



RIVER CROSSINGS: SILVERTOWN TUNNEL

SUPPORTING TECHNICAL DOCUMENTATION

SILVERTOWN TUNNEL: DEVELOPMENT IMPACTS STUDY

Atkins

November 2013

This report sets out a detailed study of the land use impacts of all four of the potential crossing options (full length bored & immersed tunnel and reduced length bored & immersed tunnel), including an assessment of the impact on development capacity, development value and planning risk associated with each.

This report is part of a wider suite of documents which outline our approach to traffic, environmental, optioneering and engineering disciplines, amongst others. We would like to know if you have any comments on our approach to this work. To give us your views, please respond to our consultation at www.tfl.gov.uk/silvertown-tunnel

Please note that consultation on the Silvertown Tunnel is running from October – December 2014.

Silvertown Tunnel Development Impacts Study Final Report

November 2013

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1. Introduction

Background

- 1.1. The Greenwich Peninsula Masterplan safeguards the 'Silvertown Crossing Reserve Area' for the future development of a new crossing that will take the form of a road tunnel linking the areas north and south of the Thames between the Greenwich Peninsula and Silvertown ('the Silvertown Tunnel'). The tunnel is expected to reduce delays and closures at the Blackwall Tunnel by improving connections and offering alternative crossing options, which could effectively double available river crossing capacity and facilitate wider economic and regeneration benefits.
- 1.2. As well as the construction of the tunnel under the Thames, the project would require new road connections from the A102 in Greenwich within a corridor which has been safeguarded for this purpose. The nature of this link, and the required land take and impact on existing and planned land uses, including the largely unbuilt Greenwich Peninsula masterplan, would depend upon the method of tunnel construction due to the gradient required to access the link.
- 1.3. TfL initially developed two options for the crossing (as illustrated in Appendix A):
 - Full length bored tunnel; and
 - Full length immersed tunnel
- 1.4. The full length bored tunnel was the preferred method of construction due to the fact that it is a proven technology, has lower costs and was expected to result in a lesser land take from the link road in the Greenwich Peninsula. However, a set of alternative options has recently been suggested by the Independent Investment Programme Advisory Group (IIPAG), which would result in reduced length tunnels to reduce costs (also illustrated in Appendix A).
 - Reduced length immersed tunnel (option B)
 - Reduced length bored tube tunnel (option C)

Objective of the Study

- 1.5. The principle objective of this study is to consider the land use impacts of all four of the potential crossing options, including an assessment of the impact on development capacity, development value and planning risk associated with each.

Approach to the Study

- 1.6. The following approach has been undertaken to meet the study objectives:
 - A review of current planning status of the Greenwich Meridian Masterplan and updated Cable Car masterplan, in order to explore the potential flexibility to changes in the configuration and layout resulting from the four options (**Chapter 2**);
 - Identification of the amount and type of development affected by each crossing option (**Chapter 3**);
 - Consideration of whether any affected development could be reconfigured within the masterplan (**Chapter 4**);
 - Review of compliance with Borough and London wide planning policy (Chapter 5);
 - Summary and conclusions on planning risk and impacts to the value of development, including consideration of amenity impacts and changes to the coherence of the masterplan as a whole (**Chapter 6**)

2. Planning Status of Masterplan

2.1. The section reviews the current planning status of the Greenwich Meridian Masterplan in order to explore the potential for changes in the configuration and layout resulting from the four crossing options.

The Greenwich Peninsula Masterplan

2.2. The Greenwich Peninsula Masterplan proposes the creation of a new mixed urban district comprising the retention and change of use of the Millennium Dome and the redevelopment for a combination of land uses within the Greenwich Peninsula area. The approved masterplan establishes building plots with associated land uses and massing parameters together with hierarchies of open space and circulation routes.

2.3. The Greenwich Peninsula Masterplan outline planning application (reference 02/2903/O) was submitted by Meridian Delta Ltd and was granted permission by the London Borough of Greenwich on 23rd February 2004 (subject to a Section 106 agreement and 149 planning conditions).

2.4. The outline planning application allows the following development to take place on the site:

- 1) Change of use and retention of the Millennium Dome;
- 2) External alterations to the Millennium Dome;
- 3) Erection of a 26,000 capacity Dome Arena;
- 4) Construction of Millennium Square;
- 5) Creation of Dome Waterfront sports, leisure, entertainment, retail complex within the Dome;
- 6) Temporary Car Parking to serve the Dome Arena and Waterfront;
- 7) Up to 10,010 residential dwellings, student and special needs housing;
- 8) Up to 325,000 sq.m office, research and development floorspace;
- 9) Up to 18,600 sq.m light industrial business park;
- 10) Community uses including schools and health care provision;
- 11) 48 acres of Open Space;
- 12) New Hotel;
- 13) Up to 22,800 sq.m retail and up to 10,950 sq.m food and drink use.

2.5. All matters were reserved in the outline planning permission for the mixed-use element of the scheme. The Dome, Arena and the Dome Waterfront Area were submitted with full details.

2.6. Greenwich Peninsula Regeneration Limited (GPRL) is bringing forward the development of the plots through either reserved matter applications or full applications. These applications should be consistent with the parameters, conditions and S106 obligations imposed upon the permission and secure the delivery of mitigation identified in the Environmental Statement (ES) (condition 97). This includes the consideration of the following, all of which form part of the outline planning permission (and are considered in more detail in Appendix B):

- The Masterplan Design Code (MDC) which includes a series of broad urban design principles for the development;
- Height and massing restrictions for each plot;
- Density and land use restrictions for each plot

2.7. The approach of having fixed the scale and type of development within the masterplan as a whole, but leaving the detailed design of specific plots to be considered as part of individual reserved matters applications, means that there is an inherent degree of flexibility within the masterplan. The current degree of flexibility is dependent on the current planning status of each plot.

Planning Status at Plot Level

- 2.8. Any assessment of the planning risk of the four crossing options will need to take into account the position of plots which now have full planning permission (granted via reserved matters applications), as shown in Figure 2.1. Any impacts of the crossing options which result in the reconfiguration of floorspace and layout which could affect these plots would require new planning applications to be submitted.
- 2.9. Figure 2.1 shows the location of plots that have approved reserved matters planning applications. The majority of the commercial plots to the north of the masterplan now have full planning permission, with only a limited number of residential plots in the centre and south of the masterplan with full permission.

Figure 2-1 Plots with Approved Reserved Matters Applications



- 2.10. It should be noted that approved planning applications for the reserved matters can be superseded by new planning applications. For example, for plot N0602, the planning application (ref 08/1013/F) was superseded by a new application (ref 14/0684/0) that covered plots N0601, N0602, N0607, N0608, N0504 and N0506 and revised the amount of floorspace originally agreed.

Development Programme

- 2.11. Table 2.1 summarises the proposed phasing programme for the Masterplan, as set out in the outline application submission. This programme is now out of date, with the majority of development still yet to take place. Although we do not have details of the revised development programme, the fact that a number of reserved matters applications have been recently submitted and approved may suggest that the developer is planning to commence construction on some plots relatively soon.

Table 2-1 Development Programme

Proposed Development Period	Neighbourhood Area	Proposed Development
Upto 2006	Arena Millennium Square District East Riverside Bugsby's Reach South	Construction of Dome Arena, Millennium Square and initial surface car parking for the Dome Arena Dome Waterfront and the hotel Start of residential development (to the east of Central Park adjacent to Greenwich Millennium Village) Two commercial buildings (forming the edge of Millennium Square adjacent to the Dome)
Upto mid 2008	Bugsby's Reach Bugsby's Reach South Parkside South	Progression of residential development northwards (located to the east of Central Park) Progression of residential development (extended to the south-west of the site) Progression of residential development (commenced adjacent to the river to the south east- of the site)
End of 2010	Parkside Dome Central Dome Waterfront District	Progression of residential development (to the west of Central Park) Progression of light industrial units to the west of Millennium Way Progression of the first commercial buildings and the multi-storey car park for the Dome Arena (to the west of the Dome) Progression of development to the south of North Greenwich Transport Interchange
During 2013	Parkside Dome Waterfront Meridian Gardens	Progression of residential development to the west of Central Park (extending northwards) Progression of development to the west of the Dome Completion of the Meridian Pier (to the west of the Dome)
By 2015	Parkside North Meridian Gardens Dome Central Millennium Square District	Progression of residential development extending northwards(to the west of Central Park) Completion of residential development to the west of the Dome Progression of two commercial buildings to the south and west of the North Greenwich Transport Interchange. These will complete the permanent car parking for the arena and the Dome Waterfront. Commencement of two remaining buildings forming the southern edge of Millennium square

Proposed Development Period	Neighbourhood Area	Proposed Development
By 2018	Bugsby's Reach North Parkside North Gateway Site	Development of the remaining land to the east of central park will be underway. Progression of the remaining commercial Plots to the west of North West Greenwich Interchange
By 2021		Completion of whole development

Blackwall to Silvertown Link

- 2.12. When the Masterplan was granted outline planning permission, the detailed design of the crossing was still yet to be determined. The vast majority of the Masterplan layout and design assumes that the crossing will take the form of a full length tunnel which will have little impact at ground level. However, given the uncertainty of the final crossing design, the Masterplan did include an alternative layout which showed how the development could accommodate a road bridge. Such a layout would require a wider corridor than that under any tunnel option, with the size of the plots on each side of Edmund Halley Way cut back as a result (Figure 2.2)
- 2.13. This suggests that there could be flexibility within the approved outline masterplan to accommodate a revised crossing alignment. However, the acceptability of any revised crossing option would depend on the compliance with wider current planning policy (see Chapter 5).

Figure 2-2 Blackwall to Silvertown Crossing – Bridge Option (Drawing DEW PA 03_216)



Greenwich Peninsula Cable Car Application

- 2.14. The Greenwich Peninsula Cable Car Masterplan outline planning application (reference 10/3422/O) was granted permission on 6th April 2011. Further details of the application are included in Appendix B.
- 2.15. The outline application approved the development of up to 157,300m² of floorspace on the east of the site, including a significant reconfiguration of the layout and building heights as originally set out in the outline Masterplan permission. The plot boundaries that were refined included:
- M0106 and M0107: redefined and merged as M0106/7
 - M0108: lost to cable car southern station site
 - M0109 and M0110: redefined and merged as M0109/10
 - M0118: redefined
 - N0207: redefined
 - N0404: redefined
 - N0405: redefined
- 2.16. Whilst the impact of the proposed cable car and tunnel on plot site areas was considered to be significant, the application scheme provided for the same overall volume of development floorspace permitted by the 2004 Masterplan, within a townscape model that responds positively to the new constraints and opportunities provided by the introduction of the London Cable Car
- 2.17. This was achieved through the re-distribution of uses, plot extents and height parameters across the affected plots. The modified design response was deemed to utilise the opportunities presented by the addition of the cable car and its associated public realm and was considered to be generally reflective of the 2004 Masterplan.
- 2.18. This is another example of the flexibility of the 2004 Masterplan, with the loss of a whole plot to the Cable Car mitigated by increased building heights in surrounding buildings.

Conclusions on Planning Status of Masterplan

- 2.19. The Masterplan currently has outline permission for 10,010 units, 325,000sq.m of office, 18,600 of light industrial and 34,000sq.m of retail, food and drink floorspace. How this translates to an individual plot level is determined by reserved matters applications which should be consistent with the parameters, conditions and S106 obligations imposed upon the permission including those set out in the Masterplan Design Code, as well as height, massing, density and land use restrictions.
- 2.20. This means that, subject to the above parameters being met, there is an inherent degree of flexibility within the masterplan in terms of the distribution and configuration of floorspace. This is reinforced by the fact that the original masterplan application included an alternative layout to show how the development could respond to a bridge crossing rather than a tunnel.
- 2.21. If the crossing options require floorspace to be reconfigured within the masterplan, this would only trigger a requirement for a new and unexpected planning application if the reconfiguration of floorspace resulted in the need to change a reserved matters permission already granted at a particular plot. There could be planning risks attached to this, the scale of which depend upon whether any revised proposals comply with the parameters set out in the original outline Masterplan permission.
- 2.22. If any reconfiguration of floorspace affects plots which do not have reserved matters already granted, then the need for a planning application cannot be considered as additional to what would have to be undertaken anyway. However, there could still be planning risks attached to this, again the scale of which depend upon whether any revised proposals comply with the parameters set out in the original outline Masterplan permission and current planning policy.

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- 2.23. The planning risks generated by each crossing option therefore depend upon the amount of floorspace affected (Chapter 3) and how this might be reconfigured in the masterplan (Chapter 4).
- 2.24. However, there is also a need to consider how the crossing options conform with wider objectives of the masterplan, as well as planning policy objectives within London and the Royal Borough of Greenwich (Chapter 5).

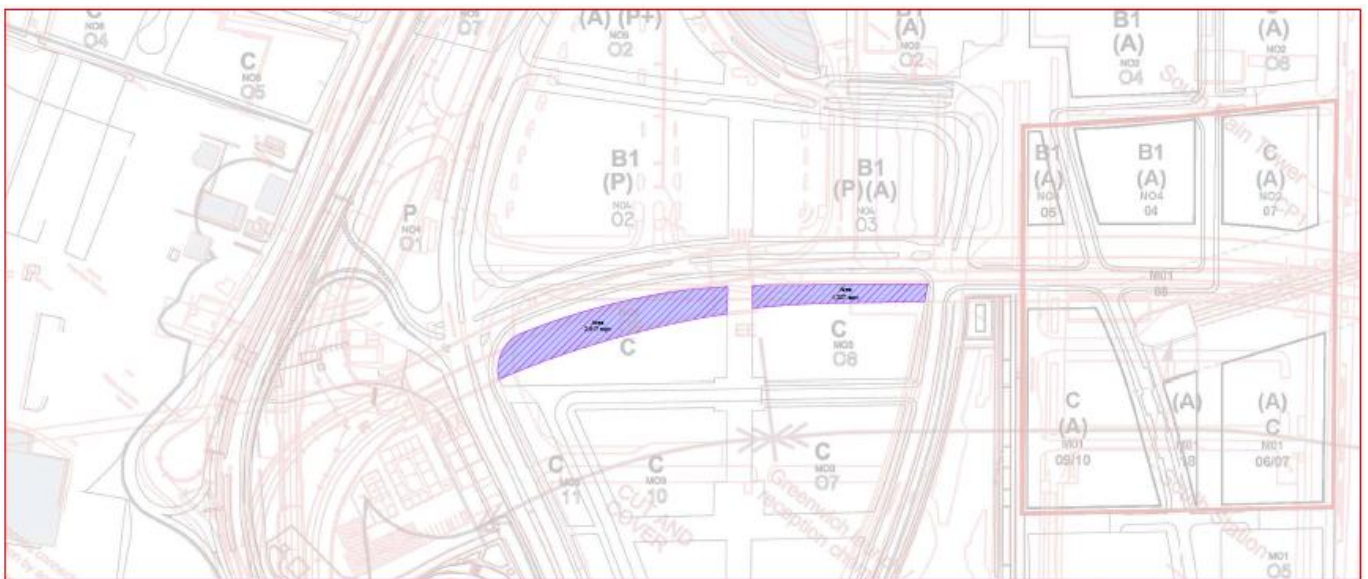
3. Impact of Crossing Options on Masterplan

- 3.1. This section identifies the amount of land that could be affected by each of the four crossing options and the resulting impact on the Greenwich Peninsula Masterplan.
- 3.2. As identified in Chapter 2, when the Masterplan was granted outline planning permission, the detailed design of the crossing was still yet to be determined. Although the Masterplan included a version of a layout which could accommodate a road bridge (drawing DEW PA 03_216), with a wider corridor reserved as a result, this was seen as a less likely scenario, with the vast majority of the Masterplan design built around the assumption that the crossing would take the form of a full length tunnel. As a result, the land use plan (drawing DEW PA 03_038) and building heights plans (drawing DEW PA 03_25) assumed that any tunnel portals would be accommodated to the west of Millennium Way.
- 3.3. This study has revisited the tunnel design looking at each of the four potential options and how each might impact on the Masterplan land use assumptions set out in the outline application (drawing DEW PA 03_038). Larger versions of each figure are provided in Appendix C.

Full length bored tunnel (Preferred Option)

- The option would result in a loss of approximately 2,817 sq.m from plot M0309(C) and 1,207 sq.m from plot M0308 (C) due to the small section of cut and cover tunnel required;
- The loss of both plots is estimated to result in approximately 515 residential units that need to be reconfigured elsewhere in the masterplan;
- The visual impact of the option is minimised as the visible infrastructure is limited to a zone close to the existing Tunnel access road.
- Existing surface level pedestrian experience and linkages will be unchanged (after construction is complete) with all desire line routes accommodated, and blocks unaffected.

Figure 3-1 Full length bored tunnel impacts



Full length immersed tunnel

- This option would result in a loss of 1,833 sq.m from plot M0309(C) and 439 sq.m from plot M0308(C), as a result of a larger section of cut and cover tunnel;
- The proposed alignment of this option is positioned very slightly further north than the full length bored tunnel so the land take from plots M0309 (C) and M0308 (C) is slightly less;
- The loss of the two plots is estimated to result in approximately 393 residential units that need to be reconfigured elsewhere in the masterplan;
- This option would have a limited urban design impact, as along with the full length bored tunnel it keeps the tunnel underground for longer, which will allow for less visual impact, and for surface level routes and connections to be maintained.

Figure 3-2 Full length immersed tunnel



Reduced length bored tunnel (Option C)

- This option requires the reconfiguration of Edmund Halley Way to the north, which affects plots N0402 (B1) and N0403 (B1), as well as the two plots to the south of the link road due to the cutting and section of cut and cover;
- This option would result in a loss of 2,127 sq.m from plot M0309(C), 3,215 sq.m from plot N0402 (B1), 2,733 sq.m from plot N0403 (B1) (P) (A) and 850 sq.m from plot M0307(C). The whole of M0308(C) that covers approximately 5,843 sq.m will be impacted as the site will be required for primary tunnel service buildings.
- The loss of these plots is estimated to result in approximately 620 residential units and over 43,000sq.m of commercial floorspace that needs to be reconfigured elsewhere in the masterplan
- The 'Silvertown Approach Ramp' that links to the 'Flyover for Blackwall Tunnel Approach and Millennium Way' would create increased visual impact caused by the greater amount of exposed roadway / cutting, when compared with the two full length tunnel options. The flyover will impact on the residential land to the south-east, the quality of the space underneath the flyover itself, the visual outlook of surrounding residential properties and it may also impact on office space to the north east, in terms of air quality and noise from the traffic generated generally.
- The flyover and approach to the tunnel entrances would also cause greater severance and limit north-south permeability in relation to the area bounded by West Parkside and Millennium Way.
- The proposed bridge will provide an access on the main desire line from the residential buildings to the station, however the quality of the environment – crossing a major dual carriageway – is poor. It will act as a detractor for the route as a preferred pedestrian / cycling solution as it requires ramps that will also impact on adjacent plots, or be convoluted in design.

Figure 3-3 Reduced length bored tunnel (Option C)



Reduced length immersed tunnel (Option B)

- This option would result in slightly greater impact on the plots to the north of Edmund Halley Way than in Option C due to the realignment of Edmund Halley Way slightly further to the north.
- This would result in a loss of 2,127 sq.m from plot M0309(C), 3,215 sq.m from plot N0402 (B1) (P), 2,733 sq.m from plot N0403 B1) (P) (A) and 850sq.m from plot M0307 (C). The whole of M0308(C) that covers approximately 5,843 sq.m will be impacted as the site will be required for primary tunnel service buildings.
- The loss of these plots is estimated to result in approximately 620 residential units and 43,000sq.m of commercial floorspace that needs to be reconfigured elsewhere in the masterplan;
- The visual impact of this option is slightly more significant than Option C, as the flyover is over a longer distance and will detract from the overall townscape quality, and damage the visual amenity of both the residential and commercial neighbourhoods;
- The proposed bridge will limit the severance, and serves the primary desire line from the residential to the station, however the quality of the environment – crossing a major dual carriageway – is poor. It will act as a detractor for the route as a preferred pedestrian / cycling solution as it requires ramps that will also impact on adjacent plots, or be convoluted in design.

Figure 3-4 Reduced length immersed tunnel (Option B)

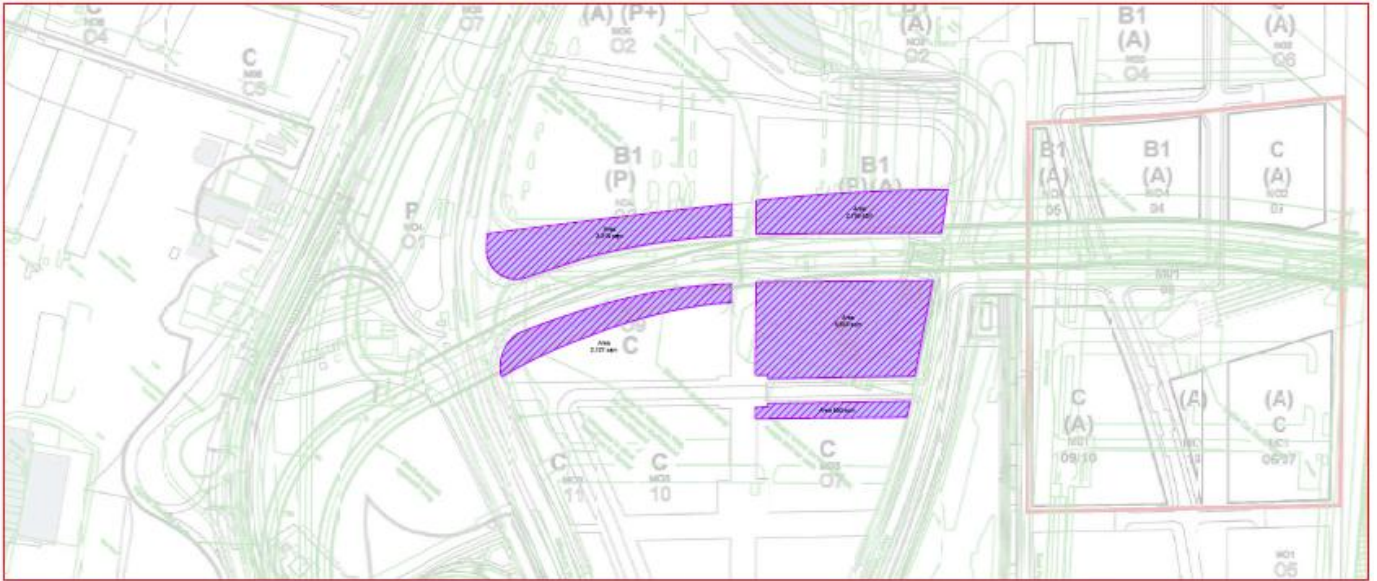


Table 3-1 Tunnel Options Impact on Plots of Masterplan Development

Option	Plot Reference	Use Class	Approximate Land Area (sq.m)
Full length bored tunnel (Preferred Option)	M0309 (C)	Residential (C3 and / or C2 including related parking)	2,817
	M0308 (C)	Residential (C3 and / or C2 including related parking)	1,207
Sub Total			4,024
Full immersed tunnel	M0309 (C)	Residential (C3 and / or C2 including related parking)	1,833
	M0308 (C)	Residential (C3 and / or C2 including related parking)	439
Sub Total			2,272
Reduced length bored tunnel (Option C)	M0309 (C)	Residential (C3 and / or C2 including related parking)	2,127
	M0308 (C)	Residential (C3 and / or C2 including related parking)	5,843
	N0402 B1 (P)	Business and part of ground uses include Dome parking	3,215
	N0403 B1 (P) (A)	Business and part of ground uses include A class (A1/A2/A3) and Dome parking	2,733
Sub Total			14,768
Reduced length immersed tunnel (Option B)	M0309 (C)	Residential (C3 and / or C2 including related parking)	2,127
	M0308 (C)	Residential (C3 and / or C2 including related parking)	5,843
	N0402 B1 (P)	Business and part of ground uses include Dome parking	3,215
	N0403 B1 (P) (A)	Business and part of ground uses include A class (A1/A2/A3) and Dome parking	2,733
Sub Total			14,768

Table 3-2 Summary of Tunnel Options Impact on Masterplan Floorspace

	Total floorspace (sq.m)	Retail floorspace (sq.m)	Office floorspace (sq.m)	Private residential units	Affordable residential units	Total units
Full length bored tunnel	22,845	0	0	434	81	515
Full length immersed tunnel	17,400	0	0	331	62	393
Reduced length bored tunnel (Option C)	70,942	2,203	41,275	522	97	620
Reduced length immersed tunnel (Option B)	70,942	2,203	41,275	522	97	620

4. Potential for Masterplan Reconfiguration

4.1. This section considers whether the affected development identified in Chapter 3 could be reconfigured within the masterplan. This takes into account the fixed parameters and flexibility of the outline planning permission set out in Chapter 2.

4.2. As identified in Chapter 2, the outline planning permission allows the developer to translate the overall scale of floorspace allowed to an individual plot level by reserved matters applications. Any reserved matters application should be consistent with the parameters, conditions and S106 obligations imposed upon the permission including those set out in the Masterplan Design Code, as well as height, massing, density and land use restrictions.

Residential

4.3. The impacts of residential floorspace are greatest in the two reduced length tunnel options (Options B&C), with an estimated 620 units affected respectively (Table 3.2). Whilst this is significant, we think that it would be possible to redistribute this to other plots within the confines of the existing planning permission, and would still meet the requirements of the Masterplan Design Code.

4.4. In effect this is the equivalent of redistributing about 7% of the total residential units planned. Our initial testing shows this could be achieved without exceeding the maximum building heights set out within the building heights plan (drawing DEW PA 03_25), or exceeding the density masterplan density guidelines.

4.5. There are 27 residential plots that do not currently have an approved planning permission and therefore have flexibility for reconfiguration. The residential plots that are impacted by all four options are located within the Parkside North neighbourhood, which has no approved planning applications. There is therefore scope to redistribute some of the residential floorspace affected to some of these plots without the need to revisit existing reserved matters applications.

4.6. Given that the full length tunnel options affect a smaller number of residential units, we think it would be possible to accommodate the residential floorspace affected without the need to compromise the Masterplan design parameters too.

4.7. However, it should be noted that this assessment does not take into account the wider impacts resulting from the various crossing options on the coherence and objectives of the masterplan

Commercial

4.8. There are 3 commercial business plots (N0501, N0502 and N0507) that do not currently have an approved planning permission. There is therefore less flexibility for reconfiguration in comparison to the number of residential plots.

4.9. Furthermore, Option B and C results in over 43,000sq.m of commercial floorspace being affected by the crossing proposals.

4.10. It is the consultants view that this quantum of floorspace cannot be reconfigured within the parameters of the Masterplan permission. For the floorspace to be accommodated one (or both) of the following would need to happen:

- The heights of other commercial buildings in the masterplan would have to be increased to a level beyond that set out in the building heights plan, to accommodate the additional floorspace;
- An additional planning application would have to be submitted for some of the plots which already have full planning permission. This would be required to increase building heights to accommodate the additional floorspace.

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- 4.11. Both of the above would carry risks as the Royal Borough of Greenwich could refuse permission if the heights proposed were not in conformity with the outline planning permission.

5. Conformity of Options with Planning Policy

- 5.1. This section considers the conformity of each crossing option with local and London-wide planning policy.

Greenwich Core Strategy with Development Management Policies (Submission Version)

- 5.2. The Core Strategy is the primary planning document of the Royal Borough of Greenwich's Local Plan and, once adopted, will replace the Greenwich Unitary Development Plan (2006). The Core Strategy sets out the spatial framework for future development and land use within the Royal Borough and includes Development Management policies which provide additional policy guidance. As a result, all planning applications are assessed against the policies set out within these documents.
- 5.3. Whilst many Core Strategy policies apply to the masterplan site as a whole, the following policies are of most relevance to the any potential reconfiguration of the masterplan. Full details of each policy are provided below.

Policy DH1 Design

- 5.4. All developments are required to be of a high quality of design and demonstrate that they positively contribute to the improvement of both the built and natural environments.
- 5.5. To achieve a high quality of design, all developments are expected to:
- (1) Provide a positive relationship between the proposed and existing urban context by taking account of:
 - (a) Topography, landscape setting, ridges and natural features;
 - (b) Existing townscapes, local landmarks, views and skylines;
 - (c) The architecture of surrounding buildings;
 - (d) The need to retain trees in line with Policy OS(g) and Policy OS(f);
 - (e) The quality and nature of materials, both traditional and modern;
 - (f) Established layout and spatial character;
 - (g) The scale, height, bulk and massing of adjacent townscape;
 - (h) Architectural, historical and archaeological features and their settings;
 - (i) The effective use of land;
 - (j) The potential for a mix of uses;
 - (k) Patterns of activity, movement and circulation particularly for pedestrians and cyclists;
 - (l) The cultural diversity of the area; and
 - (m) Acceptable noise insulation and attenuation.
 - (2) Promote local distinctiveness by providing a site-specific design solution;
 - (3) Demonstrate that the development contributes to a safe and secure environment for users and the public (See Policy CH1);
 - (4) Achieve accessible and inclusive environments for all, including disabled people;
 - (5) Create attractive, manageable well-functioning spaces within the site;
 - (6) Maximise energy conservation, through effective layout, orientation, use of appropriate materials, detailing and landscape design (also see Policy E1);
 - (7) Benefit the Borough by helping mitigate and adapt to climate change;
 - (8) Enhance biodiversity consistent with the Greenwich Biodiversity Action Plan;
 - (9) Incorporate living roofs and/ or walls in line with Policy E(f);
 - (10) Demonstrate on-site waste management including evidence of waste reduction, use of recycled materials and dedicated recyclable waste storage space;
 - (11) Demonstrate water efficiency and demand management measures;
 - (12) Wherever possible, building materials are responsibly sourced and minimise environmental impact;

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- (13) Demonstrate measures that reduce surface water flood risk and landscape the environment in a way that provides for permeable surfaces
 - (14) Meet the requirements of Policy H5 for residential schemes;
 - (15) Integrate with existing path and circulation networks and patterns of activity particularly for pedestrians and cyclists; and
 - (16) For non-residential buildings in major developments, achieve BREEAM rating of 'Excellent'.

Policy E(c) Air Pollution

- 5.6. Development proposals with the potential to result in any significant impact on air quality will be resisted unless measures to minimise the impact of air pollutants are included. Such planning applications should be accompanied by an assessment of the likely impact of the development on air quality.
- 5.7. All new developments with a floor space greater than 500sqm or residential developments of 10 or more units are required to reduce carbon dioxide (CO₂), particulate matter (PM₁₀) and nitrogen dioxide (NO₂) emissions from transport through the use of measures such as those set out in DEFRA guidance 'Low Emissions Strategies: using the planning system to reduce transport emissions Good Practice Guidance -January 2010'.
- 5.8. Residential development proposals within areas that are currently exposed to air quality concentrations above the National Air Quality Strategy (NAQS) Objectives for particulate matter (PM₁₀) and nitrogen dioxide (NO₂) should take into account the need to reduce exposure by the following design mitigation hierarchy:
 - Separation by distance;
 - External layout;
 - Internal layout; and
 - Suitable ventilation.

Policy CH1 Cohesive Communities

- 5.9. All development must include measures that help to create and maintain cohesive communities that encourage diversity and reduce inequalities between areas. Developments are expected to:
 - (1) support the development of new and improved community facilities where there are identified local needs and where the development is in line with the Council's strategy for the provision of services (see also Policy IM1 and the Infrastructure Delivery Plan). Facilities must be easily accessible for all and be located in or on the edge of town or local centres unless a special need for a location elsewhere can be demonstrated;
 - (2) consider community safety and aim to discourage crime;
 - (3) ensure that publicly accessible spaces and buildings such as streets, parks and public squares are well maintained and provide opportunities for natural surveillance;
 - (4) create safe streets, including measures that allow for shared surfaces/spaces and improve the permeability of the environment;
 - (5) encourage the shared use of community facilities;
 - (6) protect local services and encourage a mix of community and retail uses in existing local centres and neighbourhood parades; and
 - (7) encourage the successful integration of tenures in new developments, including a Community Development Strategy for developments of over 50 dwellings.

Policy IM4 Sustainable Travel

- 5.10. The Council supports the development of an integrated and sustainable transport system that is extensive in coverage and meets the needs of residents, businesses, workers and visitors in the Borough. All development in the Borough should contribute to improved accessibility and safety, and reduce the use of the private car and the need to travel. Development should be designed for the needs of pedestrians, cyclists and public transport users first and intense uses, such as schools and shops, should be close to public transport, cycling and pedestrian nodes and interchanges to enhance connectivity.

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- 5.11. Cycling and walking are supported within the Borough. The needs of pedestrians, including those with disabilities, and cyclists should be prioritised in development and the design and layout of development should reflect this. High standards of safety, accessibility and convenience will be required, including establishing and maintaining links with public transport.
- 5.12. All existing footpaths and cycleways, including the existing riverside and Thames paths, will be safeguarded and the development of new and improved footpaths and cycleways will be supported. Developments along the riverside must ensure that they incorporate the provision for a riverside pathway and contribute to improvements to this where it is required. Where development is proposed alongside Deptford Creek the provision of a waterside path should be included to provide public access to pedestrians and cyclists. Proposals to provide a pedestrian bridge across the Creek will be supported.
- 5.13. In order to reduce the use of the car, developments, must not go above those maximum parking standards set out in the London Plan and, where appropriate, should go below these.

London Plan

Policy 6.1: Strategic approach – Integrating Transport & Development

- 5.14. The Mayor will, and boroughs should, take an approach to the management of streetspace that takes account of the different roles of roads for neighbourhoods and road users in ways that support the policies in this Plan promoting public transport and other sustainable means of transport (including policies 6.2, 6.7, 6.9 and 6.10) and a high quality public realm. Where appropriate, a corridor-based approach should be taken to ensure the needs of street users and improvements to the public realm are co-ordinated.

Policy 6.7: Better streets and surface transport

- 5.15. DPDs should promote bus, bus transit and tram networks, including:
- (1) allocating road space and providing high levels of priority on existing or proposed routes
 - (2) ensuring good access to and within areas served by networks, now and in future
 - (3) ensuring direct, secure, accessible and pleasant walking routes to stops
 - (4) implementing TfL's Accessible Bus Stop Design Guidance
 - (5) ensuring standing, garaging and drivers' facilities are provided where needed
 - (6) making provision for retaining or creating new interchanges where appropriate.

Policy 6.10: Walking

- 5.16. Development proposals should ensure high quality pedestrian environments and emphasise the quality of the pedestrian and street space.

Masterplan Design Code

- 5.17. The Greenwich Peninsula Masterplan Design Code outlines design principles to be considered for developments within the masterplan. It establishes the framework, vision and principles for the built environment and sets out essential criteria to be met.
- 5.18. Key aspects of the Design Code include:
- **Permeability:** A key feature of the Masterplan is the interconnecting sequence and hierarchy of public spaces and routes, providing permeability throughout the Peninsula. The aim is to give residents and visitors an experience which includes a variation of enclosures and vistas that make being there a process of discovery
 - **Legibility:** A key component of the legibility and permeability of the scheme is a sense of familiarity in streetscape to assist in orientation. This is derived from a strong, clear image that is easy to understand, as well as landmarks, gateways, focal points and vistas that create visual links from one part of the Peninsula to another.

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- Pedestrian routes: Pedestrian routes are created throughout the Masterplan, providing a safe network of routes. Conflicts of pedestrians and traffic are kept to a minimum. Strong connections are established both up and down and across the Peninsula

5.19. It is the Consultants view that the two reduced length tunnel options are likely to conflict with the principles of the approved Masterplan in several ways:

- Severance: The flyover and approach to the tunnel entrances will create significant severance issues within the masterplan, therefore reducing the level of permeability within the development. Although the provision of a footbridge would help to mitigate this, we are of the view that the crossing would still provide a significant physical and psychological severance barrier. The severance issues would be contrary to the design principles of permeability, legibility and high quality pedestrian links within the masterplan;
- Design: The visual impact of the flyover is likely to detract from the quality of the space underneath the flyover. The tunnel service buildings are also likely to have a negative impact on the visual amenity of buildings which overlook them.

Conformity of Options with Planning Policy

5.20. Table 5.1 presents the assessment of how each option would conform to the policies identified above. The assessment shows that the two reduced length tunnel options would probably fail to conform to most of these policies due to the negative amenity and severance impacts caused by encroachment of the heavily trafficked tunnel approach road through the centre of the masterplan layout.

Table 5-1 Conformity of Options with Planning Policy

Policy	Full Length Bored Tunnel	Full Length Immersed Tube	Reduced Length Bored Tunnel (Option C)	Reduced Length Immersed Tube (Option B)
Greenwich Core Strategy				
DH1 - Design	Option unlikely to impact on ability of masterplan to conform with this policy	Option unlikely to impact on ability of masterplan to conform with this policy	Option may not conform with aim to create attractive, well functioning spaces, the effective use of land, and minimise exposure to noise.	Option may not conform with aim to create attractive, well functioning spaces, the effective use of land, and minimise exposure to noise.
E(c) - Air Pollution	Option unlikely to impact on ability of masterplan to conform with this policy	Option unlikely to impact on ability of masterplan to conform with this policy	Option would mean that development would be in close proximity to major source of air pollution so may not conform to policy	Option would mean that development would be in close proximity to major source of air pollution so may not conform to policy
CH1 – Cohesive Communities	Option unlikely to impact on ability of masterplan to conform with this policy	Option unlikely to impact on ability of masterplan to conform with this policy	Option may not conform as streets have less opportunities for natural surveillance and would certainly reduce permeability of environment	Option may not conform as streets have less opportunities for natural surveillance and would certainly reduce permeability of environment
IM4 - Sustainable Travel	Option unlikely to impact on ability of masterplan to conform with this policy	Option unlikely to impact on ability of masterplan to conform with this policy	Option would not conform as the development has not been designed for the needs of pedestrians, cyclists and public transport users first	Option would not conform as the development has not been designed for the needs of pedestrians, cyclists and public transport users first
London Plan				
Policy 6.1	Option unlikely to impact on ability of masterplan to conform with this policy	Option unlikely to impact on ability of masterplan to conform with this policy	Option may not conform as would be less likely to support sustainable means of transport and a high quality public realm	Option may not conform as would be less likely to support sustainable means of transport and a high quality public realm

Policy	Full Length Bored Tunnel	Full Length Immersed Tube	Reduced Length Bored Tunnel (Option C)	Reduced Length Immersed Tube (Option B)
Policy 6.7	Option unlikely to impact on ability of masterplan to conform with this policy	Option unlikely to impact on ability of masterplan to conform with this policy	Option may not conform in terms of ensuring direct, secure, accessible and pleasant walking routes to bus stops	Option may not conform in terms of ensuring direct, secure, accessible and pleasant walking routes to bus stops
Policy 6.10	Option unlikely to impact on ability of masterplan to conform with this policy	Option unlikely to impact on ability of masterplan to conform with this policy	Option would not conform as would not emphasise the quality of the pedestrian and street space	Option would not conform as would not emphasise the quality of the pedestrian and street space
Masterplan Design Code				
Masterplan Design Code	Option unlikely to impact on ability of masterplan to conform with this policy	Option unlikely to impact on ability of masterplan to conform with this policy	Option may not conform as it is likely to create significant severance and amenity impacts related to poor legibility, permeability and poorer quality pedestrian routes	Option may not conform as it is likely to create significant severance and amenity impacts related to poor legibility, permeability and poorer quality pedestrian routes

6. Summary and Conclusions

- 6.1. The section draws together the findings in Chapters 2 – 5 and summarises the Consultant’s view on the potential land use impacts of the four options assessed.
- 6.2. It is the Consultants view that the reduced length tunnel options are unlikely to be in full conformity to planning policies set out in the Royal Borough of Greenwich’s Core Strategy, as well as the design principles set out in the Masterplan Design Code. As a result, we conclude that the planning risk associated with both reduced length tunnel options could result in delays of around 12 months as a result of the need to prepare and gain support for a new planning application.
- 6.3. The wider impacts are also summarised in Table 6.1 below.

Flexibility of Masterplan

- 6.4. The Masterplan currently has outline permission for 10,010 units, 325,000sq.m of office, 18,600 of light industrial and 34,000sq.m of retail, food and drink floorspace. How this translates to an individual plot level is determined by reserved matters applications which should be consistent with the parameters, conditions and S106 obligations imposed upon the permission including those set out in the Masterplan Design Code, as well as height, massing, density and land use restrictions.
- 6.5. This means that, subject to the above parameters being met, there is an inherent degree of flexibility within the masterplan in terms of the distribution and configuration of floorspace. This is reinforced by the fact that the original masterplan application included an alternative layout to show how the development could respond to a bridge crossing rather than a tunnel. However, the degree of flexibility, and therefore the ability of the masterplan to accommodate a revised layout within the confines of the outline planning permission, depends on the scale of floorspace affected by each crossing option and conformity with current planning policy and guidance.

Floorspace affected by crossing options and potential for reconfiguration

- 6.6. Table 3.2 demonstrates that there could be an estimated 43,000sq.m of commercial floorspace and up to 620 residential units within the proposed masterplan configuration (as set out in drawing DEW PA 03_038) that would be affected by the reduced length immersed tube (Option B) and the reduced length bored tube tunnel (Option C).
- 6.7. This is much greater than 515 and 393 residential units (with no commercial floorspace) affected by the full length bored tunnel and immersed tube options, respectively.
- 6.8. The consultants have undertaken a high level assessment to test whether the affected floorspace could be accommodated elsewhere with the masterplan without compromising the design parameters set out within the outline permission.
- 6.9. In terms of residential, the 620 residential units affected under Option C is the equivalent of redistributing about 7% of the total residential units planned. Our initial testing shows this could be achieved without exceeding the maximum building heights set out within the building heights plan (drawing DEW PA 03_25), or exceeding the masterplan density guidelines.
- 6.10. There are 27 residential plots that do not currently have an approved planning permission and therefore have flexibility for reconfiguration. The residential plots that are impacted by all four options are located within the Parkside North neighbourhood, which has no approved planning applications. There is therefore scope to redistribute some of the residential floorspace affected to some of these plots without the need to revisit existing reserved matters applications.

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- 6.11. However, in terms of commercial floorspace there is less flexibility for reconfiguration in comparison to the number residential plots. Furthermore, Options B and C would result in over 43,000sq.m of commercial floorspace being affected by the crossing proposals, respectively.
- 6.12. It is the consultants view that this quantum of floorspace cannot be reconfigured within the parameters of the Masterplan permission. For the floorspace to be accommodated one (or both) of the following would need to happen:
- The heights of other commercial buildings in the masterplan would have to be increased to a level beyond that set out in the building heights plan, to accommodate the additional floorspace. This would be contrary to the existing planning permission and would require the submission of a new planning application;
 - An additional planning application would have to be submitted for some of the plots which already have full planning permission. This would be required to increase building heights to accommodate the additional floorspace.

Compliance with planning policy

- 6.13. The consultants have undertaken an assessment of the likely conformity of future reserved matters applications being in conformity with Borough and London level planning policy. It is our opinion that the two reduced length tunnel options would result in significant severance and amenity impacts that would mean proposals are unlikely to be in full conformity with a range of planning policies. Clearly, this will increase the potential risk of delay associated with negotiation on these issues.
- 6.14. Informal consultation with the Royal Borough of Greenwich has confirmed that the reduced length tunnel options are unlikely to be in full conformity with policies set out in the Borough's Core Strategy as well as some aspects of the Masterplan Design Code.

Planning risk

- 6.15. Our assessment is that the planning risk for the two full length tunnel options is relatively low. Whilst there would be a need to reconfigure 515 residential units in other parts of the masterplan for the full length bored tunnel, and 393 for the full length immersed tube tunnel, these are likely to be able to be accommodated without the need to increase building heights on other plots. Both these options are also in general conformity with Borough and London wide planning policy.
- 6.16. However, the planning risk for the two reduced length tunnel options is considered to be medium-high. This is because the scale of commercial floorspace affected cannot be reconfigured without increasing building heights or renegotiating other reserved matters applications that have already been agreed. Planning policy is also less supportive of these options which generate greater negative amenity impacts and adverse reaction arising from the wider public consultation process. The consequence of which increases the likelihood that proposals to amend the masterplan to accommodate reduced length tunnel options may be refused planning permission by the Local Planning Authority. In fact informal consultation with RB Greenwich planning department has confirmed that an application for the reduced length tunnel options would be likely to be refused on the basis of non-conformity with planning policies and design principles.
- 6.17. In addition, the need to submit a new planning application could result in a significant delay to the programme, depending on how quickly the wider planning issues could be resolved and the statutory planning process. A revised planning application could take at least 12 months for TfL to prepare a planning application (including pre-application consultation), submit, process and determine. This introduces the risk of a refusal and the need for an appeal or revised application, all of which would add further delay and uncertainty to the delivery of the project.
- 6.18. It should be noted that we have arrived at this conclusion based mainly on a desk-based assessment of the planning applications and their status. We have undertaken informal consultation with Royal Borough of Greenwich planning department via TfL to identify their

informal views on the reduced length options, but wider consultation has not been undertaken as the impact of these options is considered to be sensitive by TfL.

Impacts on development value through reduced amenity and coherence of the masterplan

- 6.19. As well as impacts on the amount of developable floorspace, the tunnel options are also expected to affect the quality of neighbourhood as a place to live and work. We have considered two dimensions of impacts related to this:
- Amenity impacts to residential uses resulting from noise, visual intrusion and air pollution from a major highway, which is likely to reduce the attractiveness of the development and therefore its value;
 - Wider impacts on the coherence of the masterplan as a place to live and work through severance barriers and the character of the neighbourhood as a whole
- 6.20. Our research of the impacts of major highways on residential values (see Appendix E) suggests that they can reduce the sale prices by approximately 12%. We have applied this figure to the expected average sales value of the units, as well as the number of units likely to be immediately affected, both by the road link and the exposure to the tunnel service buildings. Our estimate is that this could result in a reduction of approximately £8million in sales values for both of the reduced tunnel options, where units are likely to be exposed to the highway. Commercial floorspace is less likely to be affected.
- 6.21. In addition, we estimate that there will be a potential reduction in value to other residential units across the masterplan from a poorer quality of place, as a result of severance issues and loss of public realm. It is impossible to be accurate about the extent of such an impact, but a very small 1% reduction in sales value applied to the closest 1,000 units likely to be affected most significantly by the reduction in quality of the neighbourhood, could mean a reduction of residential value of at least £36million.

Impacts on development viability

- 6.22. The Consultants consider that, if the affected floorspace can be reprovided within the masterplan, then the reduction in sales values considered above are not likely to have a significant impact on the viability of the scheme or cash flow of the developer.
- 6.23. It should be noted that we have not consulted with the developer as part of this work, who may have a different view on how the reduced length tunnel options could impact on developable area and development viability.

Land costs

- 6.24. It is understood that the estimated cost to purchase the land for the Silvertown tunnel is between £9.7million – £11.1million (2010 prices). The reduced length tunnel options will require a greater amount of land within the masterplan as a result of the tunnel service buildings and the land that is affected to the north of Edmund Halley Way. Table 6.1 shows that the reduced length tunnel options would require an additional 14,768sq.m of space within the masterplan area, compared to only 4,024sq.m for the full length bored tunnel options and only 2,272sq.m for the full length immersed tube option.
- 6.25. We therefore consider that the total land costs would be greater for the reduced length tunnel options, although we do not have sufficient information to enable us to provide an estimate of the scale of potential costs at this stage.

Table 6-1 Summary of Development Impacts

Option	Land Area affected (sq.m)	Commercial Floorspace affected (sq.m)	Residential Units affected (sq.m)	Planning risk	Potential Delays Associated with Planning Risk	Development value impacts from negative amenity (£)
Full length bored	4,024	0	515	Low	None	0
Full length immersed tube	2,272	0	393	Low	None	0
Reduced length immersed tube (Option B)	14,768	43,479	620	Medium-High	12 months+	8-44 million
Reduced length bored (Option C)	14,768	43,479	620	Medium-High	12 months+	8-44 million

Appendices

Appendix A. Crossing Options

Figure A-1 Long tunnel: Bored Tunnel

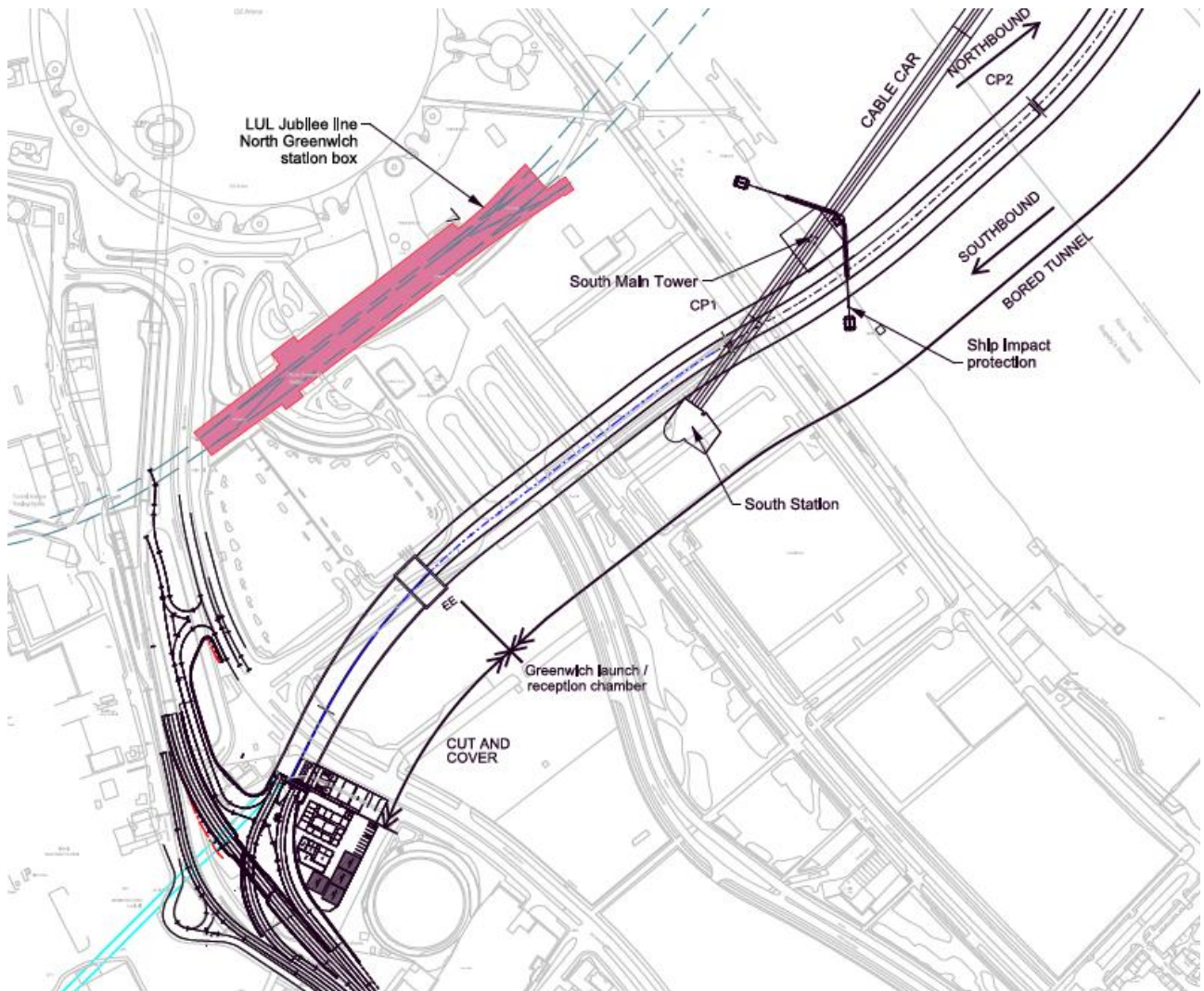


Figure A-2 Long tunnel: Immersed Tube Tunnel

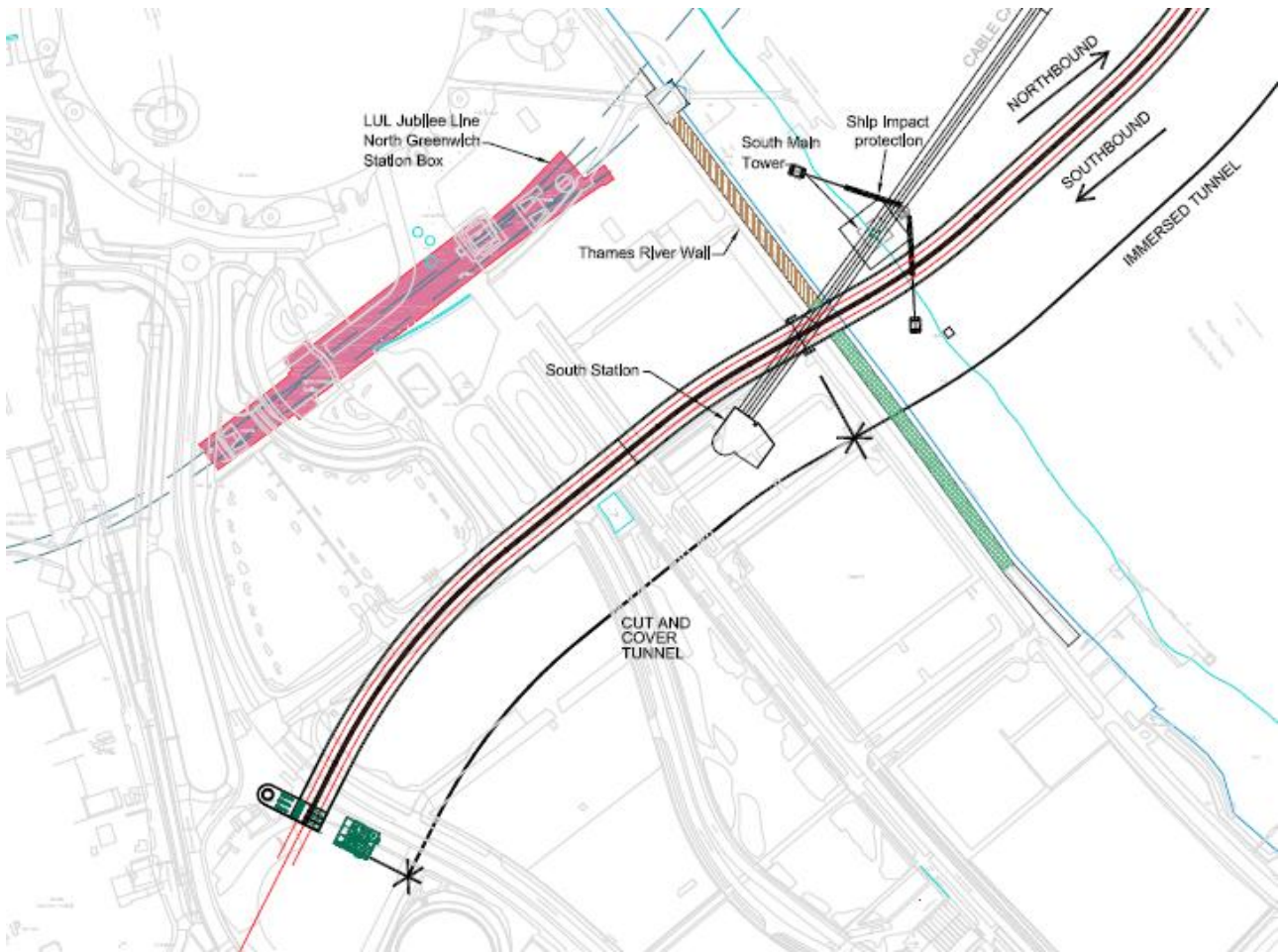
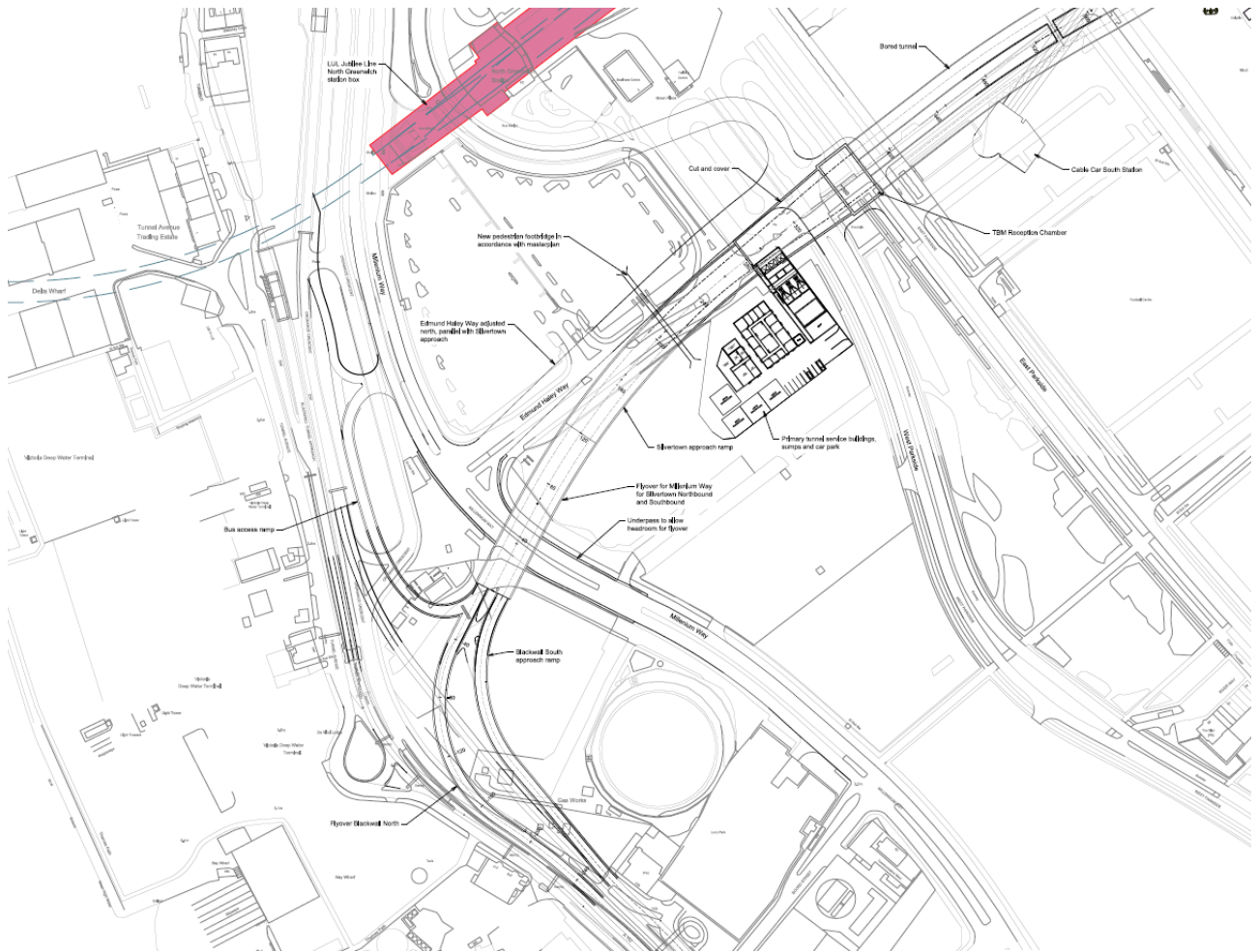


Figure A-3 Reduced Length Tunnel: Immersed Tube Tunnel



Figure A-4 Reduced Length Tunnel: Twin Bore Tunnel



Appendix B. Summary of Outline Planning Permission and Cable Car Masterplan

Masterplan Design Code

The Masterplan Design Code (MDC) under condition 66 sets out the development objectives for developments on the Greenwich Peninsula. The MDC contains a series of drawings of the masterplan area that amplify the key urban design principles and provides a breakdown of topics including

- Creating a special place with its own identity
- Defining the street
- Creating life between buildings
- Creating a place that is easy and enjoyable to move around
- Creating a familiar place
- Creating a place which will evolve; and
- Creating a place with variety and choice.

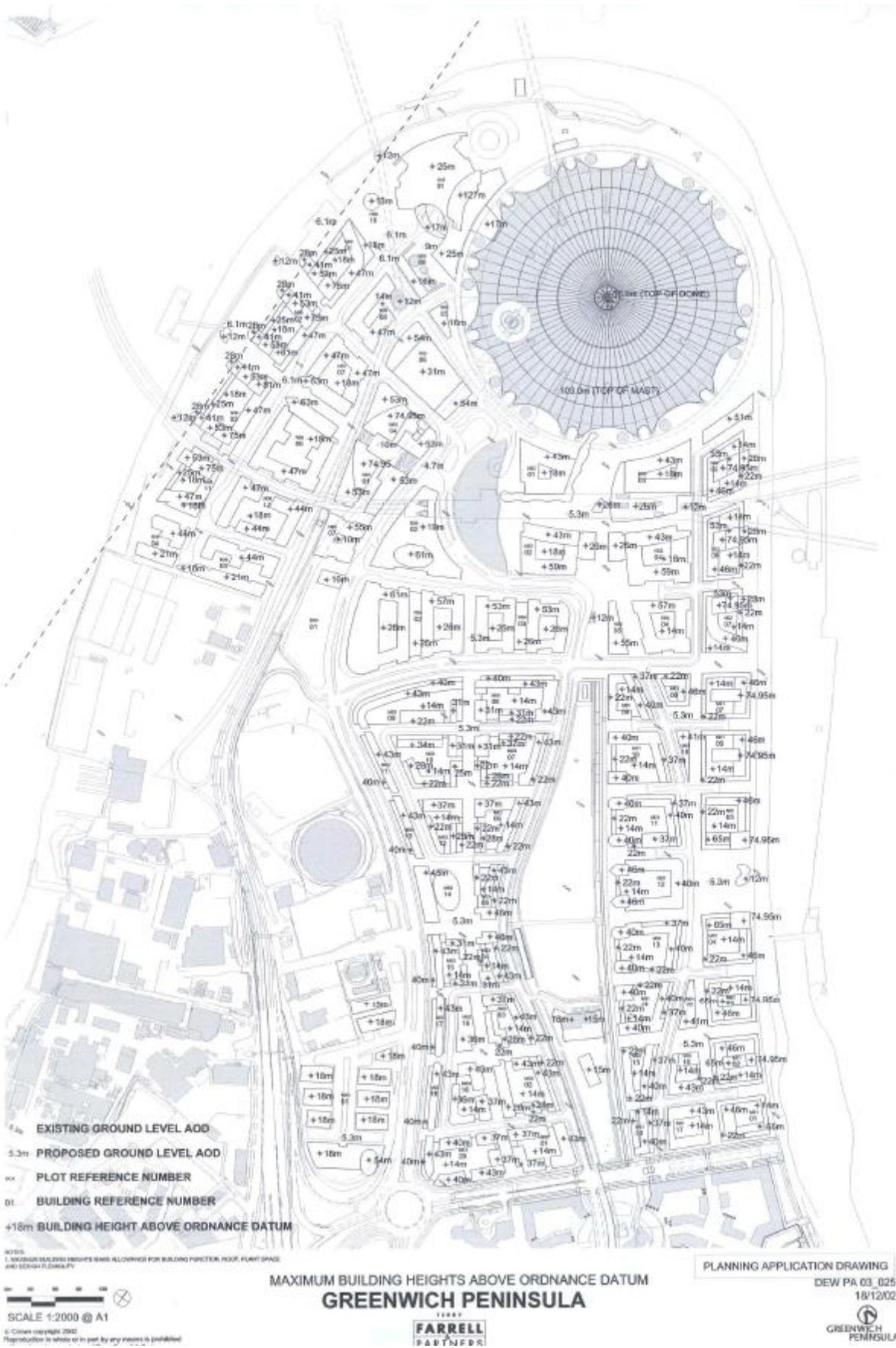
Height Restrictions

The outline application includes a building height plan (ref: DEW.PA 03-025 Rev A) under condition 59 that establishes dimensions and maximum building heights for each building element within each development plot across the site.

The development will exhibit a range of building heights from 18 metres (approximately 6 storeys) in the south-western quarter of the site (light industrial use) to 75 metres (approximately 25 storeys) along the river (residential use) on the eastern fringe of the Peninsula. The highest of the buildings and proposed as a new landmark building for the area will be the hotel on the northern edge of the site. The hotel, 127 metres (approximately 31 storeys) in height will be located to the north-west of the Dome, adjacent to the River Thames.

The Masterplan Design Code (MDC) states that building heights 'should generally accord with those derived from the masterplan' but in terms of modelling the document encourages designers to vary the rooflines within the overall volumes in order to create forms which allow for high levels of daylight, sunlight, views and other amenities.

Figure B.1 – Masterplan Heights Plan



Density and Type

The majority of residential development will be in the form of flats or maisonettes with some 3 storey town houses. Average densities are determined at neighbourhood level as summarised below. The highest densities are focused around the area of the North Greenwich Interchange.

- Meridian Gardens – 350 dwellings per hectare
- East Riverside – 300 dwellings per hectare
- Parkside – 200 dwellings per hectare
- Bugsby's Reach – 200 dwellings per hectare

Densities for individual plots will vary from the neighbourhood density. Density is calculated using the area of the plot plus an allocation of the surrounding landscape areas and streets.

38% affordable housing should be secured across the masterplan, with each residential plot providing between 20% - 50% affordable housing.

A range of private housing should be provide on-site as follows:

- 1 bed (25 – 40%)
- 2 bed (40 – 55%)
- 3 bed + (15 – 25%)

Car Parking

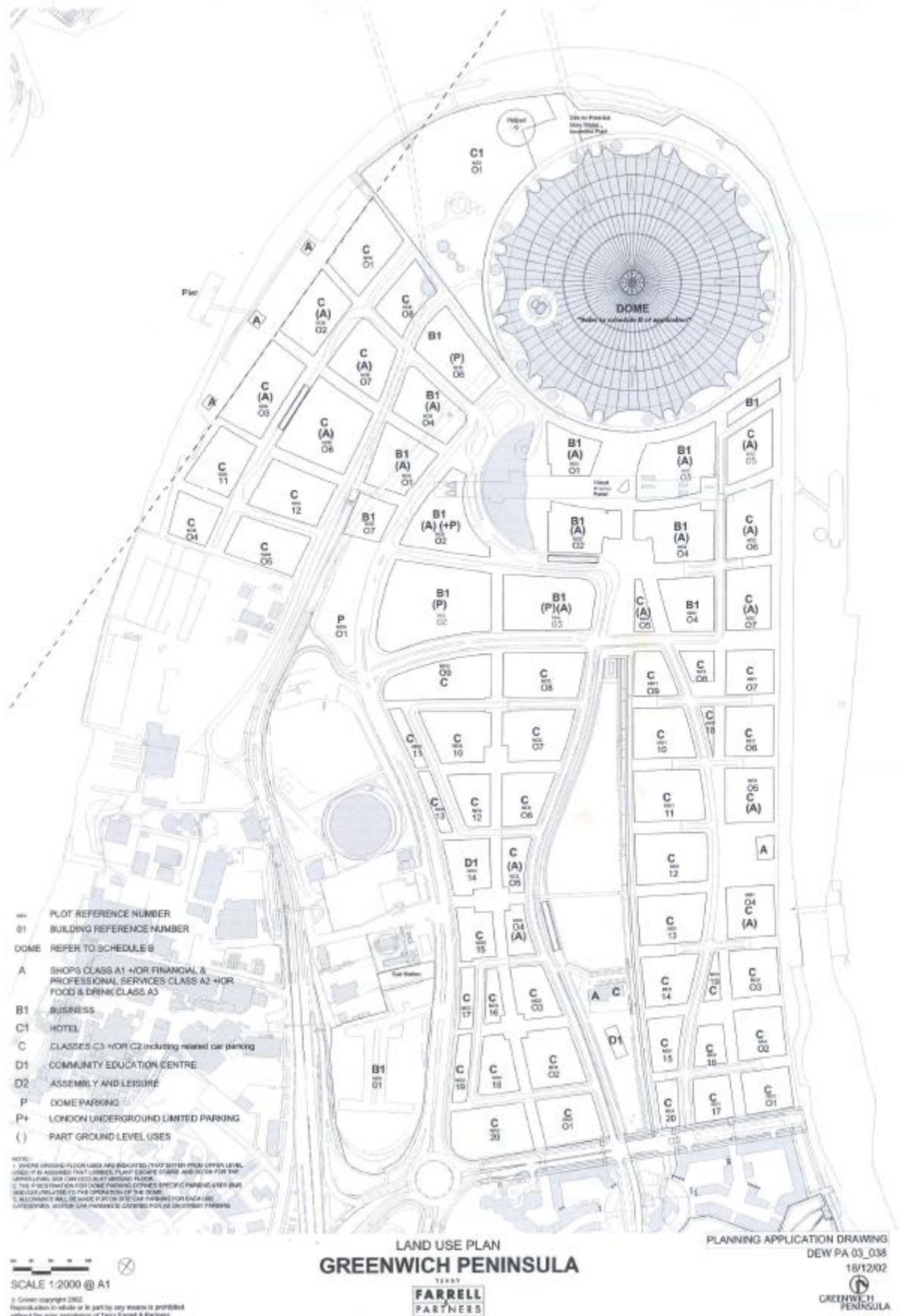
The majority of parking will be located in the centre of blocks under buildings or under raised landscape courtyards. There will be a range of different parking spaces provided across the application site according to typology as follows:

- Commercial (1 space per 1,000 sq.m)
- Residential (0.85 spaces per dwelling ultimately reduced to 0.7 spaces per dwelling on completion of the development)
- Commercial visitor (1 space per 4,000 sq.m)
- Residential visitor (0.7 spaces per 10 dwellings)

Land Uses

Condition 60 identifies that a range of lands uses must be developed in substantial accordance with the land use plan (ref: DEW.PA 03-030 Rev B – as shown below).

Figure B.1 – Land Use Plan



The outline application identifies the disposition of land uses and development limits in terms of floorspace and number of units across the masterplan as follows:

Table B.1 – Summary of Development by Location

Location	Type of Development / Use Class	Maximum quantity of development	Location and Restrictions
Dome Arena (upto 63,640sq.m and spectator capacity of 26,000 people)	Mixed use accommodation for leisure, sports, and uses and to provide mixed use accommodation for assembly, leisure, entertainment, sports, exhibition, retail, restaurant, office and ancillary uses.	63,640 sq.m	
Dome Waterfront (up to 62,000 sq.m)	(shops)	8,195 sq.m	No more than 5,000 sq.m of A1/2 in the middle Health & Safety Executive consultation zone (unless variation/revocation of the existing Hazardous Substance Consents permit.)
	A3 (food and drink)	10,080 sq.m	
	Exhibition space	11,760 sq.m	
	Leisure, sports, entertainment, and other D2 uses	33,220 sq.m	
	Floorspace for conferences and shows and associated uses	7,380 sq.m	
Greenwich Peninsula mixed use district (excludes the Dome Arena and Dome Waterfront)	A1 (shops) and/or A2 (financial and professional services)	22,800 sq.m	
	A3 (food and drink)	10,950 sq.m	Primarily in the Millennium Square and residential area to the west of the Dome
	B1(a) and B1(b) (office / R&D)	325,000 sq.m	Area immediately to the south of the Millennium Dome
	B1(c) (light industry)	18,600 sq.m	Southern quarter of the site to the west of Millennium Way Buildings shall comprise no more than three occupied stores and a maximum of 100 people on site (unless variation/revocation of the existing Hazardous Substance Consents permit.)
	C1 (hotel)	60,000 sq.m (630 rooms, associated conferencing, banqueting and 400 car park spaces)	North-west of the Dome within the Dome Waterfront Hotel should be no more than 120 metres in height without prior approval civil aviation authority
	C2 (residential institutions – close care, sheltered, nursing homes, residential care homes)	29,000 sq.m (540 bed spaces)	No institutional development shall be developed of occupied within the inner, middle and outer Health & Safety Executive zones (unless variation/revocation of the existing Hazardous Substance Consents permit.)
	C3 (dwellings)	10,010 units (820,550sq.m)	Within four principal area (south-east and south-west of the Dome and to the east and west of Central Park). No residential development shall be developed of occupied within the inner and middle

Location	Type of Development / Use Class	Maximum quantity of development	Location and Restrictions
			Health & Safety Executive zones (unless variation/revocation of the existing Hazardous Substance Consents permit.)
	C3 (student accommodation)	3,650 (120 persons)	Within four principal area (south-east and south-west of the Dome and to the east and west of Central Park). No residential development shall be developed of occupied within the inner and middle Health & Safety Executive zones (unless variation/revocation of the existing Hazardous Substance Consents permit.)
	D1 (education / community uses), including the rebuilding of Greenwich Pavilion (250sq.m)	13,310 sq.m	Provision of a secondary school (within a new residential quarter that will be created between Millennium Way and Central Park) The site area shall not exceed a total of 1.4 areas (unless variation/revocation of the existing Hazardous Substance Consents permit.)
	Rebuilding of Greenwich Pavilion	250 sq.m	Re-located to a new site within the proposed square fronting the River Thames within Bugsby's Reach
	Car Parking (upto 9,770, includes reduction of 930 spaces for LUL).	2,200 (Dome & Dome Waterfront), 400 (hotel spaces), 7,500 (residential spaces, including 500 on-street), 400 (office spaces), 200 (retail on-street spaces).	

Greenwich Peninsula Cable Car Masterplan Planning Application

The Greenwich Peninsula Cable Car Masterplan outline planning application (reference 10/3422/O) was granted permission on 6th April 2011.

The outline application approved the development of up to 157,300m² of floorspace on Plots NO404, NO405, NO207, MO106, MO107, MO109, MO110 and MO118 of the Greenwich Peninsula consisting of the following:

1. Class A1 - A5 (Retail) up to 7,717m²
2. Class B1(a) and B1(b) (Business) up to 38,024m²
3. Class C3 (dwellings) up to 1,505 dwellings (111,389m²)
4. Open space including for amenity and entertainment purposes
5. Hard and soft landscaping
6. Associated car parking
7. Highways and transport works; and
8. Associated and ancillary works.

Plot footprints and boundaries that needed to be redefined include the following:

- M0106 and M0107: redefined and merged as M0106/7
- M0108: lost to cable car southern station site
- M0109 and M0110: redefined and merged as M0109/10
- M0118: redefined
- N0207: redefined
- N0404: redefined
- N0405: redefined

The relevant documents include:

- Masterplan – DEW PA 03-052 Rev A, dated 18 March 2003
- Land Use Plan – DEW PA 03-038 Rev B, dated March 18 2003
- Maximum Building Heights – DEW PA 03-025 Rev A, dated March 18 2003

The Case for the Proposed Development

The proposals set out in the Greenwich Peninsula Cable Car Masterplan outline planning application effectively replace the previously approved scheme for this area which formed part of the Greenwich Peninsula Masterplan (ref 02/2903/O). The following summarises the key points of the case for approval put forward in the application:

Greenwich Peninsula Masterplan Design Code

The application has given regard to the approved Greenwich Masterplan Design Code that covers:

- The need to provide a range and balance of uses consistent with the Greenwich Peninsula Masterplan and the 2004 outline planning permission;
- The establishment of high quality, attractive and distinctive buildings and environment;
- The preservation of the integrity of the wider Masterplan setting;
- The provision of high quality living accommodation;
- The creation of high quality architectural design and form which will reinforce the benchmark for future reserved Matters Applications on the Greenwich Peninsula.

Cable Car Impact Study

The scheme has been informed by a 'Cable Car Impact Study' published in 2010 that was undertaken to inform the selection of the preferred alignment and design of the cable car in conjunction with Transport for London and the London Borough of Greenwich.

Redesign Opportunities

Whilst the impact of the proposed cable car and tunnel on plot site areas is significant, the application scheme provides for the same overall volume of development floorspace permitted by the 2004 Masterplan, within a townscape model that responds positively to the new constraints and opportunities provided by the introduction of the London Cable Car

The distribution of uses, plot extents and height parameters have been modified in response to the opportunities presented by the addition of the cable car and its associated public realm and are generally reflective of the 2004 masterplan through:

- Continuation of commercial development to the north of Edmund Halley Way (except Plot NO207 that will provide residential development)
- Continuation of retail (A1-A5) at ground floor level. The A1-A5 uses at ground floor level adjacent to the new Riverside Square and cable car station will enhance the relationship of these plots with the new public realm.
- Continuation of residential uses (with ground floor retail) to the south of Edmund Halley Way (except for Plot MO118).
- Redefining the plot boundaries has further resulted in more public realm and open space to the benefit of all site users.
- Increased in maximum building heights for Plots N0207, M0106, M0107, M0109 and M0110. This change will accommodate three towers that are proposed on these plots. The introduction of two tall buildings to act as a 'gateway' for the London Cable Car landing, and a third focal point tall building to the west of the station building (north-western corner of Plot M0109/10) on an axis with the cable car.
- In contrast, the proposed maximum building heights for Plot M0118 has reduced from 41m to 17.5m to reflect the scale of the Cable Car station. In addition, all plots except for Plot M0118 will have a minimum building height of 15m AOD. In Plot M0118, the minimum height will be 9m AOD.

Table B.2 compares the Greenwich Meridian Masterplan (2004) parameter to the Cable Car Masterplan (2010). This shows the total gross floorspace approved in 2004 can be provided in the reconfigured masterplan.

Table B.2 - Land Use Change

Land Use	Greenwich Meridian Masterplan (2004)	Cable Car Masterplan (2011)
Floorspace	111,389 sq.m	111,389 sq.m
Approx no. of dwellings	1,505 sq.m	1,505 sq.m
A1-A5 Floorspace	7,717 sq.m	7,717 sq.m
Floorspace	38,024 sq.m	38,024 sq.m
Total Floorspace	157,130 sq.m	157,130 sq.m

NB: All figures exclude car parking and plant areas

Total Development Capacity

The following table summarises the total amount of development across the Greenwich Meridian Masterplan Site (excluding the Dome, Dome Arena and Waterfront) and development that has secured planning permission to date (from Reserved Matters and Cable Car Application) in order to determine the proportion of land area with planning permission.

It should be noted that approved planning applications for the reserved matters can be superseded by new planning applications. For example, for plot N0602, the planning application (ref 08/1013/F) was superseded by a new application (ref 14/0684/0) that covered plots N0601, N0602, N0607, N0608, N0504 and N0506.

Table B.3 - Greenwich Meridian Masterplan Development Capacity

	Masterplan	Cable Car	Reserved Matters	Combined Cable Car + Reserved Matters
Residential (units)	10,010	1,505	4,710	6,215
Student (units)	120	0	1,394	1,394
Residential Institution (C2) (sq.m)	29,000	0	0	0
Retail (A1-A5) (sq.m)	33,750	7,717	21,599	29,316
Office (B1) (sq.m)	325,000	38,024	56,793	94,817
Industry (B1c) (sq.m)	18,600	0	0	0
Hotel (C1) (sq.m)	60,000	0	78,698	78,698
Community (D1) (sq.m)	13,560	0	30,889	30,889
Leisure (D2) (sq.m)	52,360	0	2,038	2,038
Total Floorspace (excluding resi/student) (sq.m)	532,270	45,741	190,017	243,367

Appendix C. Tunnel Drawing Overlays

Figure C.1 – Full Length Bored Tunnel: Affected Masterplan Area

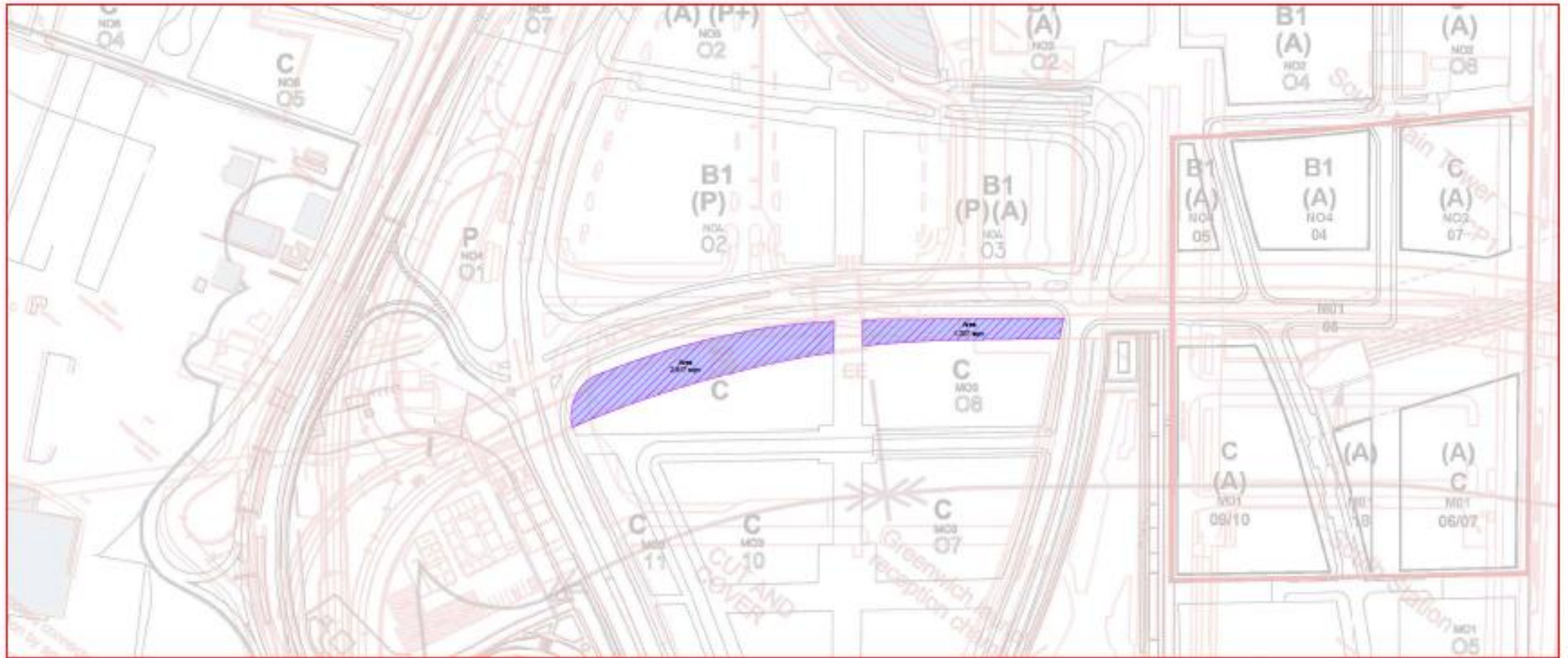


Figure C.2 – Full Length Immersed Tube Tunnel: Affected Masterplan Area

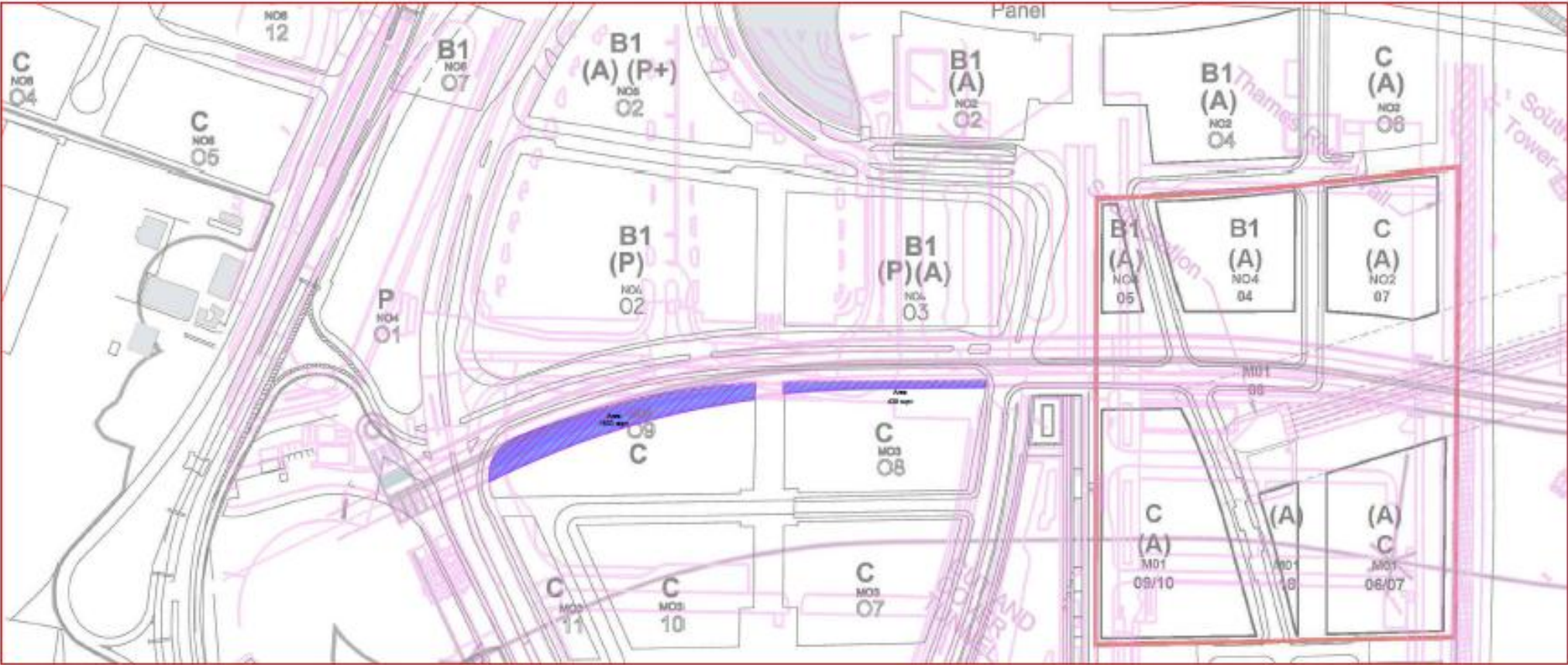


Figure C.3 – Reduced Length Bored Tunnel (Option C): Affected Masterplan Area

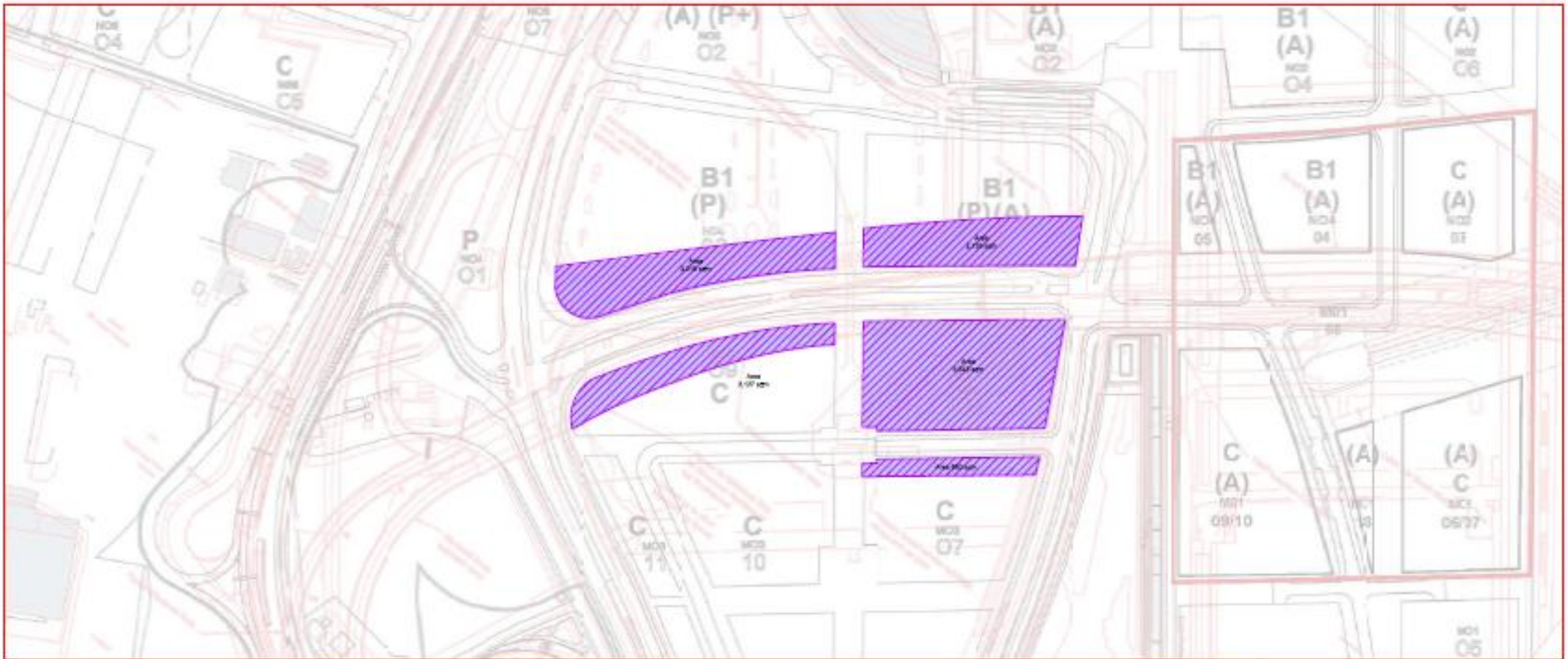
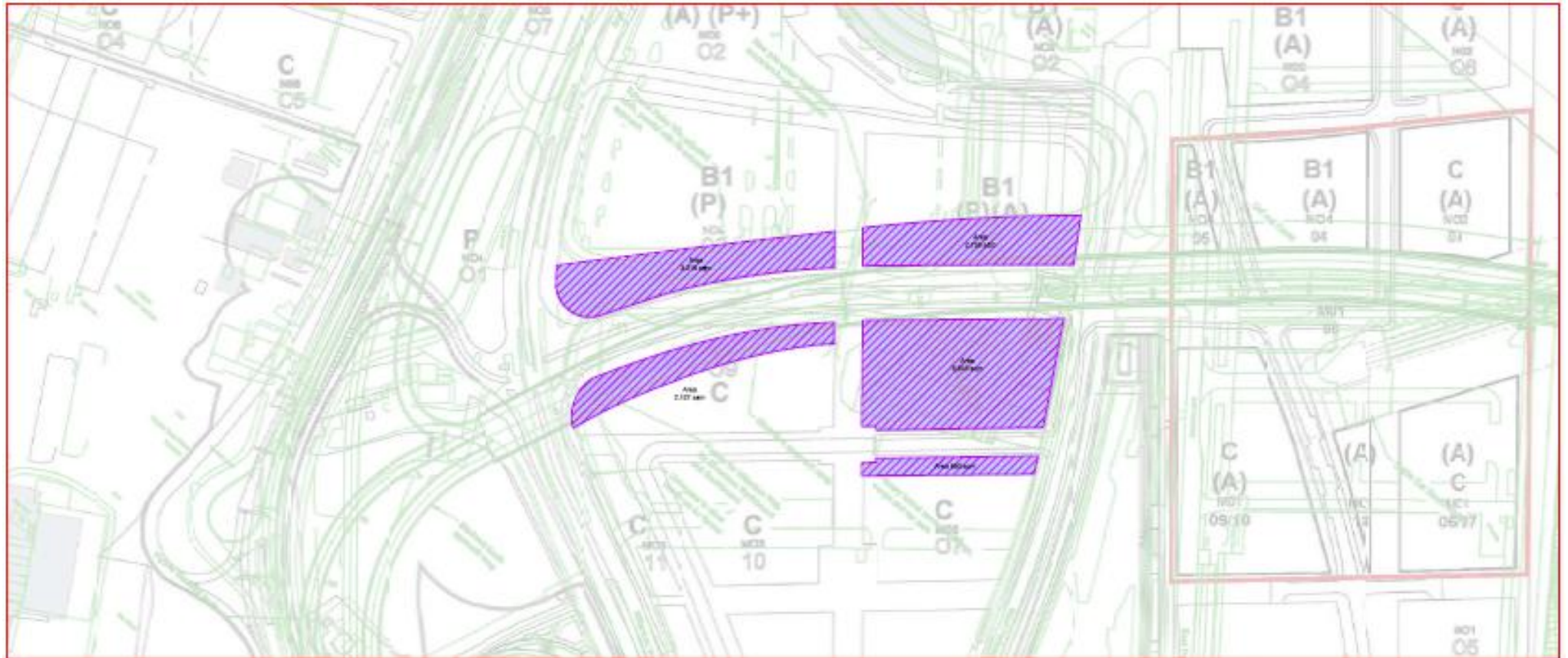


Figure C.4 – Reduced Length Immersed Tube Tunnel (Option B): Affected Masterplan Area



Appendix D. Schedule of Affected Land Uses

Table D-1: Schedule of Land Uses Affected by each Option

Plot	Total Footprint (sq.m)	Retail Floorspace (sq.m)	Office Floorspace (sq.m)	Residential floorspace (sq.m)	Private Resi (sq.m)	Affordable Resi (sq.m)	Total Private Units	Total Affordable Units	Total Units
Full length bored tunnel									
M0309	2,581	-	-	13,777	11,022	2,755	262	49	311
M0308	1,682	-	-	9,067	7,254	1,813	172	32	205
Total	4,263	-	-	22,845	18,276	4,569	434	81	515
Full length immersed tube									
M0309	1,680	-	-	8,972	7,178	1,794	171	32	202
M0308	1,679	-	-	8,428	6,742	1,686	160	30	190
Total	3,360	-	-	17,400	13,920	3,480	331	62	393
Reduced length Bored Tunnel (Option C)									
M0308	5,843	-	-	16,925	13,540	3,385	322	60	382
M0309	1,513	-	-	10,539	8,431	2,108	200	37	238
N0402	3,215	-	25,883	-	-	-	-	-	-
N0403	2,733	2,203	15,392	-	-	-	-	-	-
Total	13,304	2,203	41,275	27,464	21,971	5,493	522	97	620
Reduced length Immersed Tube (Option B)									
M0308	5,843	-	-	16,925	13,540	3,385	322	60	382
M0309	1,513	-	-	10,539	8,431	2,108	200	37	238
N0402	3,215	-	25,883	-	-	-	-	-	-
N0403	2,733	2,203	15,392	-	-	-	-	-	-
Total	13,304	2,203	41,275	27,464	21,971	5,493	522	97	620

Appendix E. Property Value Impact Benchmarking

The proposed link road is likely to generate noise and visual impacts which could reduce property values in close proximity. This section does not assess the impact of noise instead it benchmarks the effects of similar highway corridors on property values in order to identify any potential reduction in value as a result of each option.

The property values of similar existing residential developments were compared with property fronting onto a major highway against similar properties that fronting onto local roads in the close proximity to each other.

Figure C-1 and C-2 provide an illustrative example of the property type comparison.

Figure E-1 Teviot Street and Brion Plan (A12)



Figure E-2 Alfred's Gardens (A13)

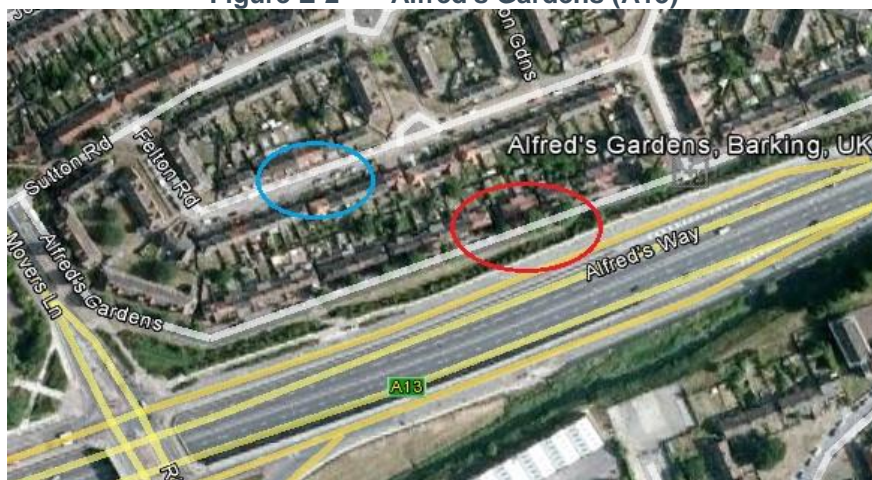


Table E-1 shows that there is significant difference in the property values between similar properties fronting onto major roads in contrast to those fronting onto local roads in locations across London.

Overall there is around a 12% decrease in property value of properties that are located on the main road corridor, in contrast to properties that are located on local roads.

Table E-1 Property Value Comparison

Type 1 located directly on a main road corridor			Type 2 Residential Development located away from main road corridor but within vicinity			Comparison	
Address	Type	Avg Value (£)	Address	Type	Avg Value (£)	Difference in Value (£)	Difference in Value (%)
304 - 312 Teviot Street (A12)	3 - 4 storey flats	201,474	55 - 63 Brion Place	3 - 4 storey flats	235,550	34,076	14.5
Alfred's Gardens (A13)	2 storey semi-detached	206,999	Felton Road	2 storey semi-detached	226,682	19,683	8.7
Kemps Drive (A13)	3 storey flats	196,649	Rosefield Gardens	3 storey flats	212,788	16,139	7.6
Norman Road (A12)	2 storey terraced	273,076	Park Grove Road	2 storey terraced	293,496	20,420	7.0
Aberdeen Road (A406)	2 storey terraced	207,114	Fairfield Road	2 storey terraced	232,355	25,241	10.9
Torquay Street (A404)	multi storey flats	284,852	Bourne Terrace	multi-storey flats	371,167	86,315	23.3



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