the existing station entrance.

There will be works at the Metropolitan line ticket hall at Moorgate Station and Old Broad Street ticket hall at Liverpool Street Station. These areas will be hoarded off to enable passenger flows to be maintained.

The main western (Moorgate) worksite will be located at 91-109 Moorgate on the northern part of the block bounded by Moorfields, Moorgate, Moorplace and London Wall. The existing office buildings at 91-109 Moorgate will be demolished in order to construct the western ticket hall.

The main Crossrail station tunnelling worksite will be located in part of the gardens and bowling green area of Finsbury Circus. A temporary shaft will be established to enable the station platforms and facilities to be constructed. Worksites will need to be established in the street area fronting 1-14 Liverpool Street and the Railway Tavern Public House.

Traffic and Access

Lorries will access all three work sites from Aldgate via Dukes Place, Bevis Marks, Camomile Street and Wormwood Street to London Wall.

Access from London Wall to Finsbury Circus will be via Circus Place, with lorries traveling round the west side of the Circus to a lorry holding area on the north-west side of Finsbury Circus. Lorries would leave the site via Circus Place, London Wall, Wormwood Street, Camomile Street and Houndsditch to Aldgate.

It is anticipated Crossrail Liverpool Street station will take approximately five years to build.



Hanbury Street Shaft (1)

To ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided no more than 1 kilometre apart.

The proposed shaft will be located between Hanbury Street and Princelet Street and will provide emergency access as well as ventilation to the Crossrail tunnels between Liverpool Street and Whitechapel stations.

The ventilation building will house equipment needed to operate the ventilation fans. The fans will extract air from the tunnels and draw air in as required.

The shaft and tunnels will be approximately 31 metres deep at this location.

Construction of the shaft will require the demolition of 80-102 Hanbury Street and the single storey rear extensions to 63, 65 and 67 Princelet Street, followed by 68-80 Hanbury Street (Britannia House). A period of approximately 2.5 months will be required to complete each of the two phases of demolition.

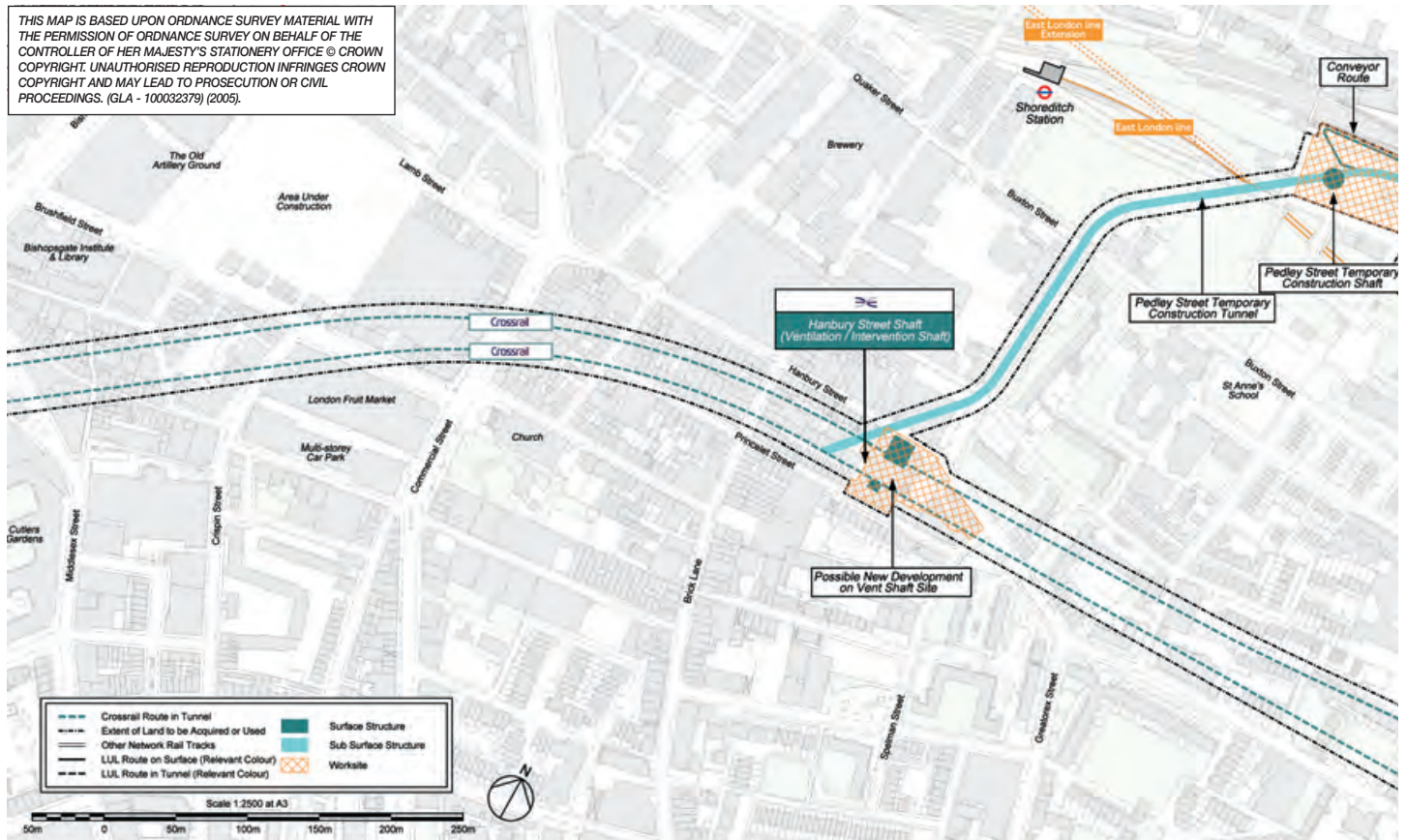
Crossrail is consulting the London Borough of Tower Hamlets on construction principles.

In total, construction of the shaft will take approximately 18 months. During this period, excavated material will be removed by lorries travelling to the east of the site.

Access to the site will be from Whitechapel Road via Greatorex Street and Hanbury Street. Egress will be via Spital Street and Buxton Street to Vallance Road. A section of Buxton Street currently closed to traffic will be re-opened for construction traffic only.

At no time will any lorries travel towards or along Brick Lane.

Once shaft excavation is complete, tunnelling operations will shift to Pedley Street (see panel C28.R3.1).



Hanbury Street Shaft



Hanbury Street Shaft (2)

Hanbury Street Shaft will be one of seven points along the route used as a starting point for tunnel boring machines (TBMs). The TBMs will be delivered to the site and installed at the base of the shaft.

Following the estimated 18 months of surface activity to construct the shaft, it will be acoustically capped and the TBM's will leave the site as they start their tunnel run.

A total of four tunnels will be constructed - two towards Fisher Street and two towards Whitechapel.

After the TBMs have left, all tunnelling activities will be serviced from a temporary construction shaft and worksite at Pedley Street, connected underground to the base of the Hanbury Street shaft by a temporary tunnel (see panel C.28.R3.1)

The overall period for the excavation of the main tunnels will be approximately two years. No surface construction activity is currently proposed at the Hanbury Street site during this period.

Throughout the works there will be a 24-hour on-site security presence. The site will also be fully hoarded.

Following completion of the tunnelling, some of the TBM equipment will be retrieved from the top of the Hanbury Street shaft over a period of a few weeks.

There will subsequently be a fit-out of the permanent shaft equipment over a period of three months. The only activity following this will be periodic inspection and maintenance of the shaft equipment.



Hanbury Street – An artist's impression of a possible future development that could be built over site



Pedley Street Shaft

To reduce the need to use lorries to remove material excavated from the tunnels, a 6 metre diameter temporary construction tunnel is proposed to connect the base of the Hanbury Street shaft and the main Crossrail running tunnels to a temporary construction shaft on disused railway land adjacent to the Great Eastern Main Line at Pedley Street.

Material excavated from the main Crossrail running tunnels will be removed underground via the temporary tunnel and lifted to the surface through the Pedley Street shaft. From the Pedley Street shaft the excavated material will be transferred by a conveyor running east along the Great Eastern Main Line viaduct to a train loading facility at Sand End sidings, Mile End (South of Meath Gardens). The conveyor would be shrouded to control noise (see panel C.34.R3.1).

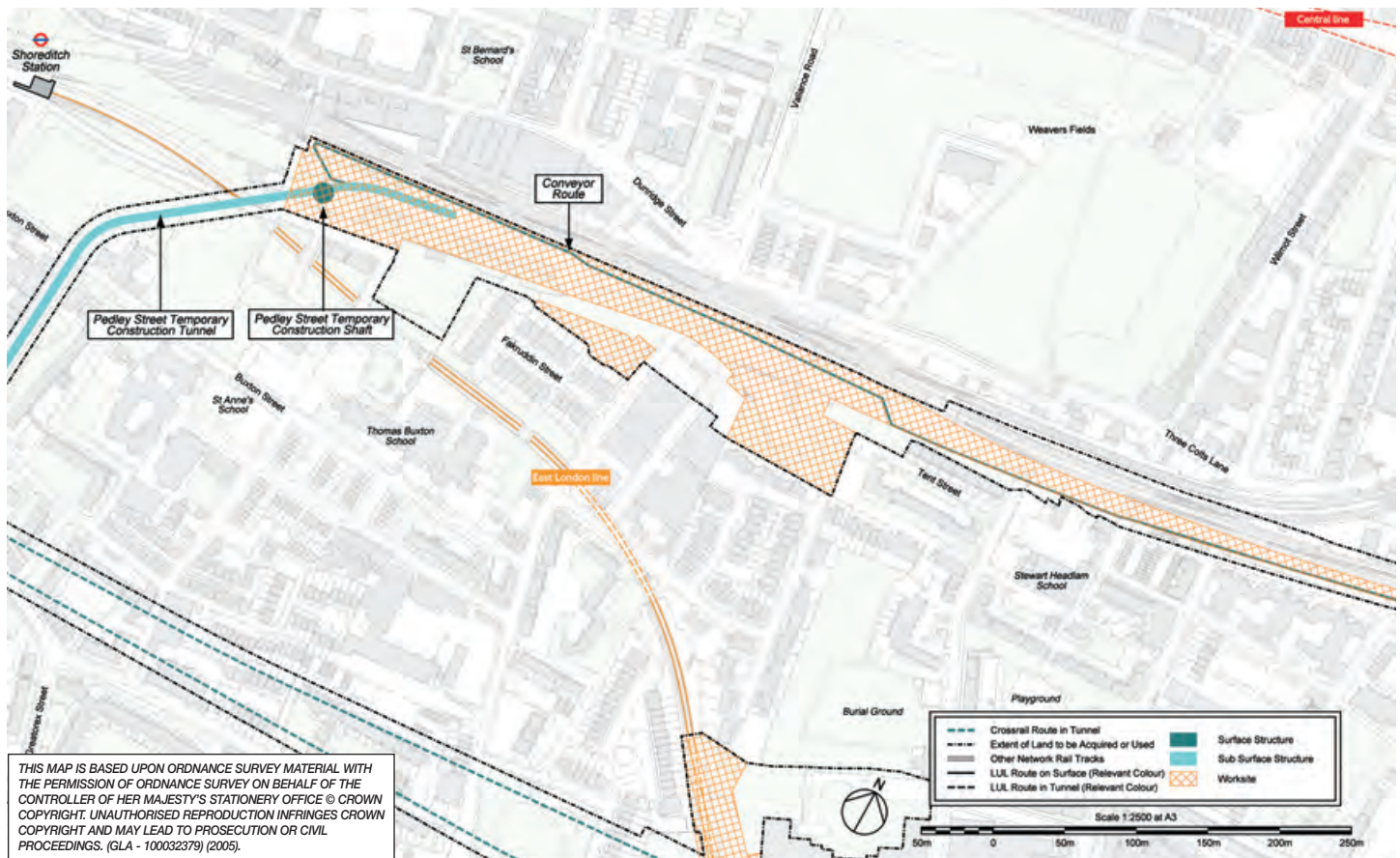
Following completion of the Crossrail works, the shaft would be filled in.

Segments that will form the running tunnel walls and all other materials will be delivered to the Pedley Street construction site and taken to the main Crossrail running tunnels through the temporary tunnel.

While the Pedley Street temporary shaft and temporary tunnel are being constructed, the conveyor to allow excavated material to be removed by rail will not have been completed. Consequently, material excavated from the temporary shaft and temporary tunnel will be removed by road out of the area during this period.

It is anticipated erection of the spoil handling equipment and the installation of the conveyor to Mile End Park Sand Sidings will be carried out over a six month period.

It is anticipated construction vehicles will access and exit the site from Whitechapel Road via Vallance Road.





Whitechapel (1)

Ticket Hall

Crossrail Whitechapel station would be situated between Fullbourne Street and Cambridge Heath Road. A new ground level ticket hall with an entrance at the junction of Whitechapel Road and Cambridge Heath Road would be provided.

A single flight of escalators and lifts from street level would provide access to the Crossrail platforms. Facilities for station staff would be provided at first floor level.

At the western end of the Crossrail platforms, a flight of escalators and lifts would provide interchange with the London Underground station, constructed within a shaft to the north of Durward Street in an area known as Essex Wharf. These escalators would lead to a new low-level concourse constructed underneath the northern end of the East London line platforms. Both stairs and lifts would be provided to enable the East London line to be reached from this concourse.

From this low-level concourse, a passageway would run under the District line platforms to a flight of escalators and lifts giving access to the District line platforms. Emergency escape provisions for the station would be located in the Durward Street shaft.

Ventilation shafts would be provided at both ends of the platforms, built within the Durward Street shaft at the west end and ticket hall structure at the east. The shafts would provide draught relief and assist in maintaining passenger comfort within the station.

Crossrail is consulting with London Underground Ltd (LUL) regarding the provision of a new combined western ticket hall over the District Line platform.

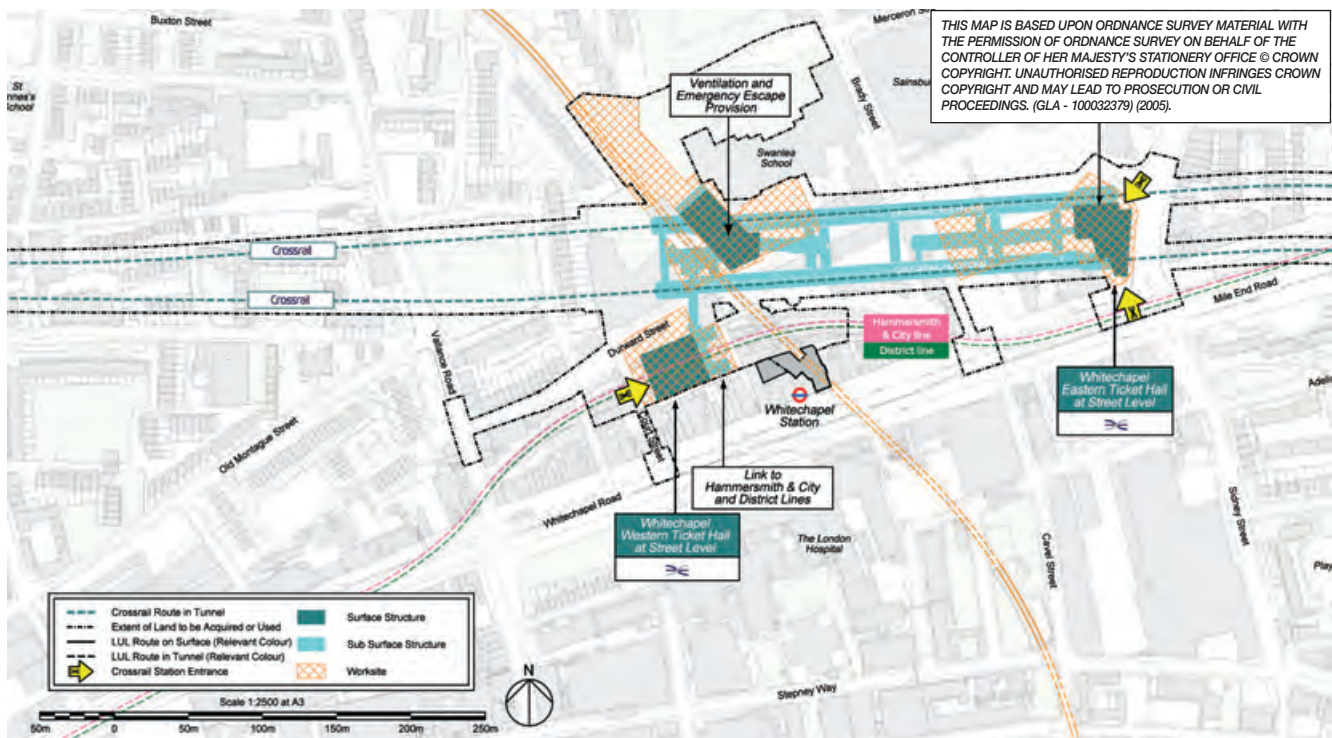
The timing of the construction of a western ticket hall will be subject to LUL enablement works being completed.



Cambridge Heath Road Ticket Hall



Cambridge Heath Road Ticket Hall



Whitechapel Station



Whitechapel (1)

Ticket Halls

Crossrail Whitechapel station will have a new ground level ticket hall near Court Street over the District Line platforms, and it will also be possible to provide a ticket hall at Cambridge Heath Road should the need arise.

At Cambridge Heath Road Ticket Hall a single flight of escalators and lifts from street level would provide access to the Crossrail platforms. Facilities for station staff would be provided at first floor level.

At the western end of the Crossrail platforms, a flight of escalators and lifts would provide interchange with the London Underground station, constructed within a shaft to the north of Durward Street in an area known as Essex Wharf. These escalators would lead to a new low-level concourse constructed underneath the northern end of the East London line platforms. Both stairs and lifts would be provided to enable the East London line to be reached from this concourse.

From this low-level concourse, a passageway would run under the District line platforms to a flight of escalators and lifts giving access to the District line platforms. Emergency escape provisions for the station would be located in the Durward Street shaft.

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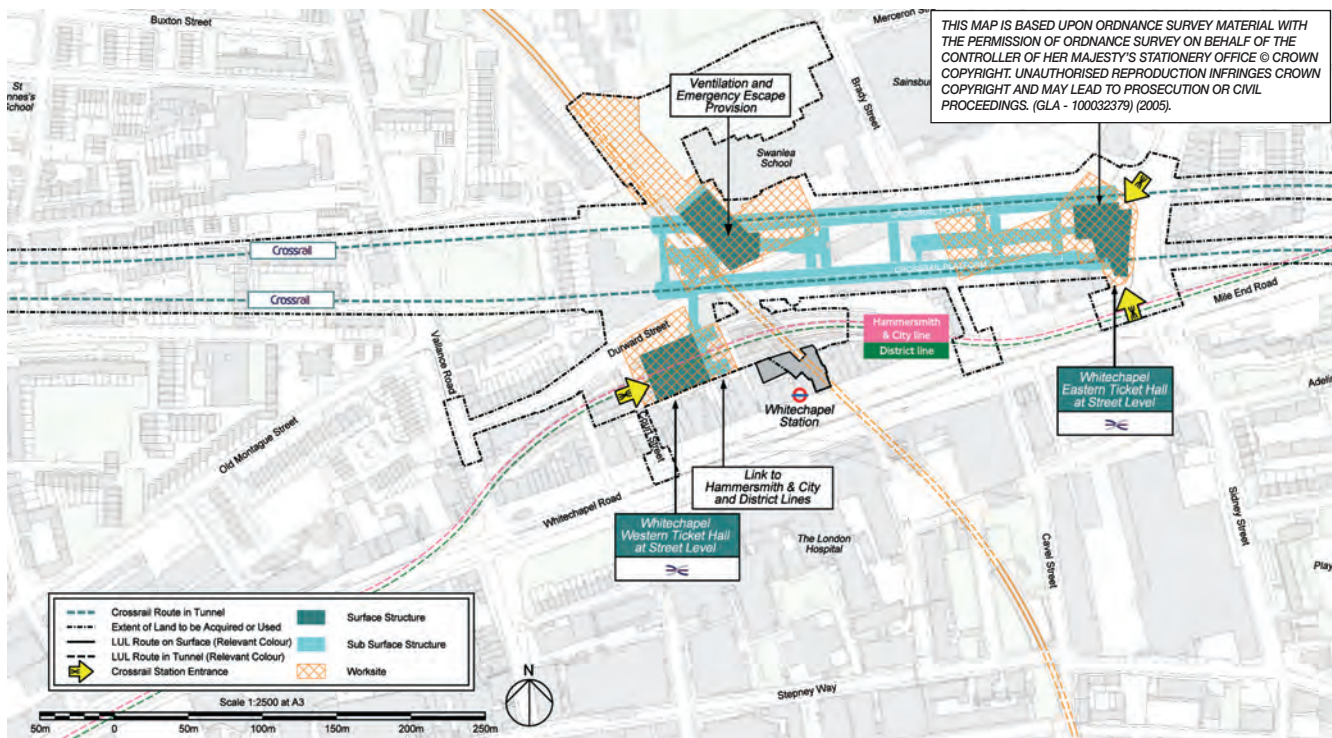
The timing of the construction of a western ticket hall will be subject to LUL enablement works being completed.



Cambridge Heath Road Ticket Hall



Cambridge Heath Road Ticket Hall



Whitechapel Station



Whitechapel (2)

Durward Street Shaft

Swanlea School

The proposals for Durward Street Shaft will require the temporary rearrangement of the access to Swanlea School and some of its ancillary buildings. A new entrance will be provided at Durward Street for Swanlea School following completion of the station works.

Crossrail is consulting Swanlea School and Tower Hamlets Education Department on the possibility of providing the school with an enlarged playground that will include all of the unused area of Essex Wharf. Following the works, Crossrail will need to keep a right of way for access to the emergency escape site.

The potential exists for the Durward Street entrance to the school to be enhanced. A “light well” bringing natural light into the Crossrail station could provide a local architectural feature.



Essex Wharf – Suggested ‘Light Well’ feature



Stepney Green Shaft (1)

To ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided no more than 1 kilometre apart.

Crossrail's proposed routes to Shenfield and Abbey Wood will divide underground in the area of Stepney Green. A ventilation shaft will be required for each branch.

The proposed location for the ventilation shafts is a strip of park between the existing Astro turf pitch and Garden Street.

The shafts will also provide emergency access and escape for the Crossrail tunnels. The ventilation equipment will be located in the two shafts.

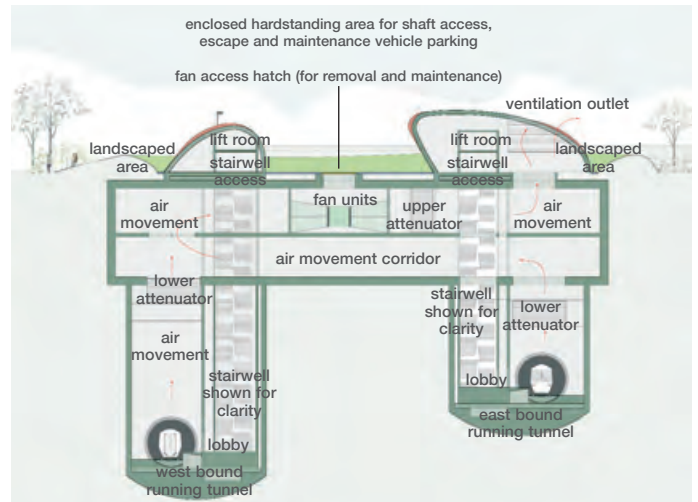
Both shafts will be 16m in diameter. Each will have a surface structure 7.5m high above ground level.

Each shaft will contain a staircase and some of the fan equipment, and will be located over each of the tunnels.

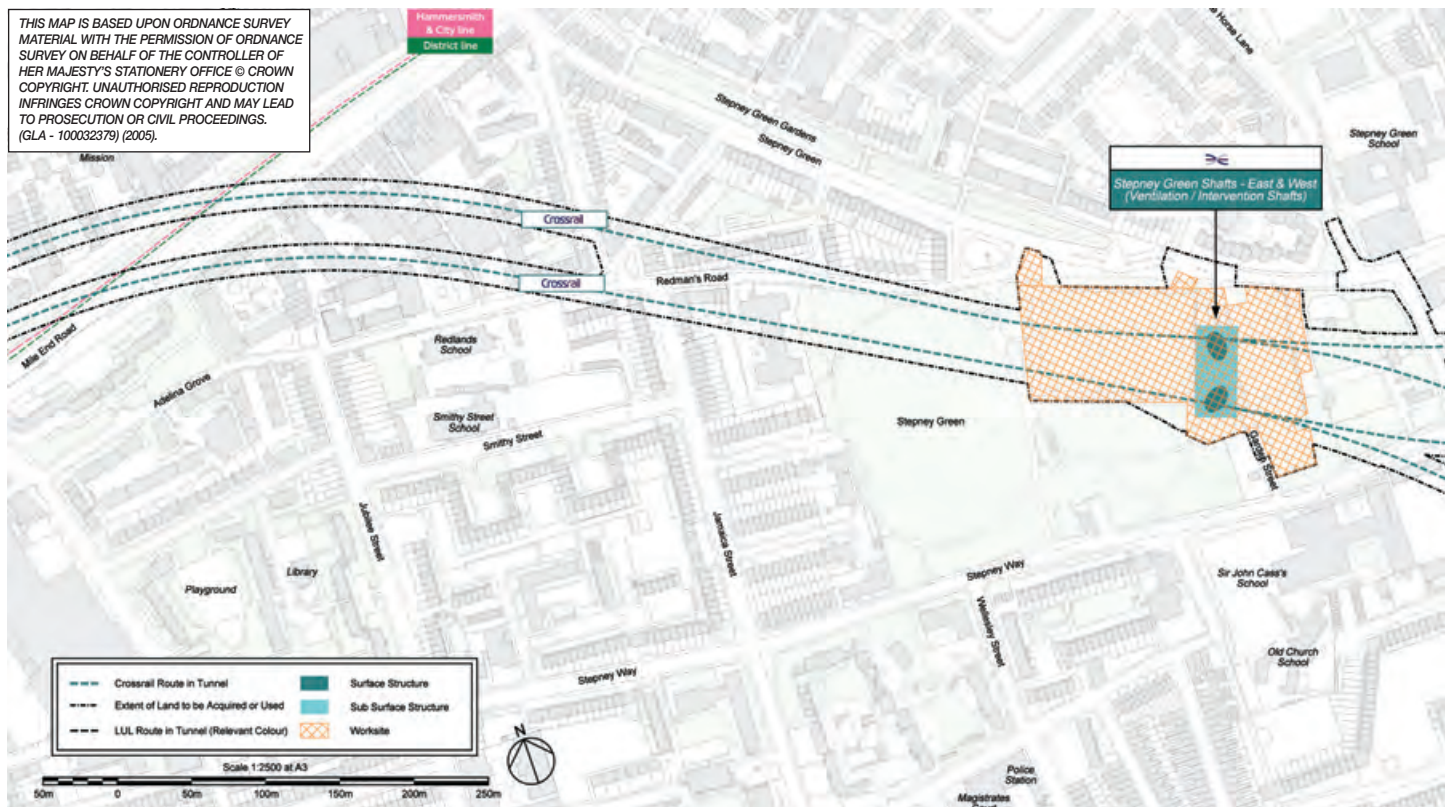
The basement will house fans to push air into or out of the tunnels as required. The basement will house noise reducing equipment and mechanical and electrical equipment for the operation of the fans.

These shafts will be used temporarily as construction shafts to enable the tunnel junction to be built.

Stepney Green shaft will take approximately 6 years to build.



Cross Section of Shaft



Stepney Green Shaft



Stepney Green Shaft (2)

Part of the Stepping Stones Farm will be needed for a period during the construction of the shafts. Crossrail is consulting with the London Borough of Tower Hamlets regarding the proposals on any protective measures that may be necessary.

Stepping Stones Farm is a Site of Importance for Nature Conservation (Borough level) which will be temporarily affected by construction activities.

The site contains archaeological evidence of a 16th Century manor house, a non-conformist meeting house (c.1674), the remains of a congregational church (c.1862) and the remains of a Baptist college (c.1811). The construction of the shaft may result in loss of a portion of the 16th Century Manor House. This will be subject to further archaeological study. The design of the construction worksite has been altered to ensure that all other remains on the site will be protected from damage.

It is anticipated that lorries will access and exit the worksite from Stepney Green and will access and exit the major road network via one or more of the following.

Lorries will access the worksite from White Horse Lane and Stepney Green via the A11 Mile End Road. Lorries will exit the site via Stepney Green directly onto the A11 Mile End Road.

Garden Street will be closed and traffic will be diverted along either Stepney High Street or Jamaica Road. Traffic calming devices will need to be removed from Stepney Green.



Shaft Plan



Existing Area



Mile End

Mile End Sidings Railhead

There are relatively few locations near the Crossrail alignment where rail sidings and a railhead (the point where the trains are parked and loaded) for excavated material removal can be established. One location is at the Sand End sidings, Mile End.

The proposed sidings rail head will be located opposite Meath Gardens, Mile End, on the south side of the railway (west of the Grand Union Canal).

The conveyor from the Pedley Street worksite will run along the top of the current area of Eastern Main Line Viaduct moving excavated material east to the proposed railhead, where it will be transferred to waiting trains for onward removal via the Great Eastern Main Line.

A holding area for excavated material will be established in an area of Mile End Park to the west of the Grand Union Canal. This will enable tunnelling operations to continue during times when trains may not be available. Material will be moved west from the holding area to the sidings by a second conveyor across the canal to the railhead. The holding area will be hoarded throughout the works.

The railhead and holding area will be in operation for approximately four years.

Traffic and Access

It is anticipated that lorries will enter and leave the site from a new access point on Grove Road, approaching from the south. Access to the remainder of the park will be available at all times. Haverfield Road will not be used for site access. The canal towpath may be closed for a short period during site set-up or for periodic maintenance.

Environmental Issues

The likely environmental effects include the temporary visual intrusion around Mile End Park resulting from the presence of stockpiles and conveyors. The conveyor between Pedley Street and Mile End Park is likely to be a relatively small and unobtrusive structure, mostly located on the existing viaduct.

It is acknowledged that Mile End Park is designated as a Site of Importance for Nature Conservation (Borough Level).

All proposals are being developed in consultation with the relevant bodies including the London Borough of Tower Hamlets, British Waterways and the Environment Agency.



Mile End Park Shaft (1)

In order to ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided no more than 1 kilometre apart.

The Mile End Park shaft will be used for ventilation as well as emergency intervention and evacuation. Mechanical and electrical plant rooms will be located in the basement with access to the ventilation fans through the surface structure.

The proposed shaft will be located within the south east corner of Mile End Park.

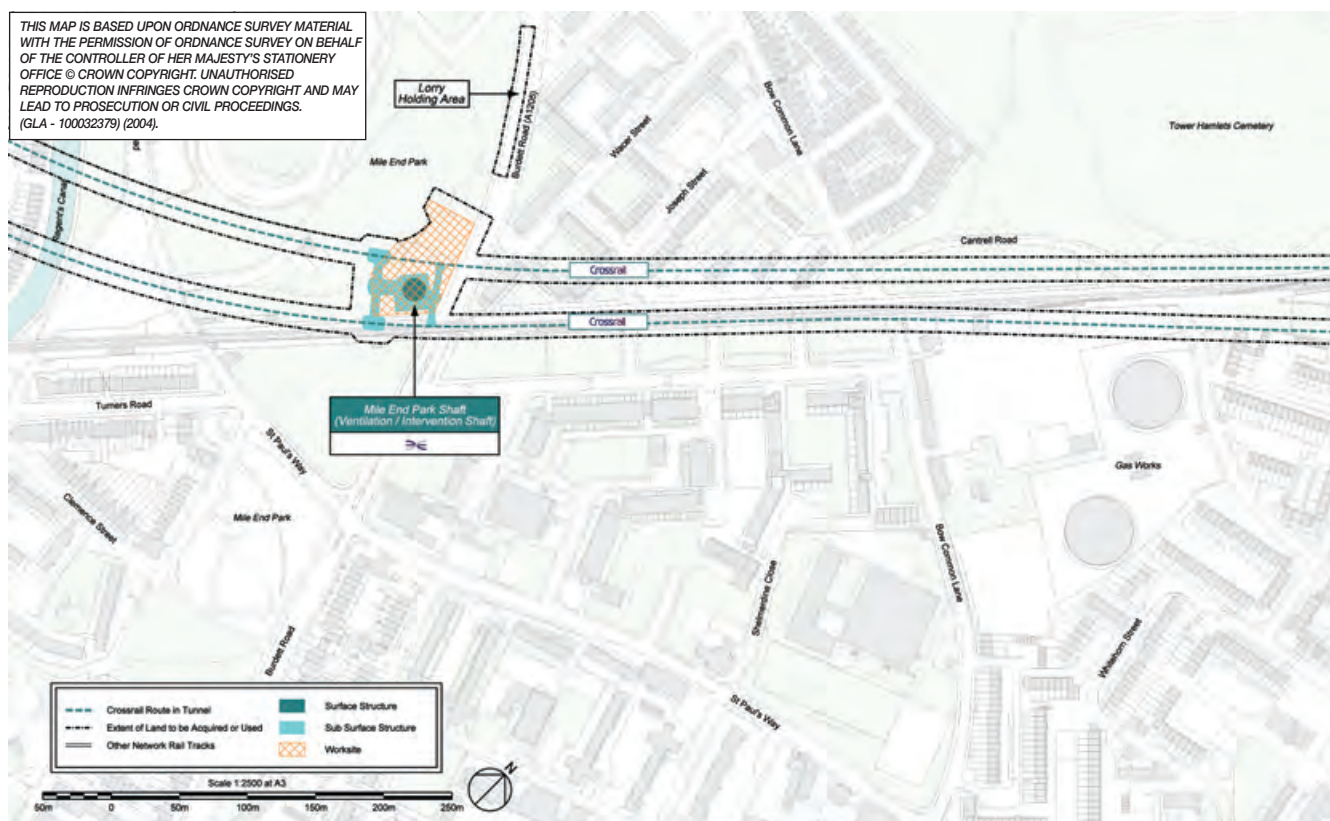
The shaft will be 16m in diameter and will be incorporated in a surface feature 43.5 metres long and 7m above ground level in height.

The Crossrail running tunnels will be approximately 23m deep at the shaft location.

A new access to the stadium on Burdett Road, immediately to the north of the Crossrail worksite is proposed.



Architect's Impression of Mile End Park Vent Shaft



Mile End Park Shaft



Mile End Park Shaft (2)

The location and appearance of the shaft above ground have been designed to blend in with the existing open space and the current proposals to extend Mile End Park Stadium. The shaft will be located close to Burdett Road.

Any reinstatement of sports facilities will be carried out in consultation with the local authority.

The surface structure of the shaft has been designed to enable it to be used by members of the public as a platform to watch events and activities in the park.

It is anticipated that site clearance in the sidings and Mile End Park will take approximately two months, erection of the spoil handling equipment at Mile End Park Sand Sidings take approximately two months, modification of the rail sidings, and installation of the conveyor and the erection of the spoil handling equipment in Mile End Park will take approximately five months to complete. The spoil handling facility will then be operated for 26 months, after which the re-instatement of the site will take two months.

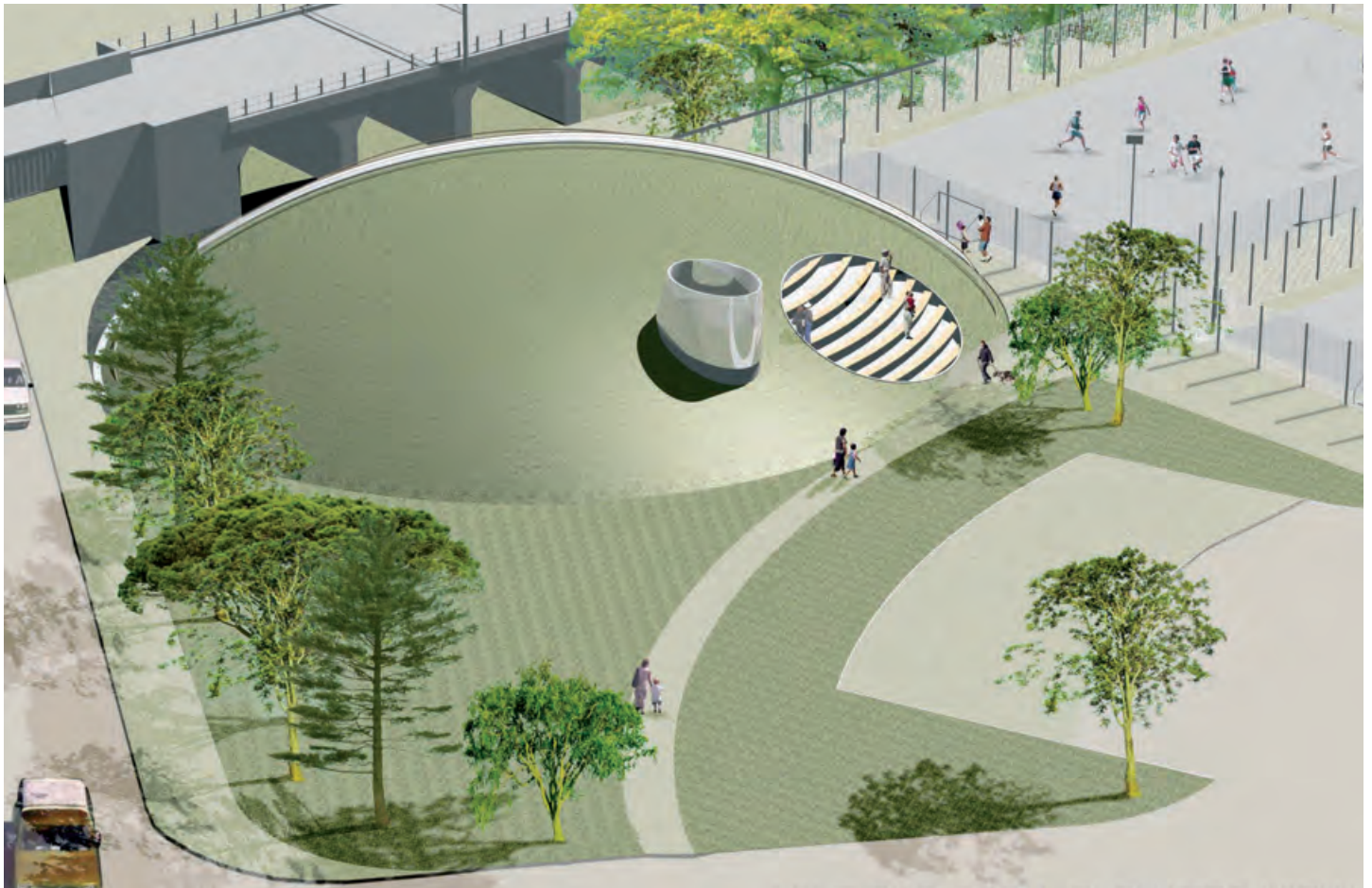
Mile End Park is a Site of Importance for Nature Conservation. The shaft forms a new permanent structure in an open setting and as such will affect the landscape of this open space and its users.

Mile End Park shaft will take approximately four and a half years to build.

It will be necessary for some trees and vegetation to be removed in advance the works commencing.

It is anticipated that lorries will access and exit the Mile End Park worksite from Burdett Road (A1205) via Mile End Road (A11).

A lorry holding area is proposed on the northbound carriageway of Burdett road immediately to the north of Mile End Park work site.



Architect's Impression of Mile End Park Vent Shaft – Viewing Platform



Eleanor Street Shaft (1)

To ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided no more than 1 kilometre apart.

The shaft will be 15 m in diameter. The shaft will be incorporated in a surface structure 17.5 m wide, 35.5 m long and 11 m above ground level in height.

The proposed shaft will be located south of Eleanor Street, in Bow Triangle. The shaft will provide ventilation as well as emergency intervention facilities for the tunnels.

The shaft will also be used for ventilation and electrical plant rooms.

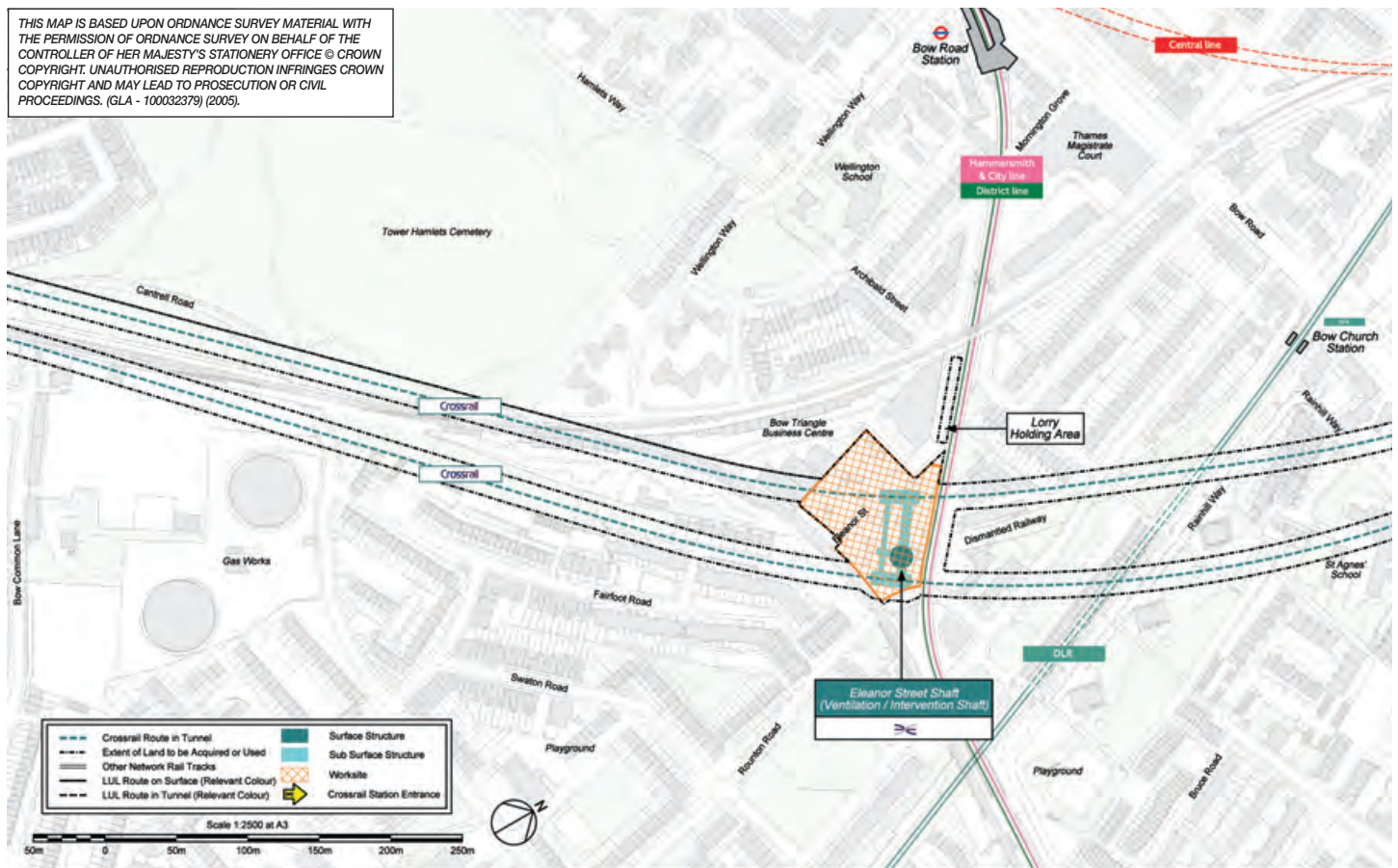
The Crossrail running tunnels will be approximately 28m deep at the shaft location.

It will be necessary to relocate the caravan park currently on site prior to the works commencing.

It is anticipated that landscaping and new tree planting will be provided in the area between the shaft and Rounton Road.

A dedicated road to access the shaft will be provided adjacent to the District line viaduct.

Eleanor Street shaft will take approximately four years to build.



Eleanor Street Shaft



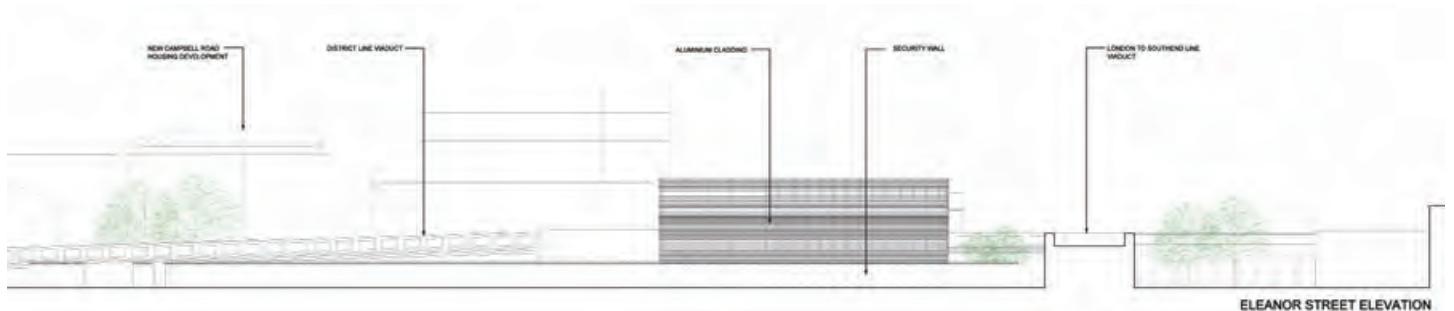
Eleanor Street Shaft (2)

It is anticipated lorries will access the Eleanor Street worksite from two points. Eleanor Street will be the primary access point for materials delivery and excavated materials removal vehicles.

Excavated materials will be removed via Eleanor Street onto Mornington Grove to Mile End Road (A11).



Architect's Impression – Eleanor Street Shaft



ELEANOR STREET ELEVATION

Eleanor Street Elevation



Lowell Street Shaft (1)

To ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided no more than 1 kilometre apart.

Lowell Street shaft will be located at 610 Commercial Road, adjacent to the Limehouse Basin, and will incorporate infrastructure for tunnel ventilation, access to the shaft and tunnels and passenger evacuation in the event of an emergency.

The Crossrail tunnels will be approximately 40m deep (eastbound) and 36m deep (westbound).

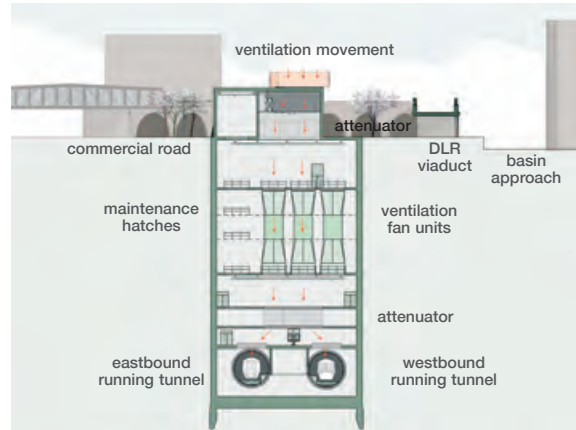
Lowell Street shaft will take approximately five years to build.

The shaft will be 18.8m in diameter. Two 23.6m long surface structures will be constructed together with an area of hard standing for vehicles.

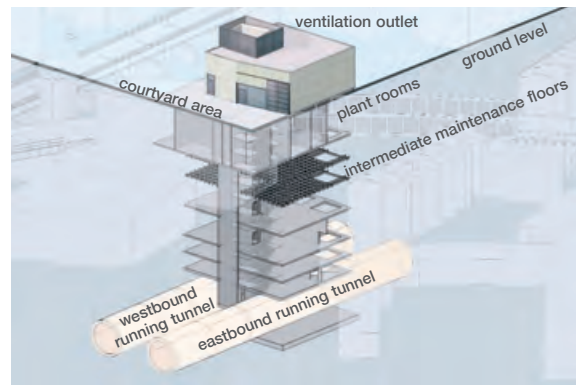
To provide tunnel ventilation, the shaft building will house mechanical equipment and below ground fans. The intake and outlet for the fans will be at roof level. Intervention and evacuation stairs and a lift will be provided within the shaft.

Evacuation from the tunnels will take place in the courtyard or in the area bounded by the DLR viaduct to the south.

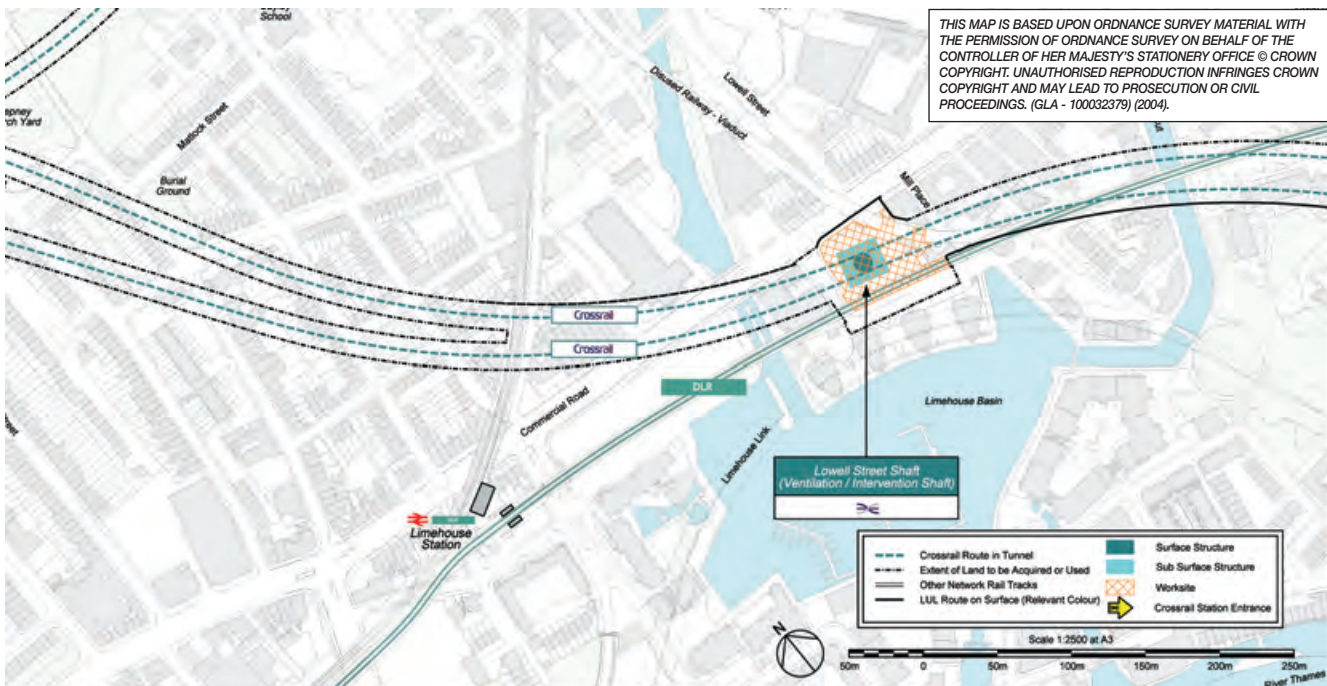
It is proposed that the site will be cleared, with the exception of the listed water tower in the south eastern corner of the site.



Lowell Street Shaft Section



Lowell Street Shaft



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Lowell Street Shaft



Lowell Street Shaft (2)

Traffic and Access

It is anticipated lorries will access and exit the site directly from the westbound carriageway of the A13 Commercial Road through new entrances. Temporary traffic signals may be required.



View of the Current Site from Basin Approach



Hertsmere Road Shaft (2)

The shaft entrance will be at pavement level from the Canon Workshops parking area. Inside the shaft, stairs and a lift will be provided between ground and track levels. Below ground level, a basement will be provided for electrical and mechanical equipment.

Trees on the site will be retained where practical. Following construction of the shaft and the Canon Workshops parking area, any trees removed will be replaced and complemented by appropriate landscaping.

Traffic and Access

Due to the weight restriction on Cannon Drive, it is currently anticipated that lorries will enter and leave the site from Westferry Road (A1206) via the Westferry Circus low-level route.

A lorry holding area for the worksite will be located in Hertsmere Road.



Shaft Site Currently at present



Isle of Dogs (1)

Crossrail Isle of Dogs station will be situated underneath the North Dock at West India Quay, approximately 30 metres below dock water level. The station will be constructed within a new box structure.

The main station entrance and ticket hall will be located to the west of Great Wharf Road Bridge, linking Aspen Way and North Colonnade. The existing Great Wharf Bridge will need to be replaced following construction as part of the Crossrail works.

At this entrance, escalators and lifts will be provided between street level, the ticket hall, and Crossrail platforms.

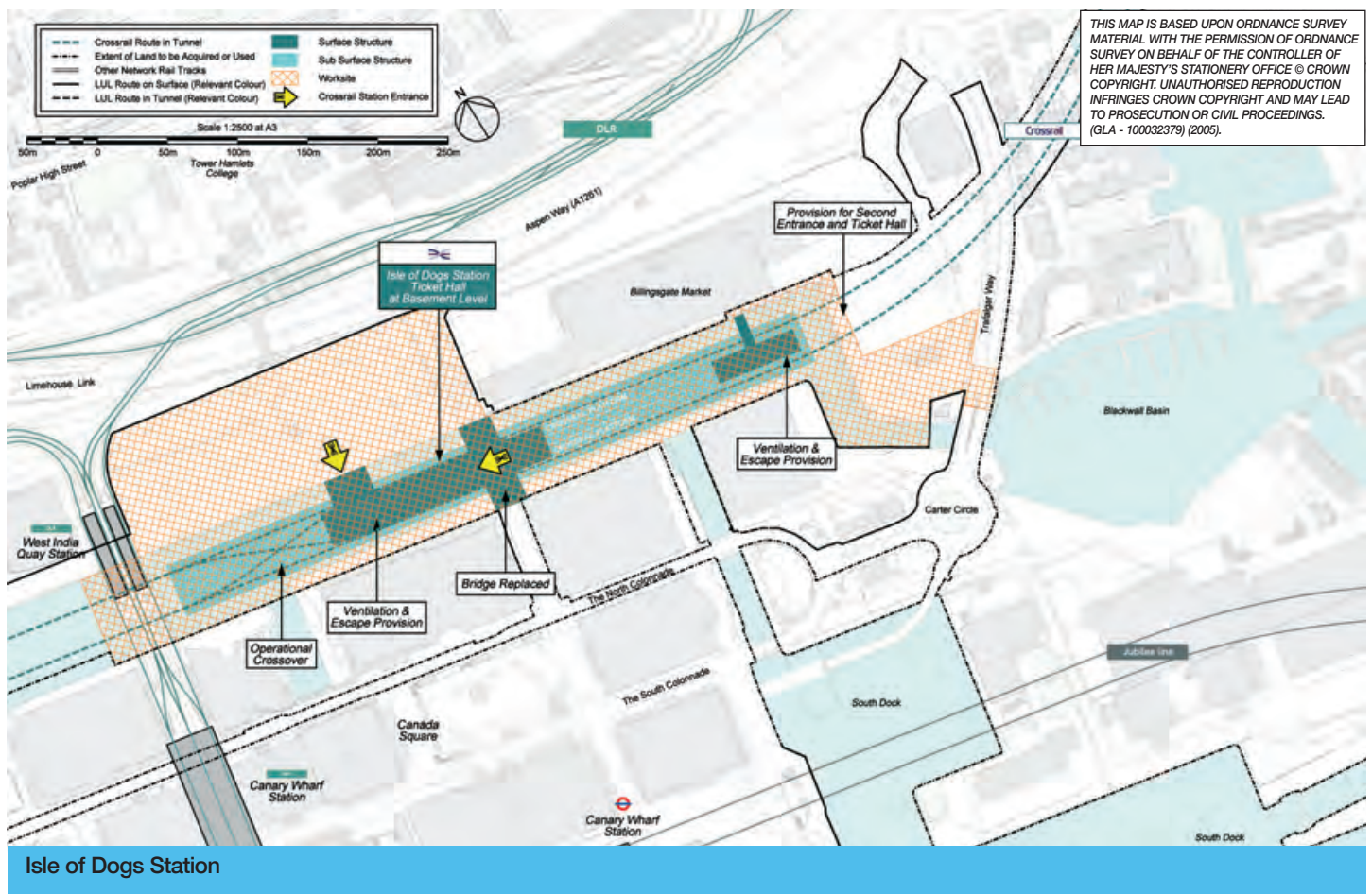
Provision will be made for future construction of a second eastern ticket hall and entrance within Billingsgate Market car park. Access from the new Crossrail station to the existing London Underground and Docklands Light Railway stations will be at street level.

Ventilation will be provided at both ends of the platforms, and be built within the station box. These will provide draught relief and assist in maintaining passenger comfort within the station.

The Crossrail platforms will be approximately 29m deep at the western end of Isle of Dogs station.

A 165 m long cross-over will be constructed at the west end of the station to enable trains to terminate at Isle of Dogs and return to central London or Abbey Wood.

Crossrail Isle of Dogs station will take approximately five years to build.





Isle of Dogs (2)

Building Crossrail Isle of Dogs Station

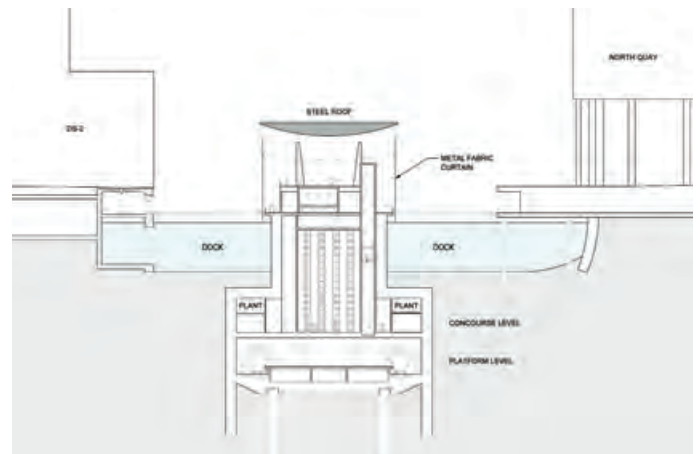
The area of North Quay between Billingsgate and the Docklands Light Railway bridge will be used as the main worksite for construction of the station and the Crossrail tunnels and crossover west of the station. A second worksite will be located within the car park of Billingsgate Market, at the eastern end of the North Dock for the construction of the station. A watertight temporary structure known as a cofferdam will be constructed within the North Dock to enable the station to be built.

The tunnel boring machines for the drive to Stepney Green will be assembled and launched from the site of the station. During the period of station construction, access for vessels wanting to enter Blackwall Basin and Poplar Dock will be obstructed by the Crossrail construction work. Measures will be taken to protect the Grade I listed West India Quay Banana Wall. Measures will also be taken to protect the water environment during construction.

Surveys to determine the aquatic ecology (water, wildlife and plants), water quality and sediment within the dock area have been undertaken to help formulate the construction methodology in relation to the temporary draining of the part of the dock that will be within the cofferdam.



Station Location



Station Section



Station Concourse – Architect's Impression



Isle of Dogs (3)

Following temporary removal of the Great Wharf Bridge Road and excavation of the cofferdam, the cofferdam itself will be used as a temporary site access road.

Excavated materials will be transported from the construction site via a conveyor system along Bellmouth Passage to a barge loading point in the South Dock.

Excavated materials will be transported away from the construction site along the River Thames by barge.

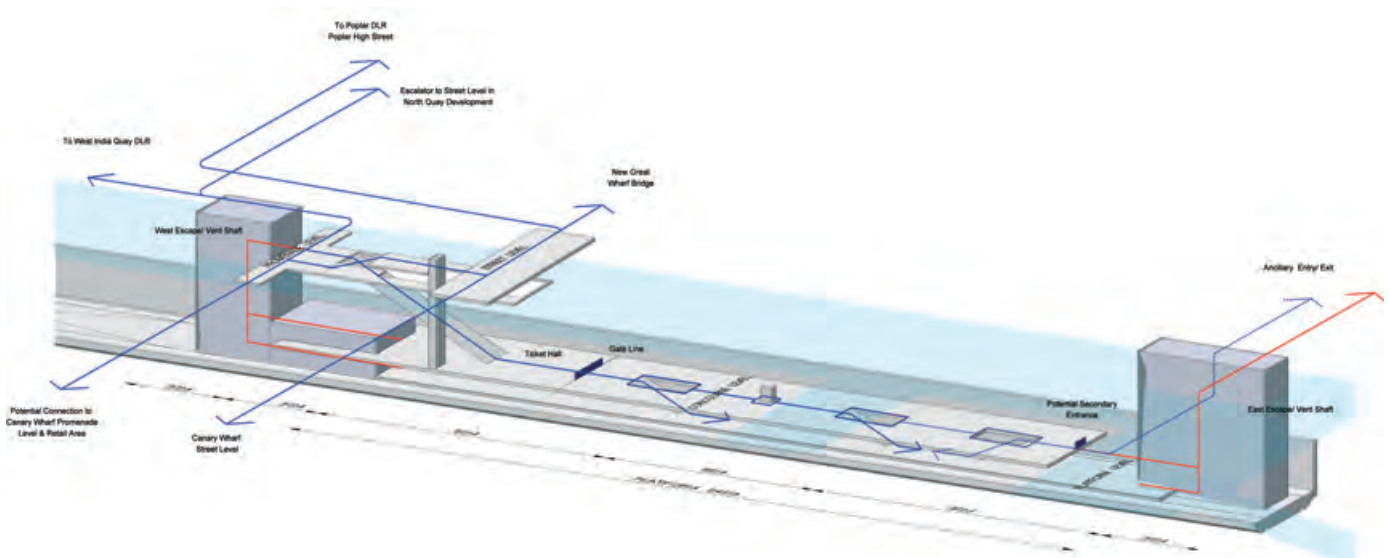
The navigation access point for Blackwall Basin and Poplar Dock through Bellmouth Passage will be closed off by the cofferdam works for the duration of construction.



Isle of Dogs Station – Architect's Model



Isle of Dogs Station – Architect's Impression



Isle of Dogs Station – Circulation Diagram



Blackwall Way Shaft

To ensure the safe running of the railway, the London Fire and Emergency Planning Authority require tunnel access shafts to be provided no more than 1 kilometre apart.

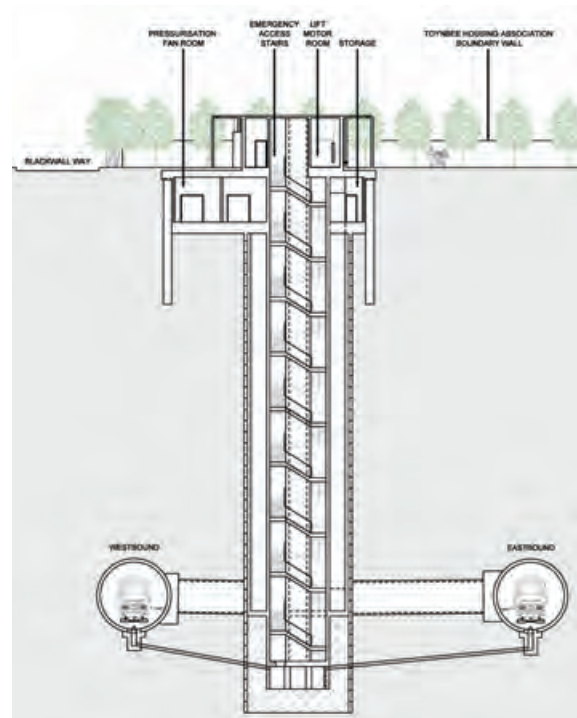
The shaft will be located at Blackwall Way, adjacent to East India station. It will be situated at the north eastern end of the car park behind an existing residential development. It will provide emergency service access to the Crossrail tunnels and will incorporate a central lift and intervention stairwells.

The shaft has been designed to have limited surface impact, with plant rooms being located in the basement, and to reflect the character of the buildings on either side.

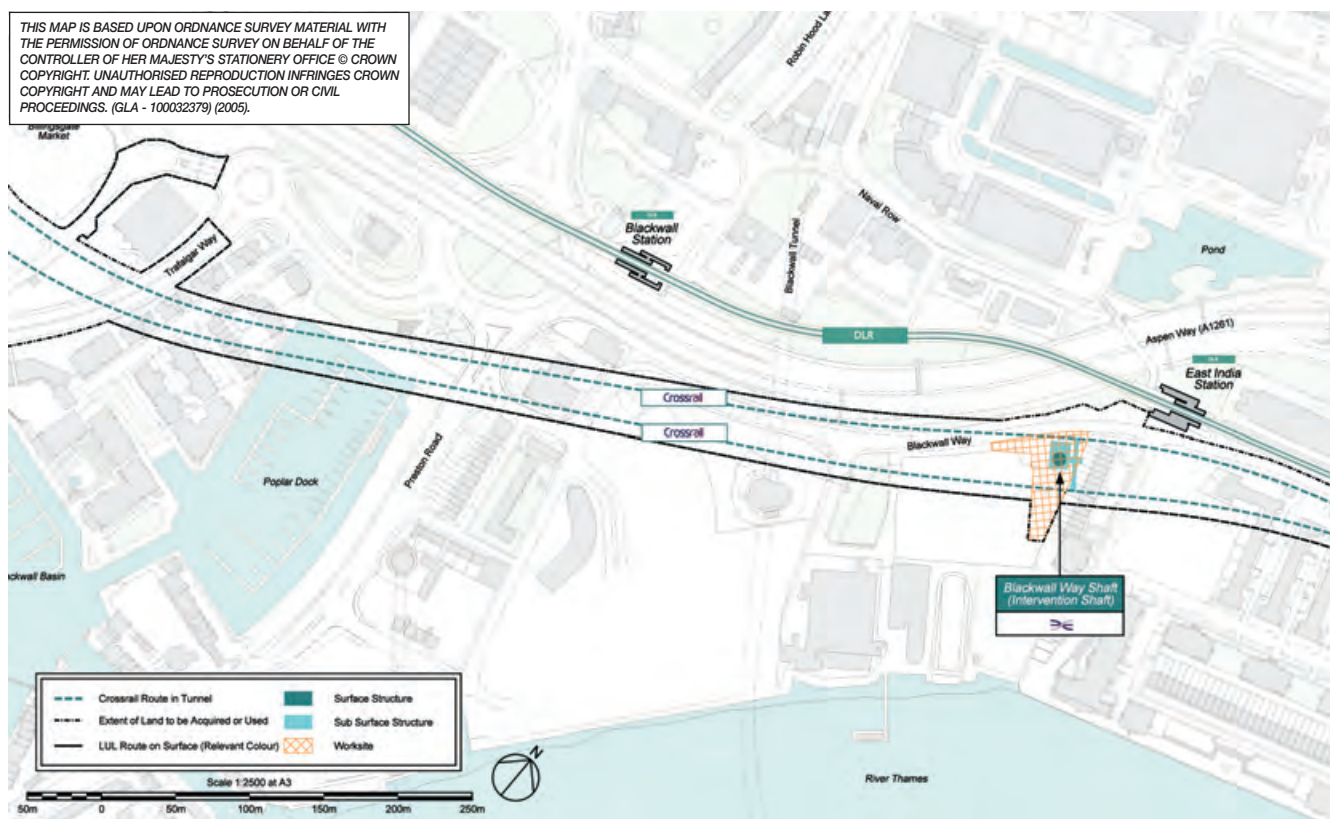
Traffic and Access

Crossrail is consulting local authorities on proposed traffic routes. It is currently anticipated that access to the site lorries would be from Aspen Way via Preston Road.

It is anticipated that lorries will access the site from the A13 East India Dock Road via Leamouth Road and the A1261 Aspen Way/A1020 Lower Lea Crossing junction via Newport Avenue.



Blackwall Way Shaft Section



Blackwall Way Shaft