

Earls Court Development Facilitation Programme

Technical Feasibility Report for relocating from Lillie Bridge depot, including Ashfield House, for Commercial Development

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Doc Ref: LBD DFP- Technical Feasibility Report _Rpt-001

Date	Revision	Comments
6 th June 2014	1	Comments included from those consulted.

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1. Introduction

The purpose of this report is to outline the technical feasibility of undertaking the Lillie Bridge Depot (LBD) Development facilitation works. This report outlines the history of the options investigated, the options progressed, the current design status, estimated costs, risks, issues and the next steps that are required if LBD development facilitation is to be considered further.

In November 2013 an outline planning consent was granted in for the Earls Courts Masterplan covering circa 11.75m sqft of development within the Earls Court Opportunity Area (ECO) including 7,500 residential units. On 5th February 2014, TfL received Board approval to finalise agreements to enter into a joint venture with Capital and Counties PLC (Capco), and subsequently finalised an agreement with Capco in March 2014, to develop the Earls Court 1&2 land in accordance with the outline consent. The development of the exhibition centres will form the initial phases of a 20 year plus programme of development to deliver the overall Masterplan.

LBD, which includes Ashfield House, lies within the West Kensington and ECO. LBD forms the latter phases of the approved Masterplan and as a result TfL has been investigating the feasibility of relocating operational elements from and within the LBD site whilst maintaining operational services and facilities.

2. Executive Summary

Feasibility work commenced in 2010 from which a number of options and approaches were developed and analysed. The conclusion reached is that stabling has to be maintained at the LBD site and that there is the potential to relocate the LBD facilities and workshops to Acton Works with Transplant maintenance activities moving to Ruislip depot (Transplant are being relocated to Ruislip depot as part of the Earls Court 1&2 Development Facilitation project, see section 3.2.1).

Stabling

Several sites were considered for stabling S7 Trains and Engineers Trains but a stabling facility beneath the proposed development at LBD was considered to be possible and is the optimum available location. A design has been developed that meets all LU's principal requirements but the design defers some details to be resolved in the design for the section of box which will be on LBD.

Workshop relocation

The feasibility concludes that if the current Acton Works are reconfigured, there would be space available to relocate the workshops from LBD to Acton. Further more detailed investigations and designs are required to ratify the conclusions.

Ashfield House

The occupiers of Ashfield House could be relocated within the existing TfL office portfolio, or new office space acquired, thereby allowing the demolition of the building. All the technical services can be relocated elsewhere.

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Feasibility stage Cost: [REDACTED]

This cost provides for a vacant site at LBD including the creation of a development platform above the retained stabling to allow the Masterplan development to proceed and covers design, construction activities (construction at Acton Works, stabling box construction, vacation of Ashfield House (assuming a relocation within TfL office portfolio) and relocation of services), management and risk. The figure also includes provision for the relocation of the ERU (Emergency Response Unit) training facility from Acton Works to a new site.

Programme: [REDACTED]

The programme includes [REDACTED] to provide new facilities at Acton Works for activities displaced from LBD, and [REDACTED] to then build and migrate to the stabling box which will be situated under the proposed Masterplan development. The long duration for this activity is because the works will be done in phases in order to meet stabling requirements during the works.

Risks:

[REDACTED]

Land Acquisition – Land may need to be acquired to relocate the ERU training facility although the only practical design solution may be to retain the ERU training facility at Acton Works if sufficient space can be created from the site reorganisation. Land/offices may also be required for the Ashfield House Occupiers if office accommodation cannot be found from within the TfL estate.

Viability – Funding for the works will be required from the Commercial Development Directorate, which will be dependant on the value of the proposed Masterplan development.

Next Steps

The following activities need to be undertaken:

- Commercial Development confirmation that funding will be available.
- Progress the stabling box design to cover the whole of the development area with the aim of addressing requirements not met in the Earls Court 2 (EC2) area.
- Commence the pre planning process with the Local Authority for the potential construction work at Acton Works.
- Traffic flow modeling in and around the Acton Works.
- Evaluate location options for the ERU training facility which is displaced in the current design.
- Acton Works requirements review and update.

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3. Background

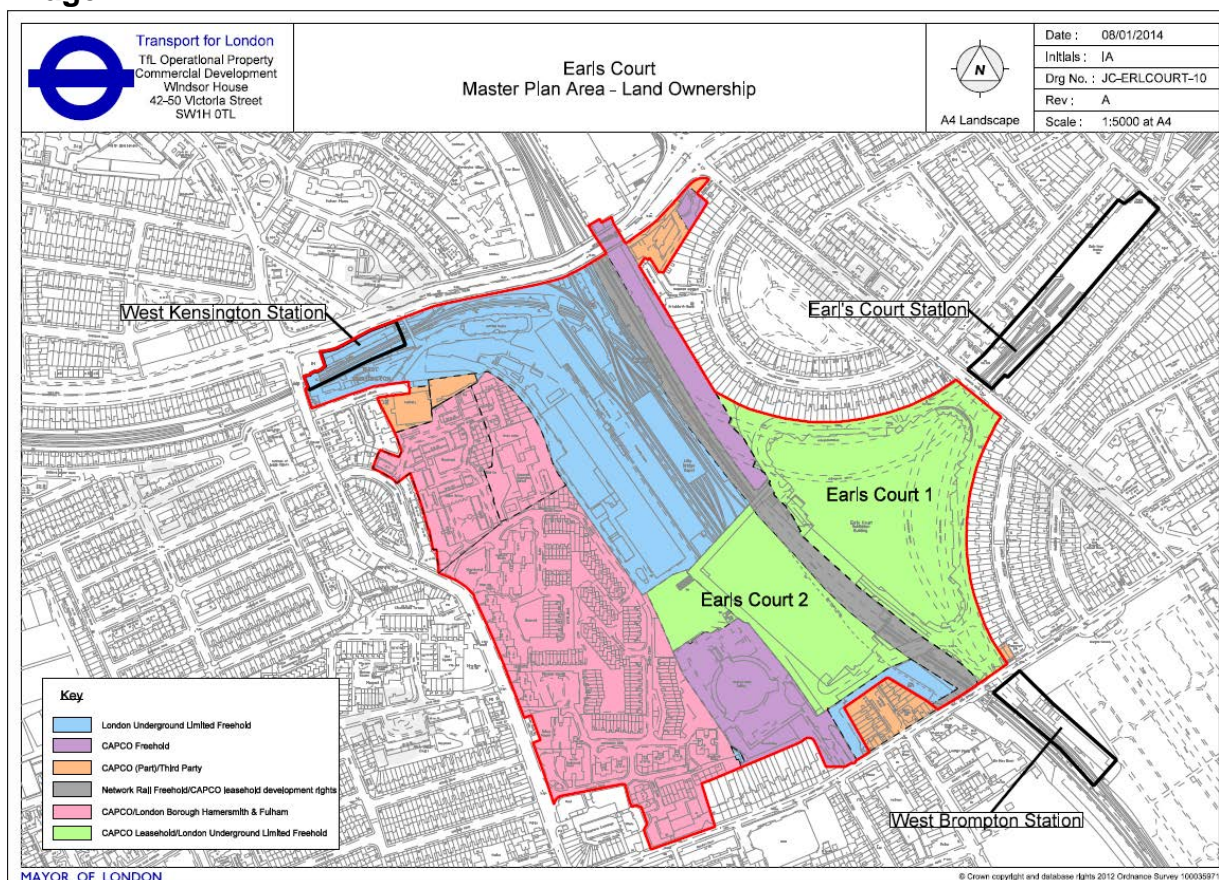
3.1 Land Ownership & Usage

The ECOA is one of the largest regeneration projects in London and covers an area of approximately 77 acres (31 hectares) on the western edge of central London spanning the London Borough of Hammersmith and Fulham (LBHF) and the Royal Borough of Kensington and Chelsea (RBKC). The ECOA is served by West Kensington, Earls Court and West Brompton Tube stations, and is bounded to the north by the A4, the east by Warwick Avenue, the west by North End Road and the south by Lillie Road.

The Masterplan for the ECOA, as shown on the plan below, covers 10.1 million square feet of developable space, and proposals for 7,500 new homes (of which 740 are additional affordable homes and 760 are replacement homes) and 10,000 new jobs as well as new open green space, health facilities and community and cultural spaces.

Outline planning permission for the Masterplan was approved by the LBHF and RBKC in November 2013 following the signing of the section 106 planning agreement by all relevant parties, including TfL in its capacity as both a transport authority and landowner.

Image1



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Within the ECOA, TfL/LU has a freehold interest in approximately 14 hectares (35 acres) (the blue and green areas in Image 1) of an overall gross development area of approximately 27 hectares (66 acres).

LBHF owns 8.6 hectares of the site (shown shaded pink in Image 1).

Capco, through its wholly owned subsidiary Earls Court Properties Limited, has a number of freehold interests in the site and has a leasehold for the two exhibition centres at Earls Court known as Earls Court 1 and 2 (EC1&2).

TfL owns the freehold of and occupy LBD, which is shaded blue on the plan and includes the space beneath EC2 (shaded lime green in Image 1). The depot comprises:

- Stabling: of up to 10 new S7 trains;
- Transplant Maintenance: 3 stabling roads for use by Transplant Maintenance activities. These are in the process of being relocated to Ruislip depot.
- Workshops: Maintenance Infrastructure Services (MIS), Track Manufacturing Division (TMD), Track Delivery Unit (TDU), Plant Services (workshops and stores) and Transplant storage facilities; and
- Ashfield House: General offices, [REDACTED], West Ashfield training facility, [REDACTED] and Network Operational learning.

The LBD site plan is shown in Appendix B.

3.2 Land Development

Capco commenced discussions with TfL and LBHF over the possibility of redeveloping the area including the LBD site in 2008.

TfL/LU has investigated various options to maximise the value of their land holdings whilst not impacting railway operations.

The original intent was to progress an agreement for the whole of the TfL interests in the OA and in June 2010 TfL approved the commissioning of high level, RIBA stage A, appraisal studies into cost estimates for the relocation of assets from LBD.

In May 2011 RIBA stage A cost estimates were produced by Turner & Townsend for:

- Lillie Bridge on site stabling. Turner & Townsend estimated that the cost of constructing and fitting out a new stabling box at LBD would be [REDACTED] including risk
- Lillie Bridge depot Relocation of the existing engineering facilities. This report outlined three options:
 - 1) Using Acton Works & Ruislip depot. [REDACTED]
 - 2) Using another railway facility (assuming a facility with rail and access links could be found). [REDACTED]

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- 3) Using a Brownfield site for relocating the facilities. [REDACTED]
- Ashfield House Relocation Options. This report outlined four options:
 - 1) A new build facility. [REDACTED]
 - 2) Refurbishment of an existing TfL office building in London. [REDACTED]
 - 3) Fit out of an existing office building (not TfL owned). [REDACTED]
 - 4) Fit out of an existing office building (not TfL owned) for the relocation of the office accommodation and a new build office for Operational Learning. [REDACTED]

These estimates provided LU and TfL with basic costs which needed to be considered in relation to development. Given the scale of the overall development and the associated risks, costs, and potential phasing, in September 2011 TfL undertook a review of the options available and decided on the progression of a two phased approach to the development of land to facilitate the Earls Court development.

- 1) Earls Court 1&2 Development Facilitation: this being the work that TfL needs to undertake (removing assets from the green shaded area entitled EC 2 in Image 1) to enable the development of the current exhibition centres and the initial phases of the overall Masterplan development and
- 2) LBD Development Facilitation: this being the work that TfL needs to undertake to enable the development of LBD (large blue area in Image 1) which would only be progressed subject to the feasibility and viability of relocating or re-providing the current LU operational facilities.

3.2.1 Earls Court 1&2 Development Facilitation

Following allocation of funding by TfL and Rail and Underground Board approval in November 2013, LU has commenced the Earls Court 1&2 Development Facilitation project to remove all their assets currently underneath EC2 to allow the redevelopment of the EC1 & 2 land. As noted in Section 1, the Joint Venture between TfL and Capco was agreed in March 2014.

The detail of the Earls Court 1&2 Development Facilitation project is not covered further in this report except to say the changes will relocate all Transplant maintenance to Ruislip, provide a revised stabling arrangement capable of berthing twelve S-Stock trains, vacating all LU operations from under EC2, and changes to storage, car-parking and site access at LBD. The revised stabling will provide a compliant long term solution should the complete redevelopment of LBD not proceed. The changes to maintenance and operations at LBD are otherwise negligible. This facilitation work has also included the spatial planning design for the void (essentially part of the future stabling box) to be left under the development on the EC2 land which has been undertaken in anticipation of the LBD Development Facilitation project going ahead. The arrangement of LBD post project is shown in Appendix C.

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4. LBD Development Facilitation project

4.1 Requirements

4.1.1 General Requirements

The fundamental aim of the project was to devise a viable and cost effective solution to enable the redevelopment of LBD (as revised by the EC1&2 Development Facilitation project), including Ashfield House for commercial and residential purposes whilst maintaining the integrity of the operational railway

4.1.2 Workshop Requirements

LU's overall strategy for engineering, manufacturing and specialist services underpins the workshop requirements. That strategy is to develop and retain key strategic internal capabilities and competencies that will allow LU to provide a timely, economic and efficient service.

To that end the project sought to establish the feasibility and costs of relocating the workshop facilities to another part of the LU estate. The intention was to provide "like-for-like" functionality and where practical to update the facilities to exploit better layouts, lean methods, modern processes etc.

A review in the first half of 2011 by LU's Asset Performance Directorate identified the potential to relocate the workshops and associated activities to Acton Works and Transplant maintenance activities to Ruislip depot.

Acton Works was opened in 1922 (originally called Acton Overhaul Works). Some additions and modifications have been undertaken over the last century but many of the buildings on the site, which date back to the 1920s, are coming to the end of their structural life whilst others are wholly or partially abandoned.

Acton Works is presently home to the Rail Engineering Workshops (REW, built 1980s) and Trains Modification Unit (TMU), power & electrical maintenance teams, stores and other support services (e.g. Distribution Services, Emergency Response Unit (ERU)). Given that LU owns the freehold and in consideration of its geographic location and good transportation links, Acton Works is the favoured location to consolidate manufacturing activities to create a centre of engineering excellence.

4.1.3. Stabling Requirements

The project requirements are centred on providing twelve train stabling berths in the central London region. Previous work by Transport Planning on the Sub Surface Railway Upgrade Programme (SUP) business case has shown that the optimal location for stabling in the central area was LBD (as it already existed) and that this required a minimum of ten berths to enable the proposed end-state timetable. Under advice from LU Transport Planning and allowing for changes in future service patterns, an additional twenty per cent was recommended, making the total number of berths twelve. One of the berths needs to be capable of stabling an engineering train

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(e.g. rail grinder or battery loco plus wagons) and have access to street level for the on/off tracking of road rail vehicles (RRV). This requirement is necessary to support long term infrastructure and track renewal programmes.

4.2 Stabling Design

4.2.1 Relocating Stabling

In 2010 Halcrow were commissioned by Capco to undertake an options analysis of alternative central London train stabling facilities away from LBD. Halcrow's work completed in Feb 2011 and EC Harris provided cost estimates based on the engineering solutions proposed. The options proposed and estimated costs are outlined below:

Locations	No. of trains	Cost (£m)	Notes
Kensington Olympia (Maclise Road)	4	█	Need to rebuild part of Kensington Olympia station. Potential loss of residential development on Capco car park. Need to purchase land from Network Rail (not in estimate)
	9	█	As above plus significant cost building underground car park.
Parsons Green	3	█	Site may not be available long term as the area is reserved for Crossrail 2 works.
	5	█	Site may not be available long term as the area is reserved for Crossrail 2 works.
South Kensington	2	█	
West Ham	5	█	Operationally inefficient location.
Whiteley Sidings	2	█	

Due to the operational costs associated with each stabling location, LU set a requirement that the twelve berths must be provided by no more than two sites. Following an analysis of the proposed options and in light of the aforementioned requirement, LU determined that the only realistic solution was to incorporate stabling facilities within the new development. Note; although provision of nine stabling berths at Maclise Road was considered feasible by LU (to be supplemented by another site),

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the impact on the area and the associated costs and risks of that option led to it being ruled out.

In order to provide the twelve berths at LBD and in consideration of the Masterplan and the east-west alignment/gradient of the site, it was decided that to maximize development potential the most beneficial solution was to provide a subterranean stabling facility immediately adjacent to the West London line. This design minimized the impact on the development above it and comprised twelve berths made up of six double length roads

It should be noted that during the development of the stabling box option, other alternative stabling options were informally considered but none were found to be worth progressing further due to the same reasons as above i.e. no two sites large enough to provide twelve berths, the costs of providing stabling was greater than LBD and had inherent risks.

4.2.2 Stabling box

Halcrow Stabling box design

In September 2011 Halcrow, on behalf of Capco, produced a design (Lillie Bridge outline design, operations and maintenance strategy) based upon LU requirements for an under site development stabling box.

This design proposed a layout comprising of six tracks numbered 1 to 6 from the east to the west side of the stabling facility. Each track consists of two stabling berths, each able to stable an S7 train (see Appendix D).

LU reviewed the design and although the principal was accepted, there were a number of technical concerns with the proposals.

Jacobs stabling box validation design work

As LU had concerns regarding the acceptability of the proposals, in the summer of 2012 Jacobs engineering were commissioned by LU to validate the work presented by Halcrow.

This validation work consisted of reviewing all design elements:

- Six double length sidings
- Spatial requirements for all ancillary plant and operation rooms
- Smoke Ventilation Plant
- Spatial requirements for structural supports to the over-site development.
- Fire Strategy
- Train Arrestors
- Walkways
- Maintenance facilities

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This exercise concluded that the Halcrow’s design was not capable of satisfying all of LU’s requirements. Jacobs undertook further design development with Halcrow which concluded with a design which met LU’s requirements for the stabling beneath Earls Court 2, but left certain requirements such as RRV access to be resolved in the detailed design for the element of stabling which would be beneath any development on LBD.

The requirements not met in the current design for ECD include:

Requirement	Proposed Solution(s)
On/off tracking of Road Rail Vehicles at or in the vicinity of LBD	<ul style="list-style-type: none"> An engineering solution is possible but would likely impact the LBD development, reducing revenues. Explore possibility of on/off tracking at Olympia as part of Concept Design.
Stabling a 139m engineering train	<ul style="list-style-type: none"> This requirement can only be met at the expense of two stabling berths when an engineering train longer than an S7 train is in residence. Either accept limitation or identify alternate stabling facility of 139m in vicinity of LBD.
Stabling of diesel powered engineering trains	<ul style="list-style-type: none"> Due to fire strategy, the stabling of diesel powered vehicles or those with high fire load would not be permitted without special arrangements. Requirement can be met by using Whiteley sidings which will need a Northern Connection to the Olympia line.
Passive ventilation to atmosphere	<ul style="list-style-type: none"> It is unlikely to be possible to achieve natural air volume exchanges / airflows without a serious impact on the development potential above. Thus mechanical ventilation is proposed in lieu.

4.3 Workshop relocation design work

The proposed redevelopment of LBD and Ashfield House site requires that the workshops and all other non-S7 stabling related activities at LBD are relocated off site and Ashfield House is demolished.

4.3.1 Acton Works whole site option

In 2012 LU commissioned Jacobs to produce a whole site upgrade option (excluding the REW building which is relatively new (built in the 1980s)) of the Acton Works site (see the site plan in Appendix E) involving relocating the workshop activities from LBD and providing new facilities for the Train Modification Unit (TMU) who are already based at the site in one of the original 1920s buildings. The requirement to design new facilities for the TMU was included, over and above the basic requirements for moving the above activities from LBD, to support the organisation’s vision outlined in section 4.1.2. Furthermore, LU did not want to progress a design that only considered the LBD workshops since such an approach could potentially limit the future capability

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of upgrading other site operations, such as TMU, to support the wider company strategy.

The whole site option focused on the opportunity for redevelopment presented by redundant facilities at Acton Works, particularly some of the old storage units (AC2 and AC7). The objective was to maximise the opportunity for importing operations from LBD whilst minimising disruption to operations at Acton Works and retaining, where possible, existing facilities that are functioning effectively, in particular the REW building (AC01). The whole site option design is shown in Appendix F.

Retention and re-use of the existing structures at the site was considered. However, the combination of their relatively poor structural condition (some of them dating back to the 1920s) and inefficient use of space when applied to current and future requirements made that a relatively unattractive proposition compared to the advantages of efficiency and the whole life cost of clearing much of the site and building a new development.

Unfortunately not all LBD and Acton Works activities can fit on the site. The whole site option recommends the ERU training facility as a suitable candidate to relocate off site to an alternative location which needs to be adjacent to one of the four ERU operational facilities. Also extensive rationalisation of storage requirements would be needed to make the plan work.

The programme for the Acton Works whole site option and the stabling box construction at LBD is estimated [REDACTED]

4.3.2 Minimalist Option

[REDACTED] an alternative approach was examined and a design was developed, that only considered alterations to Acton Works to accommodate the displaced Lillie Bridge workshops whilst still allowing the future development of the site to achieve the whole site option. This involved the use of three areas; two old stores buildings (units AC02 and AC07) and the space occupied by the ERU i.e. ERU would still need relocating off or within the site. The operational needs of each business unit were considered and potential different site layouts were discussed with each of the business unit managers. A minimalist option was agreed with the business unit managers and is shown in Appendix G.

Given the Operational activities that are already undertaken at Acton Works and the operational activities that would be added from LBD, more works need to be undertaken on the management of vehicle flows. At the very least the present entrance will need reconfiguring.

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Emergency Response Unit (ERU)

For any of the options discussed above, part of the ERU facility may need to be relocated off the Acton Works site.

The ERU has three business divisions at Acton Works:

- 1- ERU operations
- 2- ERU training
- 3 - ERU offices

In the options outlined above, it is possible to relocate the ERU operational area within the Acton Works estate (on the outer car park). The ERU offices need to be relocated off site but these could be accommodated within the existing TfL estate (subject to there being availability at the time). However, the ERU training facility (a 29000sqft space for sections of track laid out in different configurations used for emergency scenario based training) would need to be relocated within very close proximity of one of the four ERU operational sites around London (Acton, Battersea, Stratford, Camden).

Discussions with ERU regarding a potential relocation of the training facility are still ongoing but there may be an opportunity to develop the Acton Works design in a way that the ERU training facility could be accommodated there. This will be investigated as part of any future design work.

4.3.3 Operational impacts

Given the age of the facilities and layout of the operations at LBD, there are benefits from moving to a new facility in terms of the condition and a more operationally efficient layout of the manufacturing facilities. Furthermore, all manufacturing and workshop operations would then be housed in one area, meeting the strategic goal referenced in section 4.1.2 i.e. having a centre of engineering excellence.

There would be a marginal dis-benefit for the services that need to dispatch to central London and beyond e.g. TDU and Maintenance but overall the conclusion is that the minor dis-benefits are more than outweighed by the benefits of the new facility and the revenue generated from the development.

4.4 Relocation of activities from Ashfield House

Ashfield House provides two main functions for LU:

1. Housing of technical systems

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2. Training facilities (these occupy the vast majority of the building).

These functions need to be displaced to enable the demolition of Ashfield House. Space has previously been identified at the [REDACTED]














[REDACTED] has been identified and a space application has been approved.

New accommodation needs to be secured to re-house the training facilities and other smaller office users within Ashfield House. It is hoped that space can be found through re-organisation within the existing TfL property portfolio although if this is not possible at the time of relocation, then new accommodation would need to be acquired. LU Chief Operation Office's Head of Performance and Planning is taking forward investigations into rationalising the training facilities to ensure the space requirement is minimised and utilised as efficiently as possible. Note: given the above, no costs have been allowed the replacement of Ashfield House Training and Office facilities at this time, but would need to be included should rationalisation within the existing portfolio not be possible

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5. Cost and Programme

5.1 Overall cost (see appendix H for more detail)

Activity	Cost (£ millions)
Acton Works minimal option <ul style="list-style-type: none"> • Facilitating Works (Bollo Lane Entrance, Demolition, Services diversions) • Building Works • Plant, machinery and fit out • External Works (substation, Road surfacing, external compounds, signage etc) • Contractor costs • Design and Project Management 	
Relocation of facilities/assets from Ashfield House (incl. new Connect building) <ul style="list-style-type: none"> •  • Telephone Services • Facilities •  	
Relocation of ERU training facility <ul style="list-style-type: none"> • Land Purchase • Construction 	
Stabling box construction (this includes the temporary tracks, train shed demolition and the new stabling box)	
Stabling box fit out	
Automatic Train Control implementation	
Whiteley Sidings connection for engineering trains	
Design and LUL Project Management (@ c20% of construction costs)	
<p style="text-align: right;">Sub total</p>	
Risk @ c30%	
<p style="text-align: right;">Total</p>	

Generally priced at Q4 2012/Q1 2013 rates. Inflation excluded

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5.2 Overall programme

Activity	Duration (months)
Detailed Design (incl. planning permission)	■
Acton Works construction (minimal option)	■
Relocate LBD activities to Acton Works	■
Demolition of workshops and provision of additional/temporary stabling capacity	■
Permanent Box Construction and fit out (in 2 halves)	■
Total	■

5.3 Schedule Restrictions

The schedule for developing LBD Development has been predicated by the need to avoid putting the Sub Surface Upgrade Programme (SUP) at risk. Therefore LBD Development of the stabling has been deferred until beyond the completion of the SUP Programme, currently planned for ■■■■.

This, however, does not prevent the Acton Works element of the project progressing earlier. Detailed design, planning permission, construction work at Acton and migration of LBD workshop and Ashfield House facilities can be undertaken if funded in advance of LBD development receipts. This would reduce the lead in time to implement the LBD development of the Masterplan and bring forward the realisation of the development value of LBD.

The schedule is also restricted by the need to maintain twelve berths at all times at LBD. Once the Automatic Train Control timetable has been introduced and all associated facilities are in use there may be the opportunity to reduce this requirement on a temporary basis.

It has been assumed that premises would be available when required to relocate Ashfield House activities.

6. Conclusion and Next Steps

Conclusion

Subject to further investigations in to engineering, town planning and spatial planning issues, it is considered feasible to:

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- Create a stabling box at LBD for twelve berths
- Relocate workshops from LBD to Acton Works
- Vacate Ashfield House for demolition by others

It should be noted that the cost is high accompanied by a relatively long programme. This is due to the need to create new facilities at Acton Works whilst maintaining site and workshop operations at both sites.

Within the constraint of the current design of the stabling box and associated track work, it is not presently considered feasible to on/off track road rail vehicles or stable diesel operated engineering vehicles (due to fire and ventilation restrictions). Further design work is required to provide access for the vehicles at a suitable location on the network.

Next steps

The next steps required were summarized in the executive summary and have been mentioned throughout this report. Below is the complete list of the next activities that need to be undertaken to support the conclusions of this report and to provide further confidence that the LBD project can be progressed:

Business Case

- Undertake an outline options and cost/benefit analysis of LBD Development.

Stabling Box

- Progress the design of the stabling box which was signed off as part of the Earls Court 1&2 Development to a fully compliant design for stabling under the whole of the ECOA, addressing outstanding issues.
- Review/update requirements and consider the railway assets that may be impacted by the development that are outside the stabling box.

Workshops

- Commence discussions with London Borough of Hounslow and Ealing on the proposed upgrade of the Acton Works.
- Commission traffic and highway study to support planning discussions.
- Identify potential options for the relocation of the ERU training facility.
- Review and update Acton Works requirements, including a strategic review of the activities to be relocated from LBD.



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Ashfield House

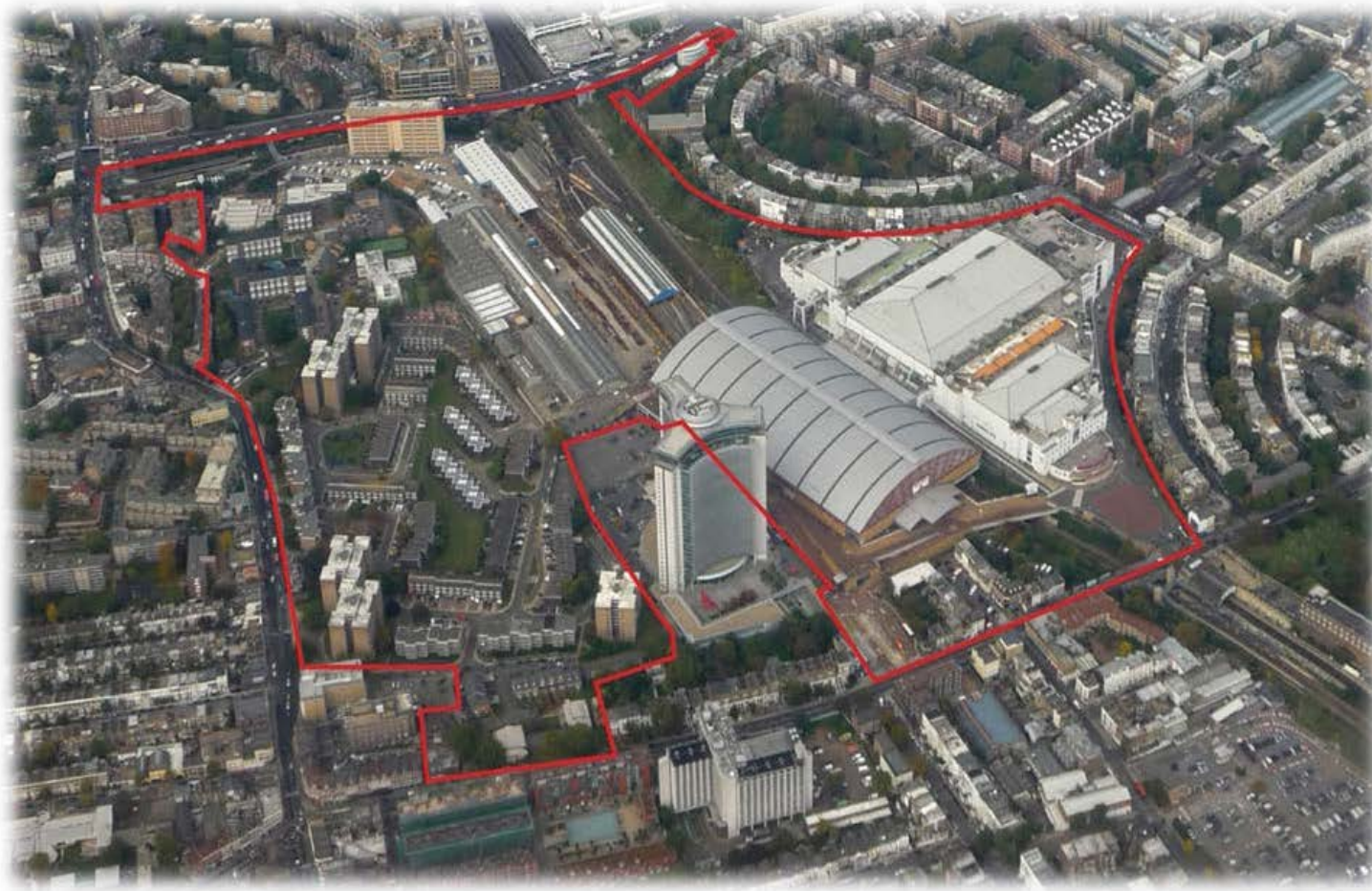
- Revisit the alternative locations for the technical services to confirm their availability.
- Support the Head of performance and planning in rationalizing the training facilities and identify potential locations for the training facilities that cannot be accommodated within the estate.



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Appendices

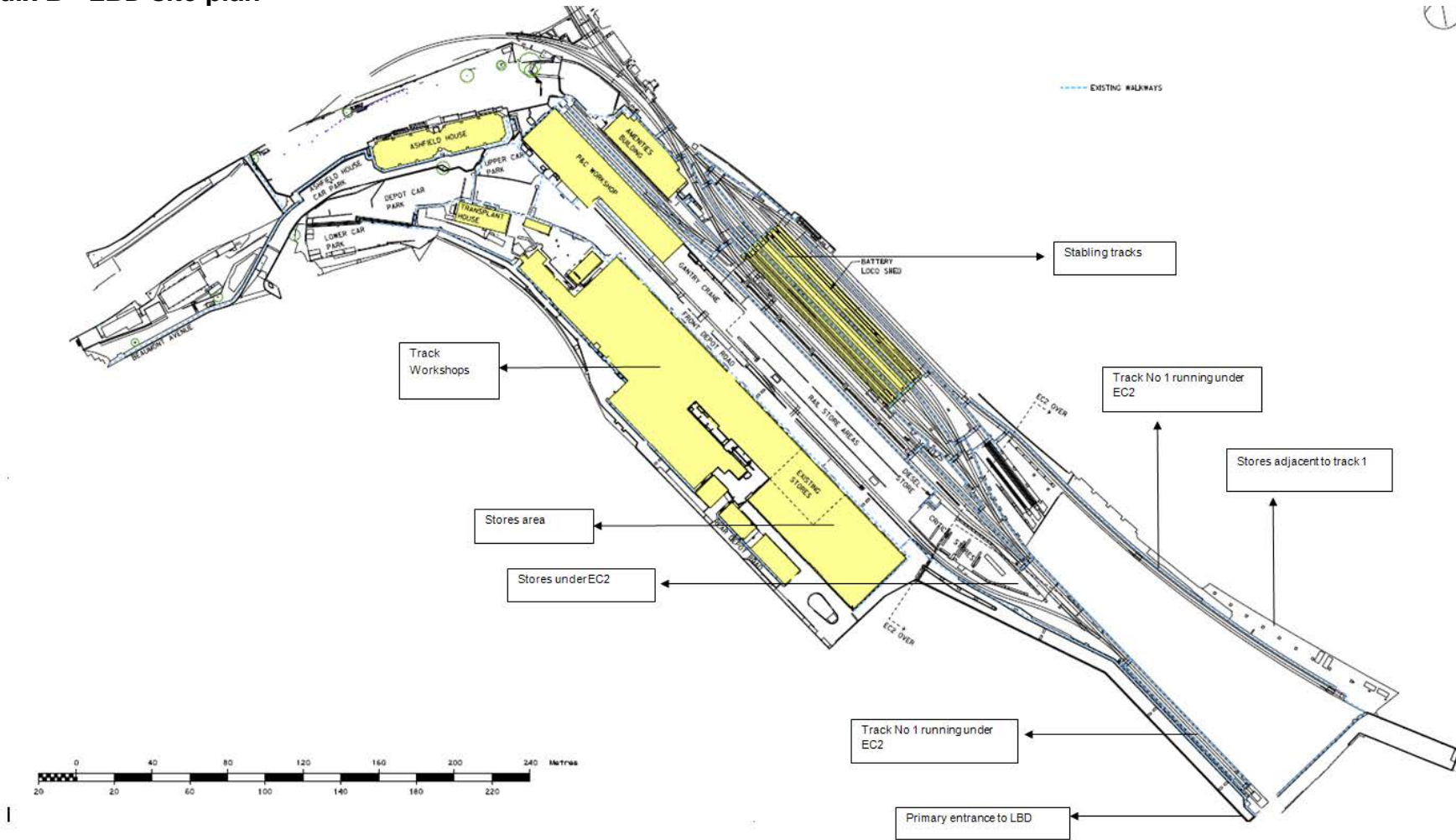
Appendix A - Aerial view of the Opportunity area





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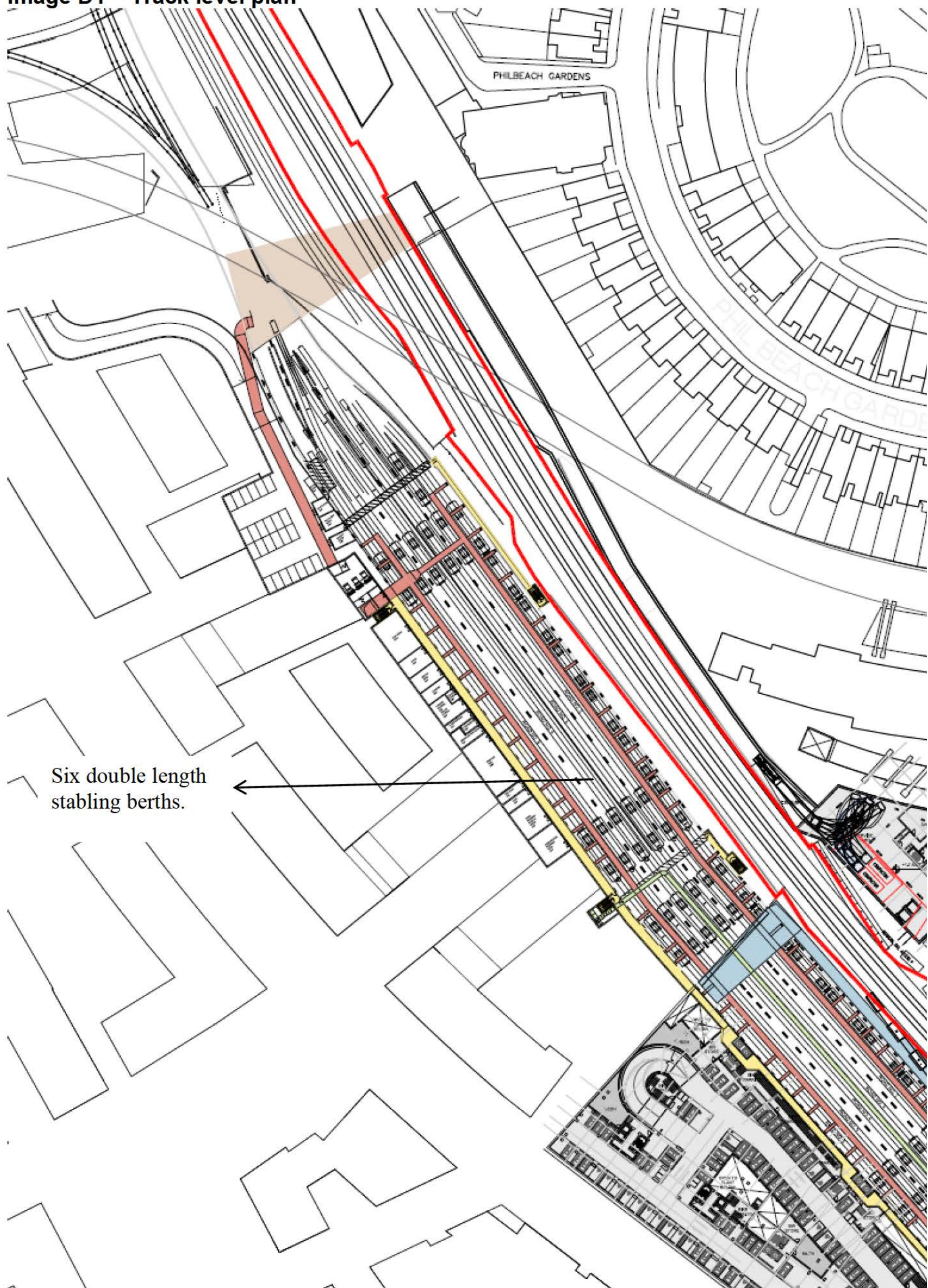
Appendix B - LBD site plan



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Appendix D - Stabling Box

Image D1 – Track level plan

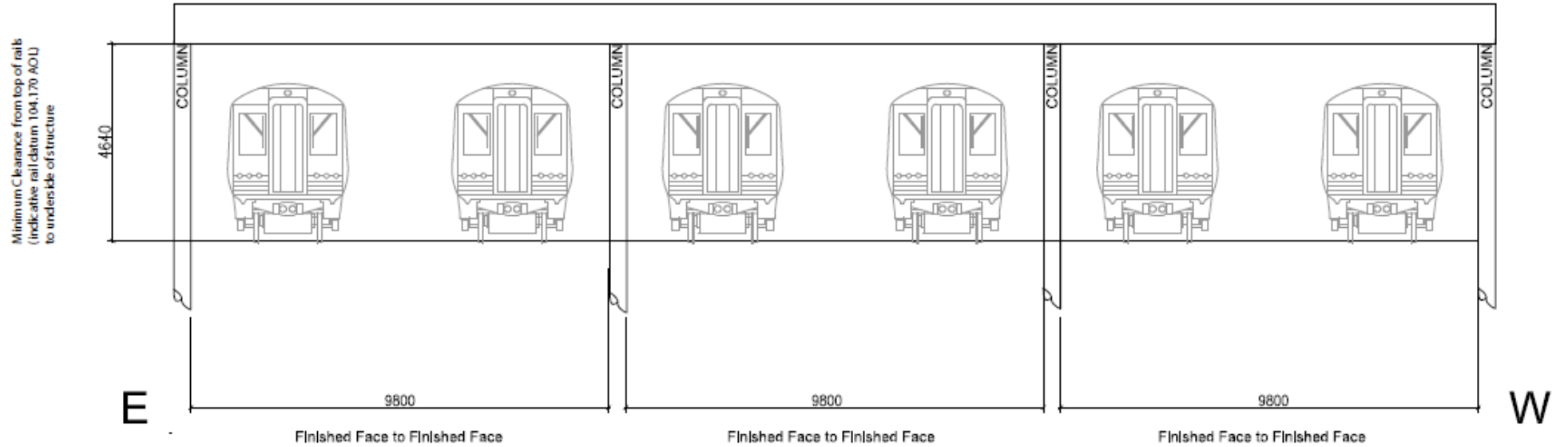


Six double length
stabling berths.



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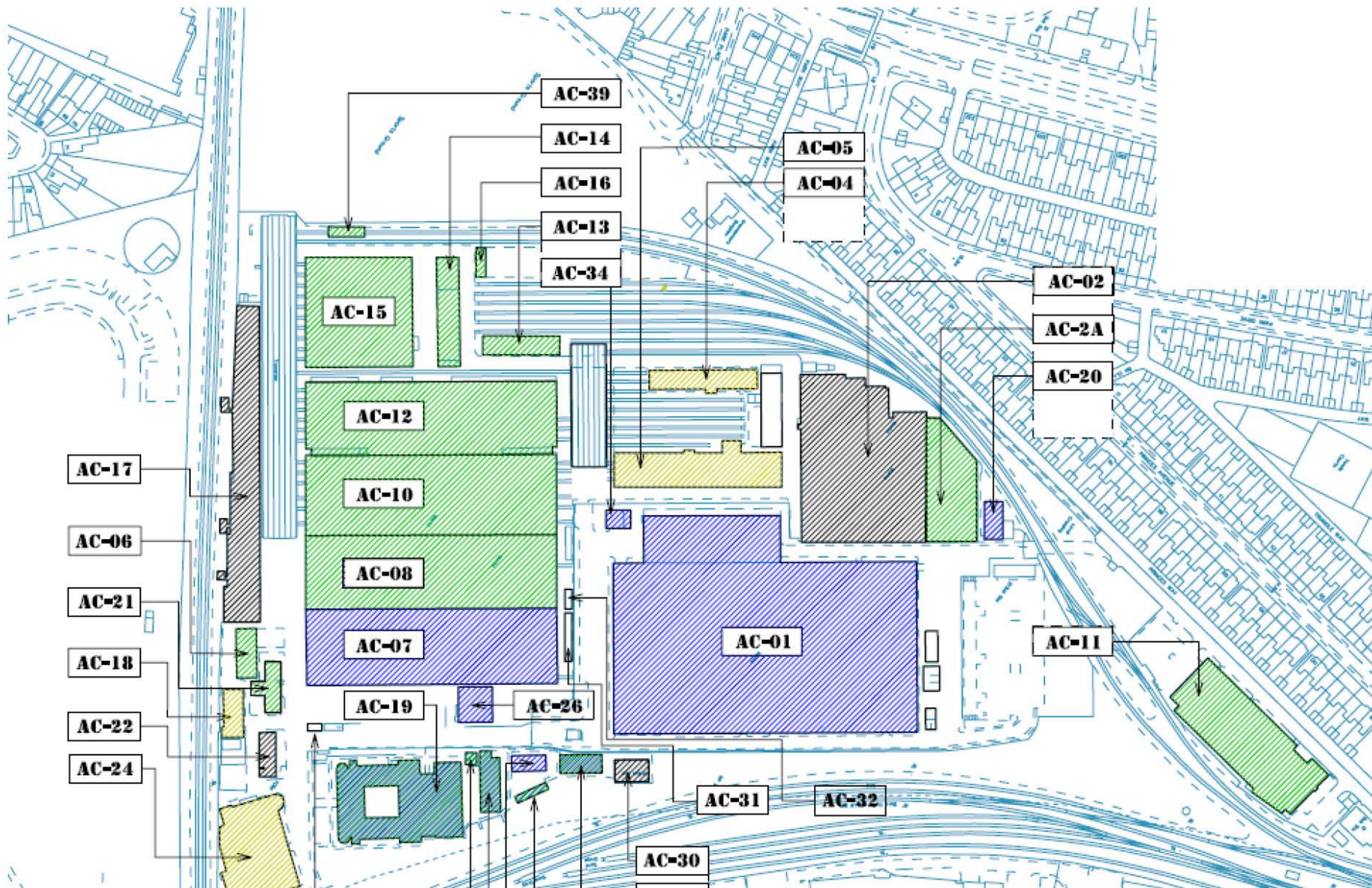
Image D2 – Stabling box sections



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Appendix E - Acton Work's present layout

Image E1 – Site Plan



ID NO.	DESCRIPTION
AC-01	- Railway Eng. W/Shop (Rew)
AC-02	-Stores Area
AC-02a	-Signals TRaining Centre
AC-03	-Signals & Elec. Contractors
AC-04	-N-Tec Training
AC-05	-Emergency Responce Unit (ERU)
AC-06	-Train Modification Unit Office
AC-07	-Network Signal Stores
AC-08	-TMU Workshop
AC-10	-TMU Workshop
AC-11	-Eng. & Apprentice Training Centre
AC-12	-TMU Workshop
AC-13	-Compound & Mess Room
AC-14	-TMU Storage Shed.



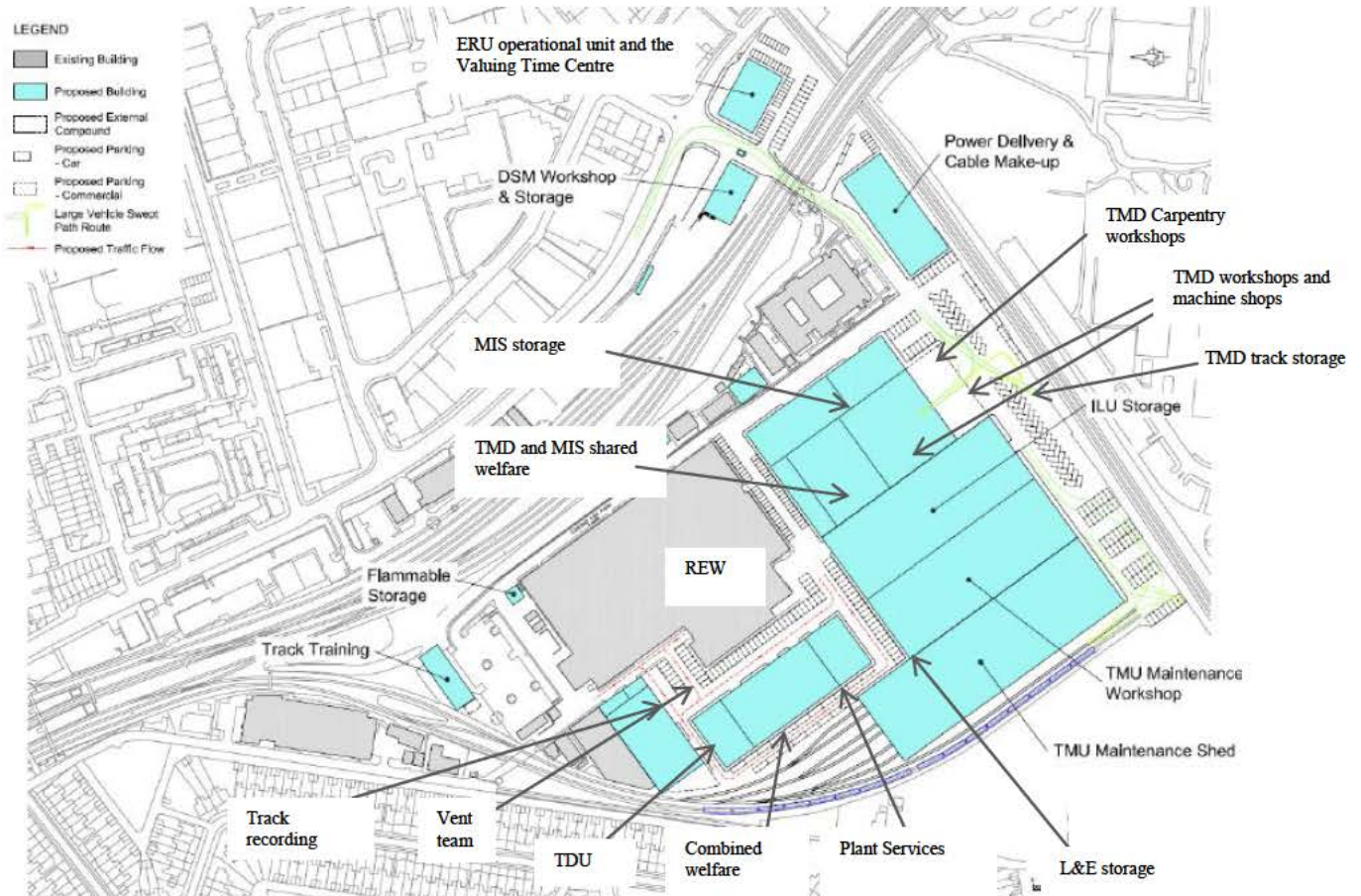
Earls Court Development Facilitation Programme

Image E2 – Aerial view of Acton Works



Earls Court Development Facilitation Programme

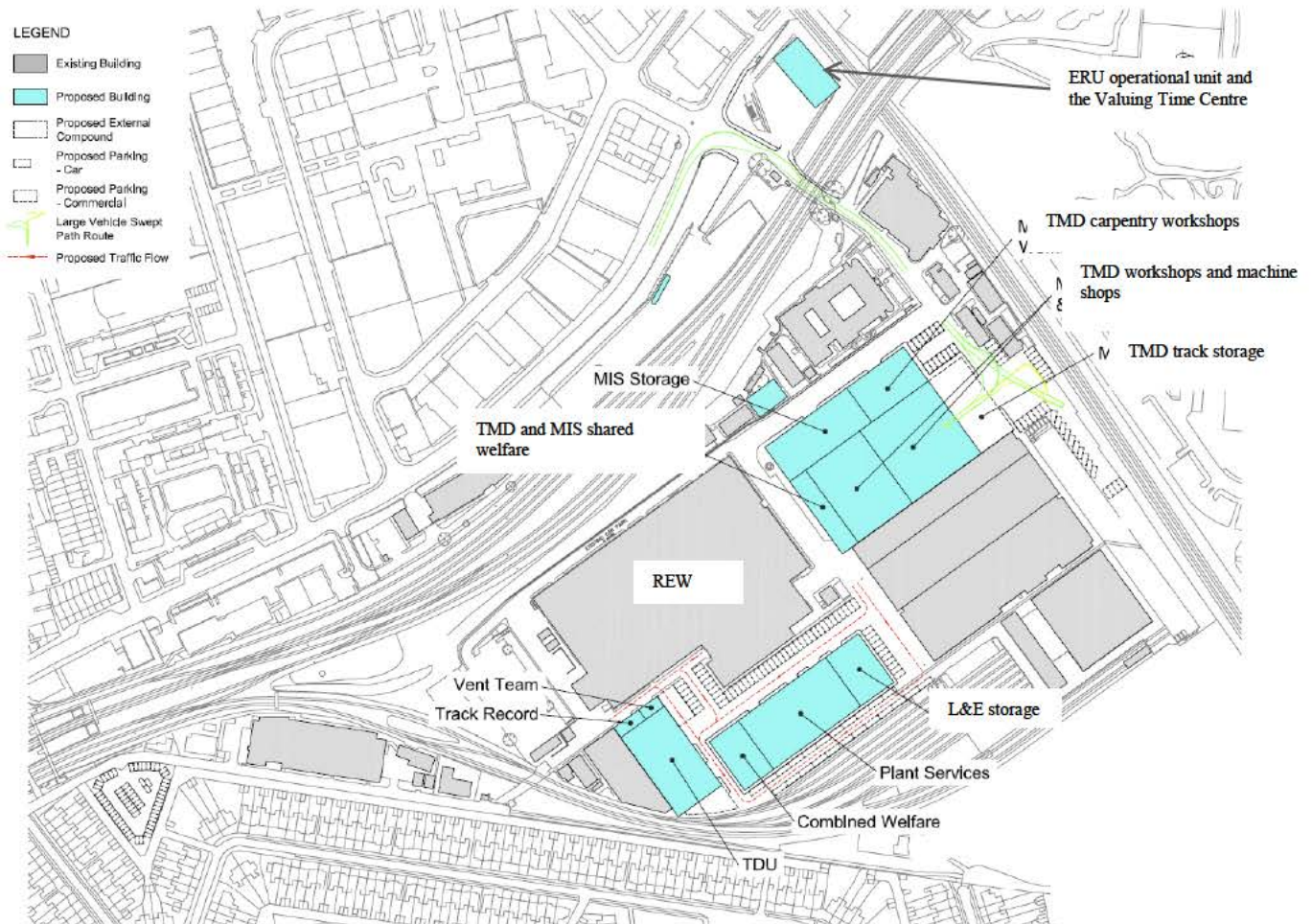
Appendix F – Acton Works whole site option



The whole site option is based upon a TMD and MIS building being located on the footprint of demolished building AC07. The other LBD transferred facilities (Plant Services, TDU, L&E storage, Track Recording and Ventilation Cleaning) would be located in two new buildings on the site currently occupied by ERU and AC02, with a vehicle yard between these new buildings and REW. The associated welfare facilities (chiefly TDU Welfare) are shared, and these are located to the south. The new TMU facilities are provided in the south east of the site replacing the 1920's buildings.

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Appendix G - Acton Works minimal option



The minimalist option is as per the whole site option less the new:

- TMU facilities
- ILU stores
- DSM workshop and stores
- Power delivery and cable make up stores
- Track training facility

This option allows sufficient space to complete the whole site option as shown in Appendix F.

