102
Camley Street, London N1C 4PF

Construction Methodology

June 2014

REGENT RENEWAL LTD

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Regent Renewal Ltd

102 Camley Street

Construction Methodology

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1 Introduction

Arup have been appointed to provide Engineering Consultancy Services to inform the Planning Application for the redevelopment of 102 Camley Street, London NW1 0PF. The project comprises commercial and associated servicing at ground and basement level with residential accommodation at upper floors in a 12 storey high-rise building on Camley Street.

The site is currently occupied by a warehouse building and is situated between the Railway line to St Pancras to the East, Regent's Canal to the South and Camley Street to the West, as shown on Figure 1.1. The sites to the North are also in the process of being redeveloped into similar mixed use residential and commercial buildings.

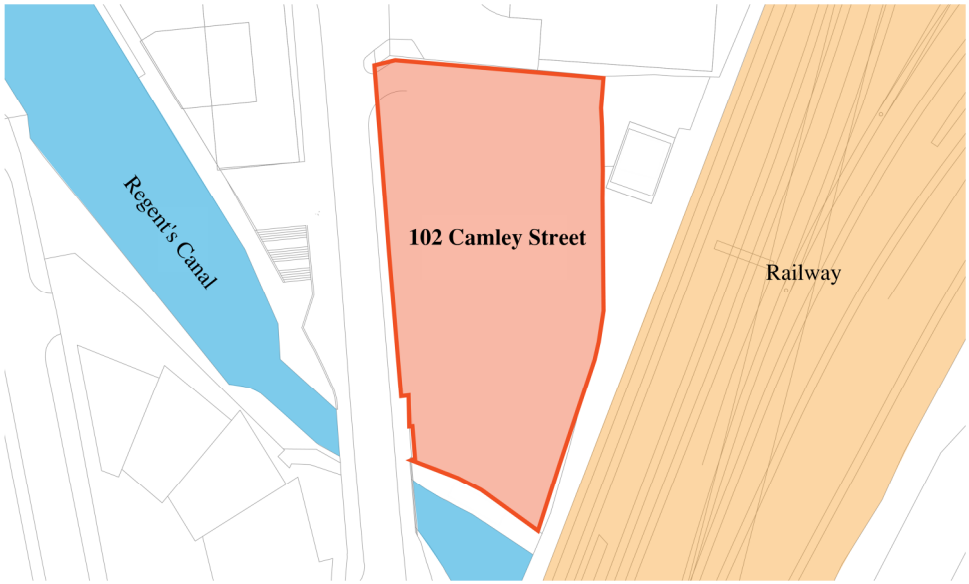

Figure 1.1 Site location plan

The Services comprise the following activities:

- Geotechnical desk study to confirm likely ground conditions, water regime and other site constraints. This includes the basement impact assessment.
- Utilities search to identify utilities in the area, to determine whether diversion work is required and to consider capacity requirements for the development.
- Structural strategy for the building in sketch form including foundations, other substructure and superstructure. It includes consideration of the several interfaces with adjacent stakeholders.
- Mechanical, electrical and public health services strategy for the building in sketch form, to set main plant locations, routes and risers and including a preliminary lift analysis and preliminary fire strategy.
- Air Quality Assessment for the site detailing the impacts of construction, operation and adjacency to the railway.
- Construction logistics plan in the form of a short report with staging plans to demonstrate approach and methodology towards Network Rail and other third parties.

2 Construction Methodology

The report outlines in general terms how the construction of the proposed development 102 Camley Street could reasonably be expected to proceed.

It considers site constraints from a construction perspective, a likely phasing arrangement with associated site logistics, and comments in particular on how works might impact those connected with the nearby railway line and retain 24/7 access for Network Rail to their adjacent electrical sub-station.

2.1 Site Constraints and Logistics

In terms of access & logistics; the site is constrained on all sides, to the North is an existing industrial unit, to the East is a Network Rail Sub-station and railway tracks, to the South is the Regents canal and towpath / footpath and to the West is Camley Street.

To the North of the site and within the site boundary is a shared access with Network Rail (NR) that needs to be maintained to provide 24 hour, 7 day access to NR substation. A nominal 6m wide access is to be maintained clear of materials at all times to facilitate NR's access.

The site will be adjacent to residential areas and the Contractor will be required to provide equipment suitably baffled and to implement methodology / procedures and additional screening to reduce the impact of noise on the adjacent environment.

Tower cranes (probably 2 No at peak) will not be permitted to over sail the NR railway tracks to the East (by means of implementation of electronic restrictions to slewing operations).

Figure 2.1 View looking South along Camley Street, 102 on LHS

The canal side footpath and Camley Street are both available to the public and appropriate protection methods will need to be provided for their safety (Protected gantries, hoardings and manned gates during deliveries).

Camley Street is a 2 way carriageway and is the only vehicular access to the site. It is anticipated the adjacent development will be substantially complete when this development commences and the full carriageway width will be available for the construction traffic.

The access to the site will be via the North gate which will be secured with a double padlock arrangement providing access to NR when the site is closed. Due to the limited width of the carriageway the contractor will be required to implement a vehicle control system/ 'call off' to prevent any build up of wagons on the carriageway.

The width of the access road within the site will not be sufficient to enable larger vehicles to turn round within the site. It will therefore be necessary for reversing into or out of the site. The Contractor will be required to provide personnel for control of traffic on the carriageway during periods of vehicle movement.

There is an existing metal fence around the site with a double width vehicle access gate to the north of the site on Camley Street and a single width personnel access gate to the south of the site on Camley Street. It is anticipated that this fencing will be maintained during the major part of the construction period. The Contractor will be required to cover the facing of the fence on the Camley Street and canal elevations to provide additional protection to the public.

To facilitate the construction of the development we anticipate 2 No tower cranes being provided, 1No primarily for the 12 storey block and the other for the 8 storey block. The cranes will be of the luffing jib type that will allow for no over sailing of the railway tracks.

The site welfare and management accommodation will be initially located to the South end on the current grassed area. The personnel gate at that end of the site will provide the site access segregating operatives from the vehicular traffic at the North end.

Once the basement is constructed we would anticipate relocating the accommodation into the future office area where it can remain for the duration of the construction works (Subject to agreement with the client). An interim location during excavation will need to be identified.

During the Fit-Out period; 2 number goods hoists will be provided - 1serving the 12 storey block and the other the servicing materials 8 storey block.

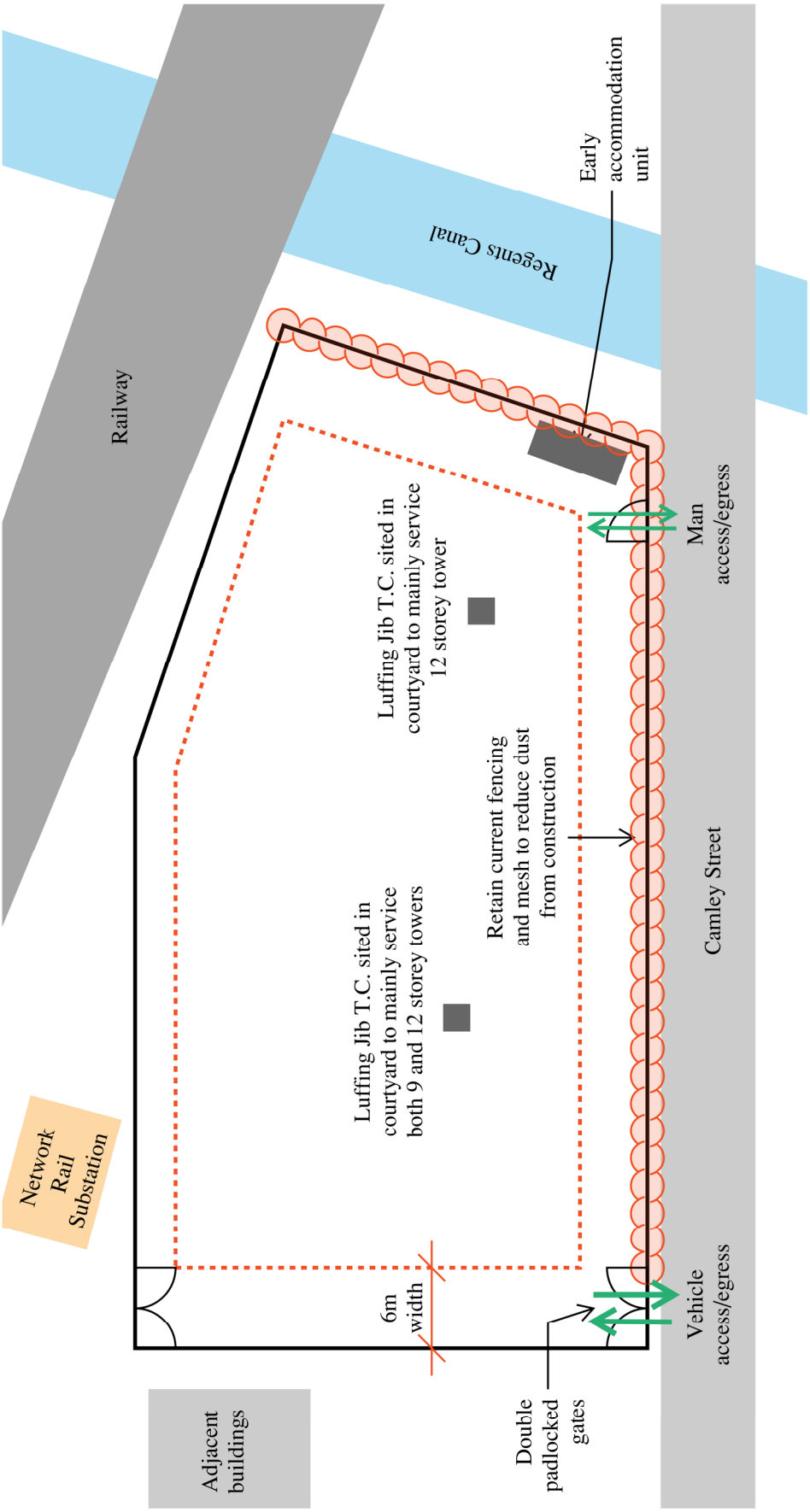

Figure 2.2 Site constraints and logistics

2.2 Outline Construction Methodology

The construction methodology can be considered in 4 phases,

- Phase 1 – Demolition and piling
- Phase 2 – Substructure
- Phase 3 – Superstructure and external envelope
- Phase 4 – Internal fit-Out, MEP services and Landscaping

2.2.1 Phase 1

The demolition material will be removed from site via the North access gate. The demolition of the industrial unit will most likely be undertaken in a North – South direction.

The demolition will include the break out & removal of the ground floor slab and the formation of a piling mat at the ground floor level (Possibly by re-cycling and crushing demolition arising's).

It is anticipated that there will be no restrictions to the day-to-day construction activities due to the proximity of the NR tracks.

Tower cranes may have to be 'de-rated' to less than their maximum lifting capacity and NR may require submission and approval of detailed method statements regarding crane erection and dismantle. However confirmation discussions need to be undertaken with NR.

Services will be disconnected and capped off at the boundary for their future use or upgrading for the new development.

Following completion of the demolition, clearing of the site and construction of the piling mat, the piling will be undertaken from approximately ground floor level.

The site is large enough to employ 2 number piling rigs with associated handling cranes as well as providing space for other plant and lay down areas.

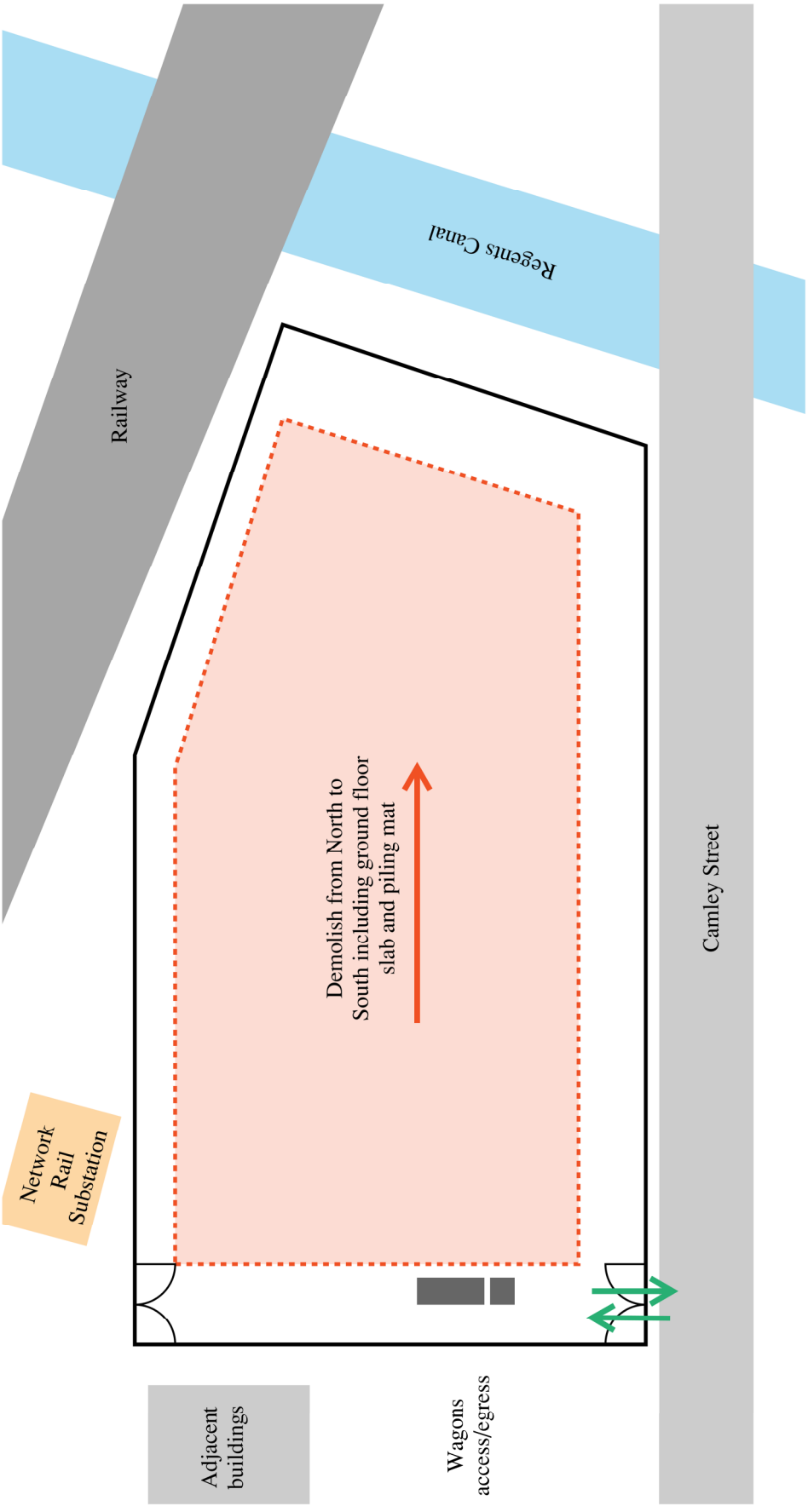

Figure 2.3 Phase 1 - Demolition

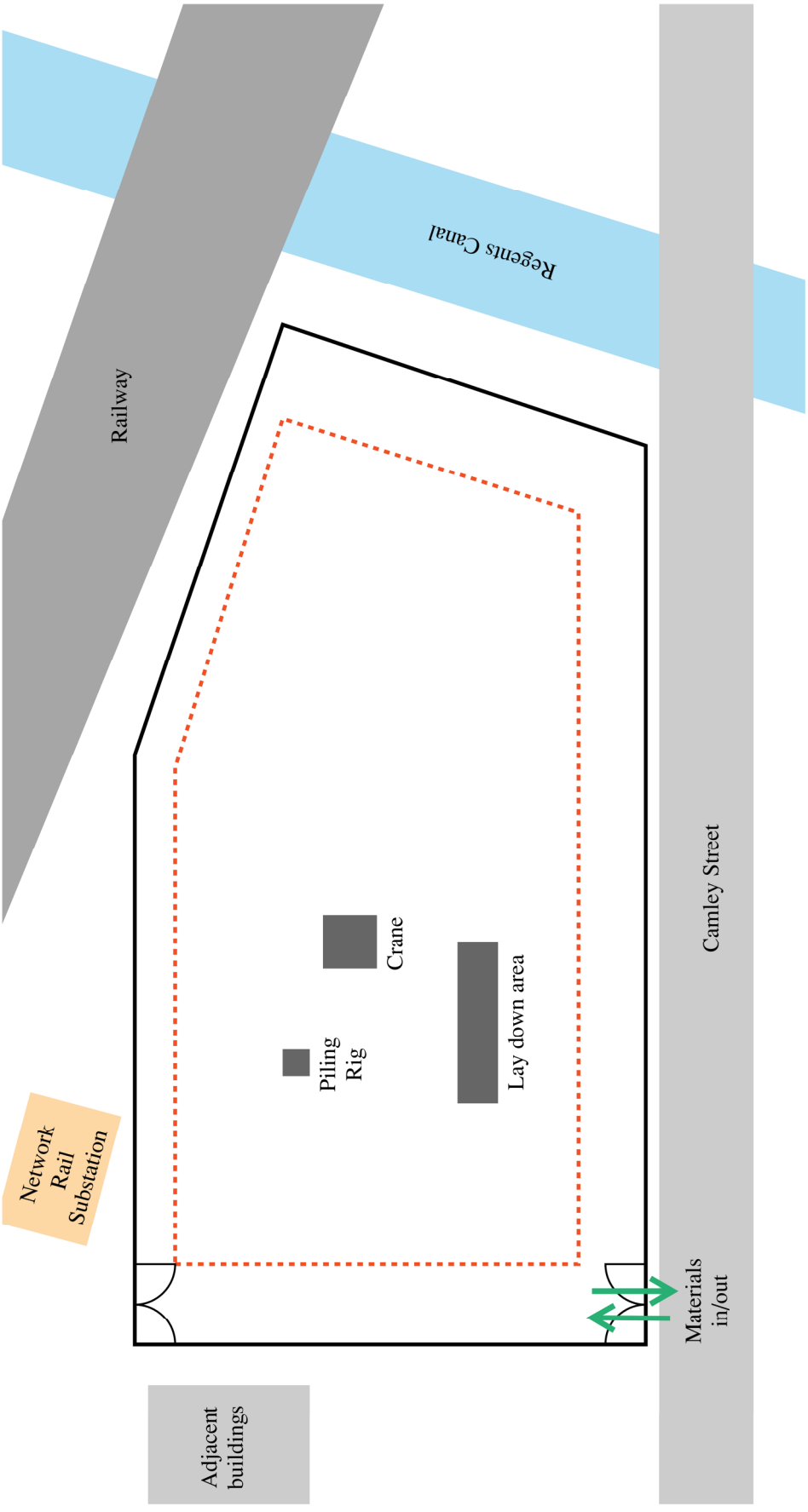

Figure 2.4 Phase 1:Piling

2.2.2 Phase 2

On completion of the piling the construction of the substructure can commence.

It is anticipated that there are no major underground services crossing the site other than local feeds serving the industrial site which have been dealt with during demolition.

Any services serving the NR substation from Camley Street are assumed to be within the 6m wide zone to the North of the development and will be undisturbed throughout the works. Sheet piling will be most likely be required to be installed to the 3 sides of the perimeter of the basement and could be used to form the back shutter shuttering for the outer face of the perimeter walls.

Excavation will then commence and with all excavated material being taken from the site at the North end the excavation will take place south to North. The excavation will include the grassed area to the south of the site up the back of the canal side retaining wall and either a berm left in place or temporary works provided to support the wall.

Temporary supports (most likely raking propos) will be provided to the sheet piling as the excavation progresses.

The basement construction will follow on in sequence north to South which will facilitate the early commencement of the 12 storey block which will be on the critical path of the programme. Underground services will be installed, piles will be broken down to their cut-off levels, insulation and waterproofing the basement slab will be formed progressively down the site.

The cores will commence from the basement slab and most likely using a jump form technique the core construction will commence and continue up the building.

As the basement slab progresses the basement perimeter walls are formed with traditional shuttering techniques on a ‘hit and miss’ arrangement allowing the temporary works to the sheet piling to be progressively removed. As the basement walls become complete the sheet piling will be removed.

In parallel with the perimeter walls the internal columns will be constructed and this will enable the ground floor slab to be progressed and be tied into the core walls.

Traditional tables and formwork will be used for the construction of the ground floor slab. The site would be split into zones to enable the overlap of works and material to be able to flow from the North to the South of the site.

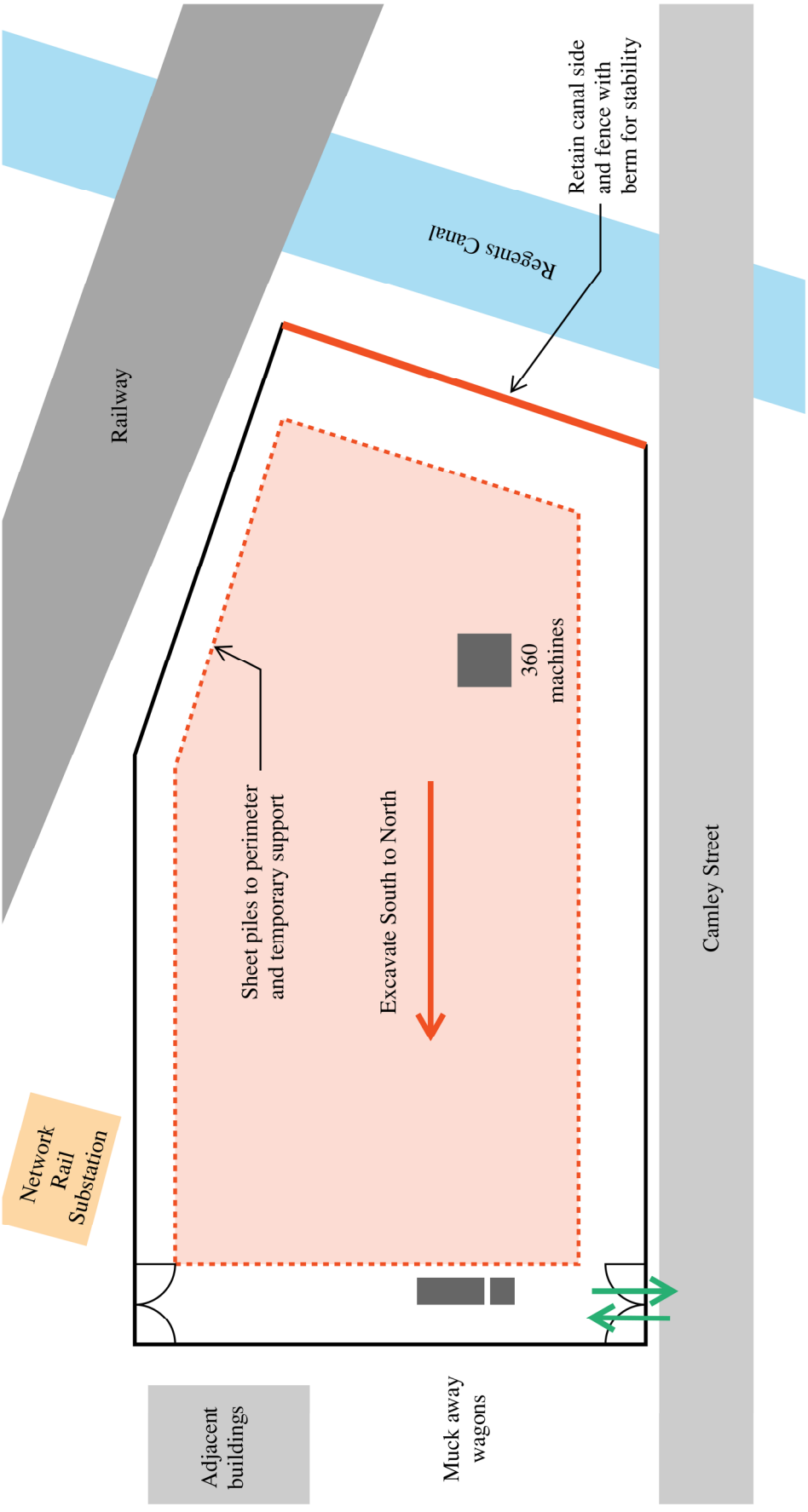

Figure 2.5 Phase 2: Excavation

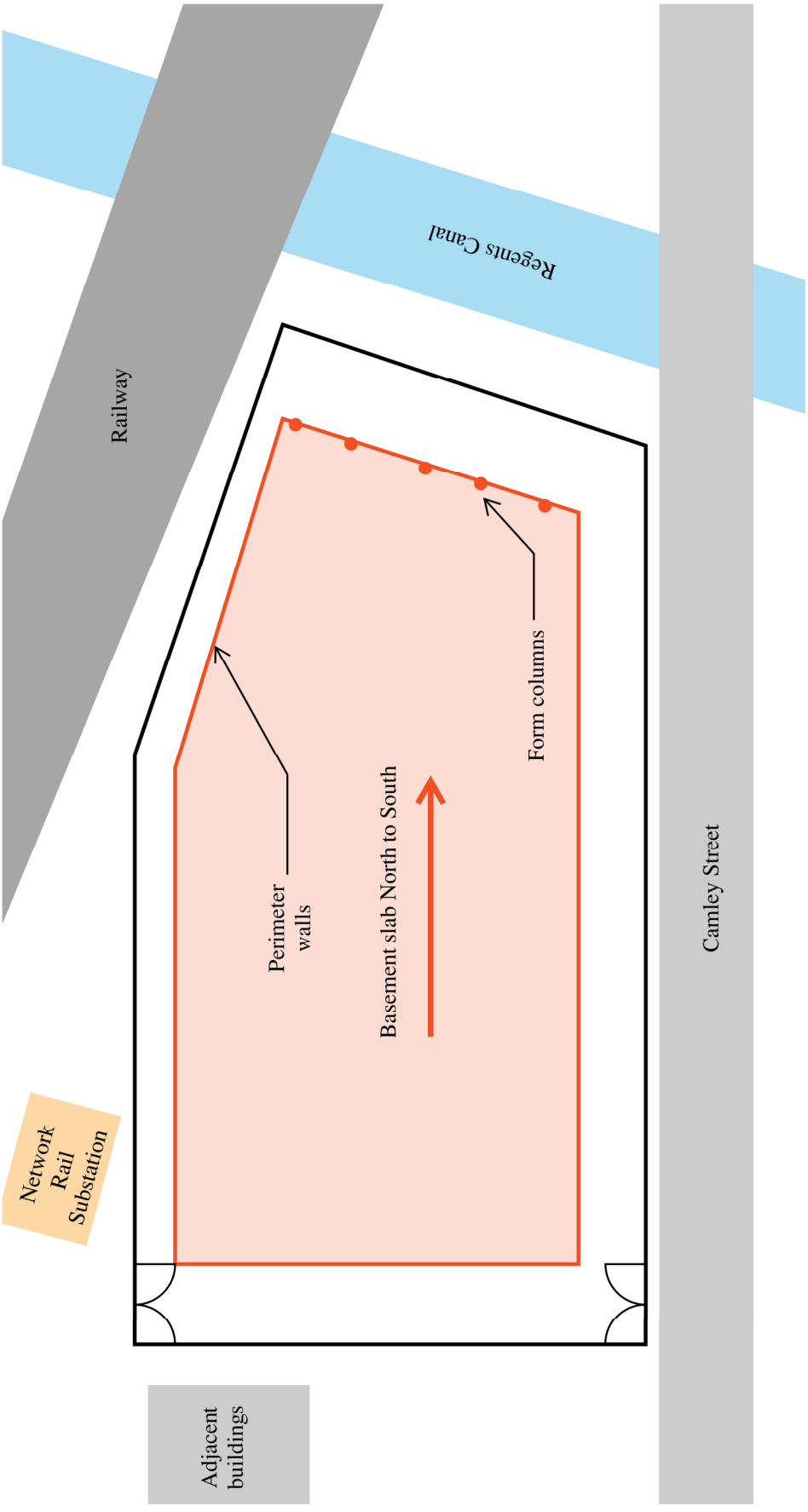

Figure 2.6 Phase 2: Basement construction

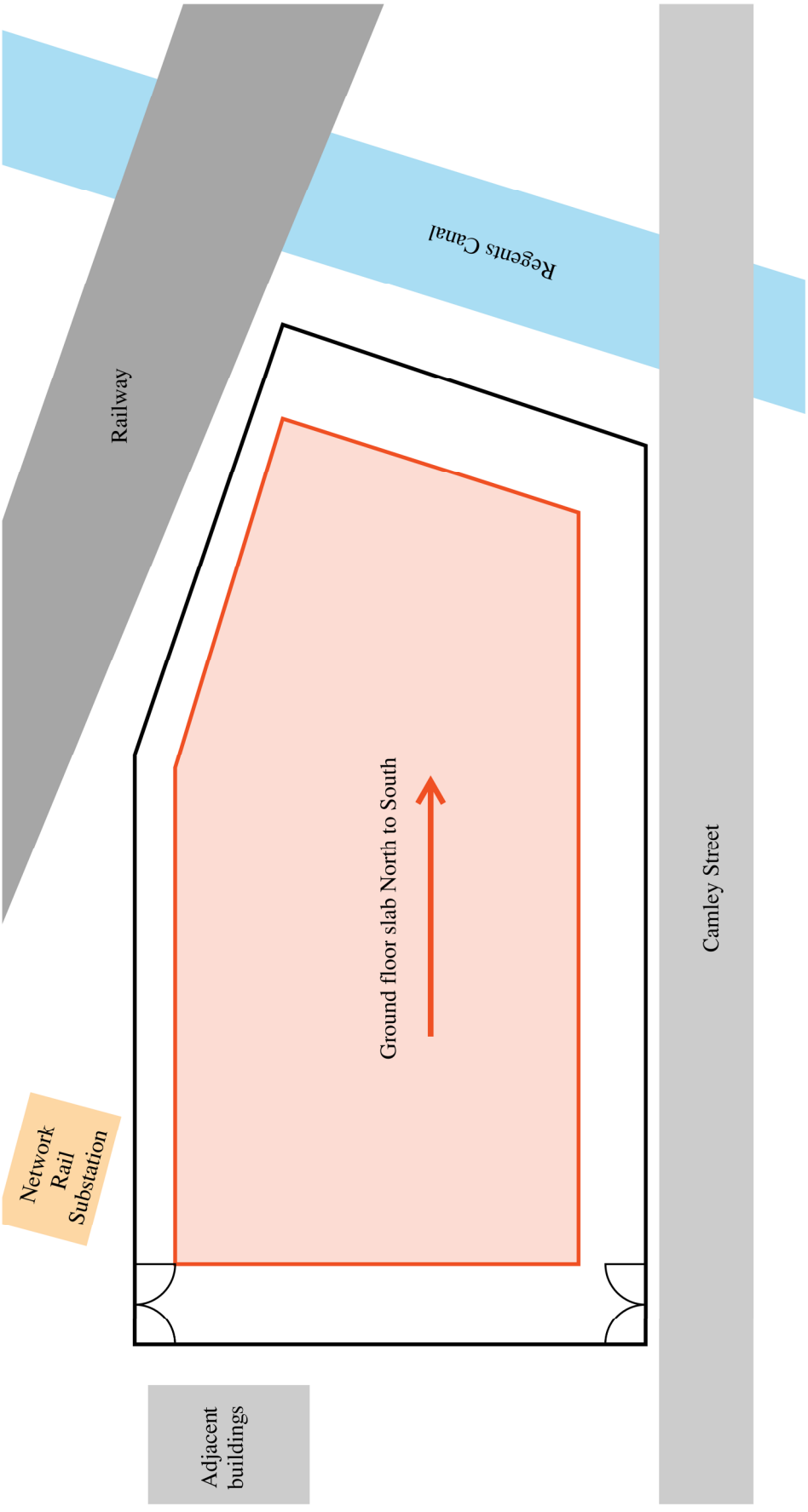

Figure 2.7 Phase 2: Ground floor construction

2.2.3 Phase 3

Once a sufficient area of the ground floor slab is constructed the 12 storey block will commence following behind the core construction. Columns will be constructed from the ground floor slab with a traditional table formwork. This procedure will then continue up the building.

The 8 storey block will commence once the ground floor slab is completed in that area and be constructed as the taller block, lagging behind slightly.

A mobile concrete pump will be utilised on the site and located in the access yard to the North, concrete lorries will discharge into the pump hopper and the concrete will be distributed around the site via static concrete lines.

As the RC superstructure progresses the cladding to the building can be commenced.

The final design of the cladding system will determine the construction technique which may include a tower crane and scaffold solution, mast climber systems, or if a panellised cladding solution then on floor specialist equipment.

The tower cranes will be removed when the cladding works are completed and major plant and materials are sited at roof level.

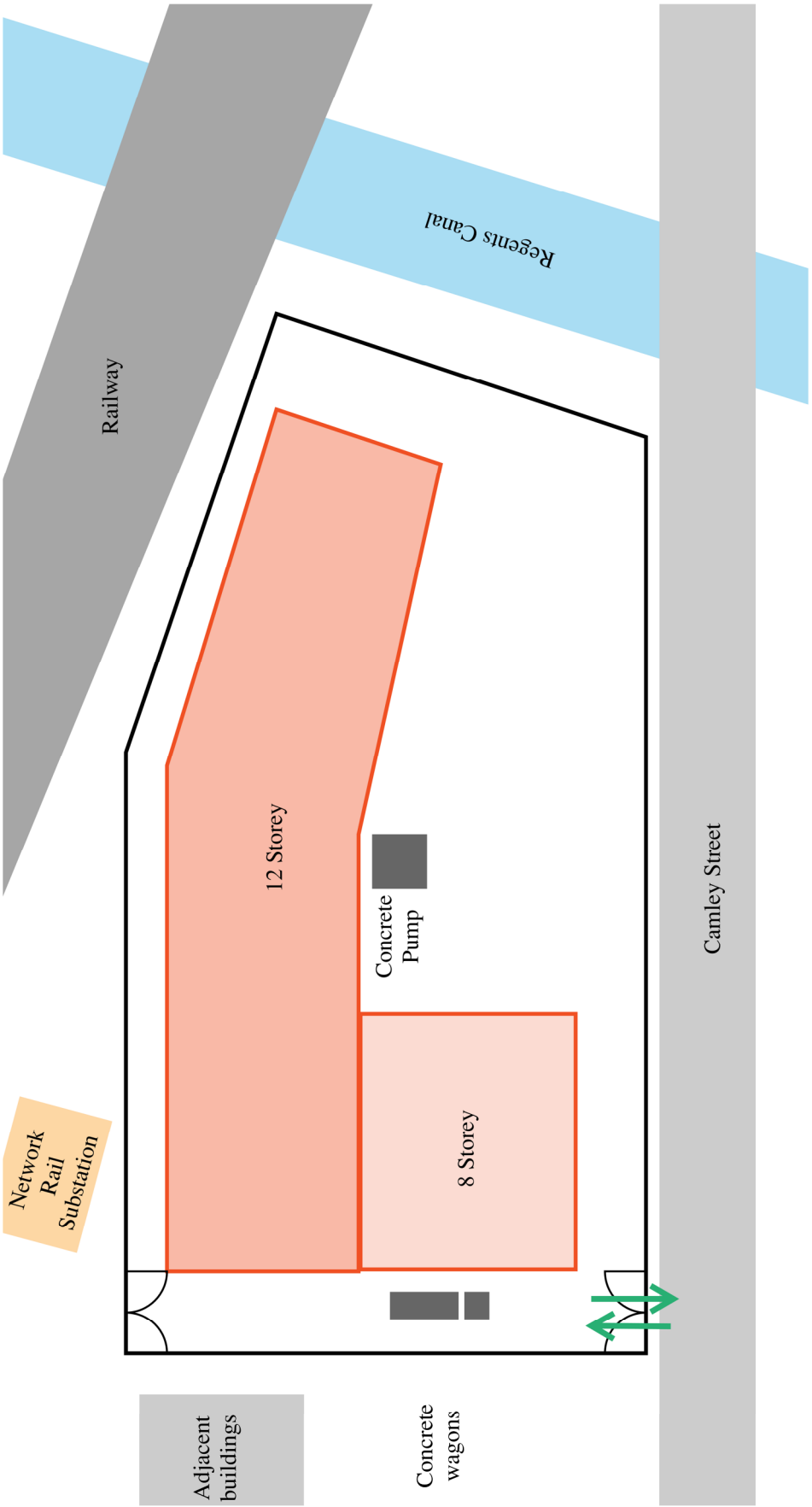

Figure 2.8 Phase 3: Tower construction

2.2.4 Phase 4

The internal fit-out of the spaces will commence as soon as areas become available.

Work faces will open up continually as the structure progresses and work will be undertaken in all areas to suit material and operative availability.

The site logistics will simplify in this period as the size of vehicles attending the site become smaller.

To enable the efficient distribution of operatives and materials around the site it is anticipated that 2 No site hoists will be provided.

They are likely to be located within the atrium area, which may require temporarily leaving out sections of atrium roof and sections of the external cladding to facilitate. They will be removed in sufficient time to allow for closing up of the buildings prior to MEP services test & commissioning and handover.

During the latter stages of the works the final landscaping can be undertaken including the demolition of the canal side retaining wall, the finalisation of the cycle ramps from the canal footpath, the steps to ground level and tying in of the floor finishes between the two spaces.

It is anticipated for safety reasons the canal side path will be closed to the public during this short period of works.

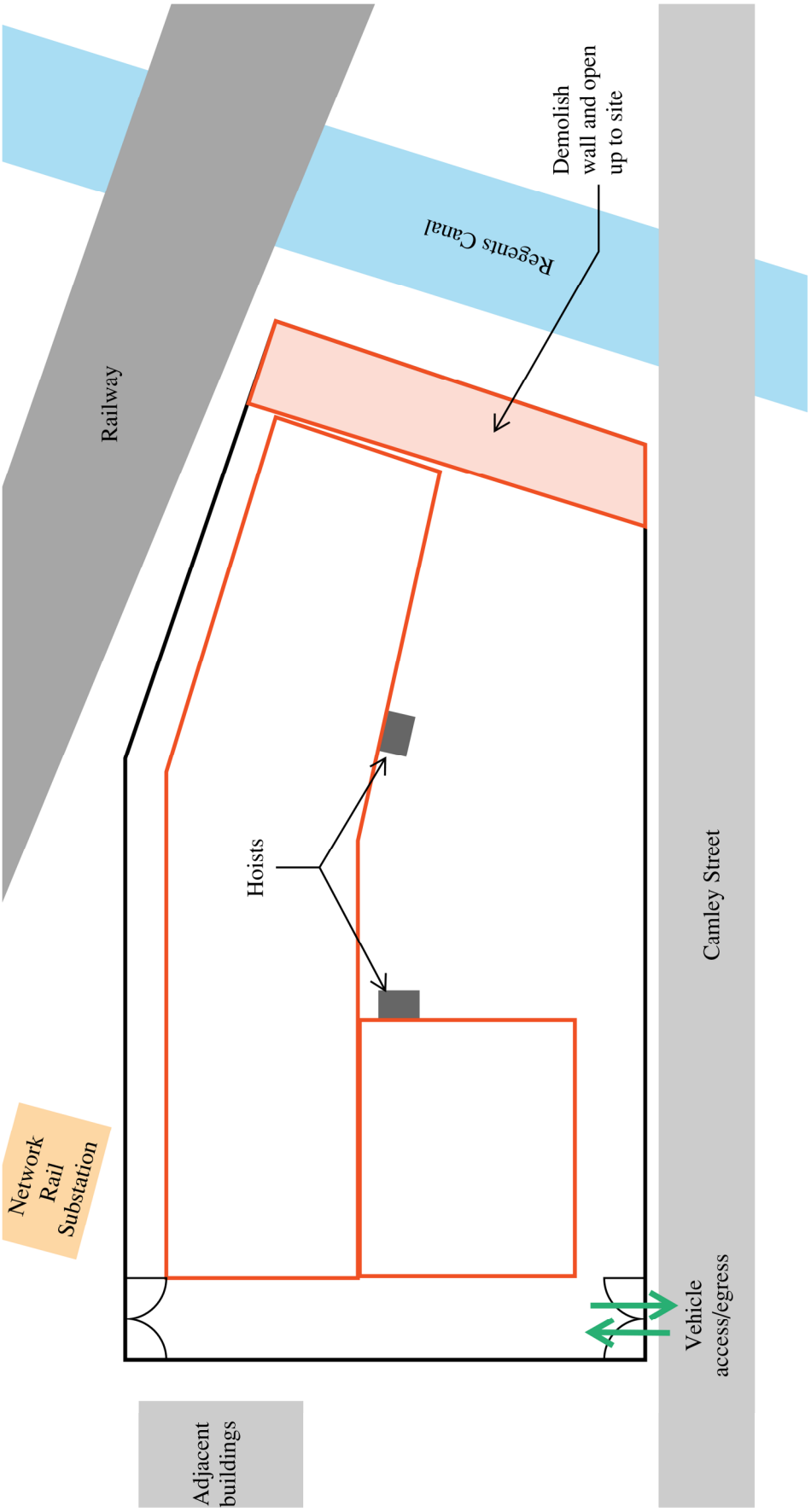

Figure 2.9 Phase 4: Internal fit-out