Extending the DLR to Beckton Riverside and Thamesmead

Options analysis technical report

Consultation 2025

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1 Introduction

1.1 Aim of options summary report

1.1.1 The aim of this report is to set out further background information on our proposals to extend the DLR to Beckton Riverside and Thamesmead, and to provide a summary explanation of the conclusions we have reached in selecting our preferred option for the scheme, which is presented as part of this consultation.

1.1.2 In developing plans for the proposed extension, we have assessed both a range of modal alternatives and different DLR route options. In doing so, we have completed workstreams such as engineering design, environmental appraisal, urban design, and transport appraisal to assess the costs and benefits of the potential options, with the outcomes from the technical work shaping the proposals presented in this public consultation.

1.1.3 Throughout the option identification and assessment process, we have worked collaboratively with the Royal Borough of Greenwich (RBG) and London Borough of Newham (LBN), and landowners including the Thamesmead Waterfront Joint Venture (TMJV) Partnership (a joint venture comprising of Peabody and Lendlease), Aberdeen Investments, and St William to ensure our proposals align with the needs of local communities and the emerging vision for Beckton Riverside and Thamesmead. Alongside the outcomes of the technical work, feedback from boroughs and landowners / developers throughout the design development process has also helped shape the proposals set out in this consultation.

1.2 Background to the scheme

1.2.1 Beckton Riverside and Thamesmead are two areas which are critical to meeting London's housing needs and for supporting economic growth. Combined, the two sites offer capacity to deliver up to 30,000 new homes; this would be key to delivering the Mayor of London's commitment to deliver new homes for London.

1.2.2 Both sites lack direct rail services, and housing development will only be possible with the provision of new a high-capacity transport link. The proposed DLR extension would provide this public transport capacity and connectivity needed to support the full development potential of Beckton Riverside and Thamesmead.

1.2.3 This proposal is a core scheme in the Mayor's Transport Strategy and sits as one of the Mayor's highest priority infrastructure projects for unlocking large-scale housing and regeneration in London.

1.2.4 An overview of the scheme is illustrated in Figure 1 below.

Figure 1: Overview of the proposed DLR extension to Beckton Riverside and Thamesmead

1.3 Report structure

1.3.1 The remainder of this report is structured as follows:

- Section 2 describes the process we followed to identify and assess potential public transport options to serve Beckton Riverside and Thamesmead and the outcomes of this work.
- Section 3 describes the process we followed to identify and assess potential options for extending the DLR to Beckton Riverside and Thamesmead.
- Section 4 provides a comprehensive overview of the different options considered for the DLR extension and details the outcomes of option assessment.
- Section 5 confirms the preferred option for the DLR extension to Beckton Riverside and Thamesmead that we are seeking feedback on as part of this public consultation.
- Section 6 outlines the next steps in developing our plans for the DLR extension following this public consultation.

2 Developing public transport options to serve Beckton Riverside and Thamesmead

2.1 Strategic option assessment

2.1.1 We have been through multiple stages of assessment to arrive at the options that are presented in this public consultation.

2.1.2 Existing national, regional, and local planning and transport policies give strong support for the principle of investing in measures to improve public transport connectivity and increase accessibility in the area.

2.1.3 The principle of a potential extension of the DLR to Beckton Riverside and Thamesmead is introduced in the London Plan and Mayor's Transport Strategy. These documents cite the scheme as having potential to unlock new development and improve cross-river public transport connectivity in east London.

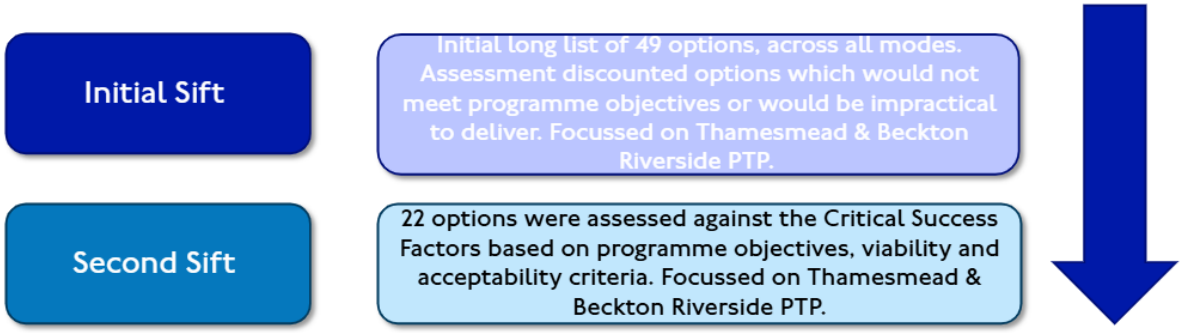
2.1.4 These aspirations were subsequently developed as part of the GLA's development of the Thamesmead and Abbey Wood Opportunity Area Planning Framework (OAPF), which was adopted in 2020. This sets out a spatial vision for Thamesmead and Abbey Wood through to 2041, identifying that the Opportunity Area (OA) has potential capacity for at least 15,000 new homes and 8,000 jobs supported by a package of new public transport connections including a DLR extension to Thamesmead.

2.1.5 The OAPF work included an initial review of public transport options between 2018 and 2020. This identified that an extension of the DLR to Thamesmead would be the most suitable means of supporting the full development vision for the Thamesmead & Abbey Wood OA.

2.1.6 Following this initial review of options, we initiated the Thamesmead and Beckton Riverside Public Transport Programme in 2021, as the evolving policy context had highlighted the scale of opportunity at Beckton Riverside, with the Beckton Riverside & Royal Docks OAPF developed by the GLA, in partnership with LBN.

2.1.7 Between 2021 and 2023 we worked in partnership with RBG and LBN and our landowner / developer partners to identify programme objectives[1] to address the key spatial and transport challenges, before going on to identify and further assess a range of transport options across two stages of assessment. Figure 2 summarises the purpose and process followed for each stage.

Figure 2: Stages of option assessment associated with the Thamesmead and Beckton Riverside Public Transport Programme



[1] The current programme objectives are set out in Section 3

2.2 Initial Sift

2.2.1 The initial assessment process considered 49 options and 15 modal categories for assessment based upon a review of: existing public transport connections in east / southeast London, previous studies / scheme proposals and key themes in the MTS. The options included all forms of transport – ranging from walking and cycling to major heavy rail options. These options were then assessed against the programme objectives and other viability and acceptability criteria.

2.2.2 We used the initial sift of the long list to rule out any options, including corridors and types of transport, that would not meet the programme objectives or would be impractical to deliver. Any corridors or type of transport intervention which failed this assessment were ruled out and did not progress to the second sift. For example, we ruled out strategic options to extend the Elizabeth line, the London Underground and the National Rail (North Kent) line.

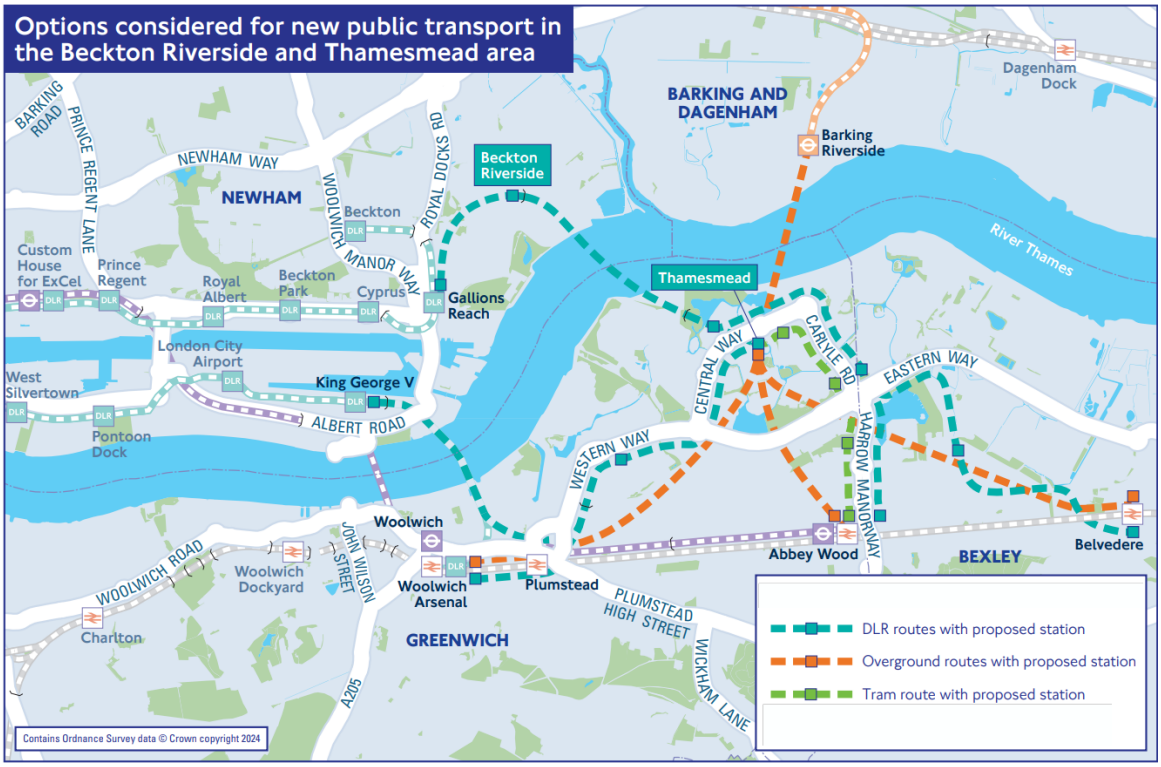
2.2.3 Following the completion of the initial sift, 6 modal options across various routes were taken forward into the second sift. The modal options to be developed further included potential DLR extensions, potential London Overground extensions, new tram and light rail services, as well as enhanced bus and bus transit options.

2.3 Second Sift

2.3.1 During the second sift, each of the selected public transport concepts were developed in further detail to identify potential route options, with a more detailed assessment of the potential costs, feasibility and transport, housing, and environmental impacts undertaken. Combinations of options were also assessed at this stage to determine if packages of options could work together to fulfil the programme objectives and strategic fit.

2.3.2 A sample of the potential DLR, London Overground and tram options considered during the second sift are illustrated in Figure 3. The full list of options assessed during the second sift also included the addition of a cross-river tram option, as well as enhanced bus services within the Thamesmead area, a bus transit corridor between Woolwich and Abbey Wood via Thamesmead, and a new light rail line between Gallions Reach and Beckton Riverside.

Figure 3: Public transport options considered during the second sift



2.3.3 The second sift assessment was based on a number of Critical Success Factors (CSFs) derived from the programme objectives, as well as the viability and acceptability criteria defined during the initial sift. This included an assessment of strategic fit, value for money, affordability, achievability, and stakeholder views associated with the options using a range of detailed metrics.

2.3.4 This assessment resulted in the selection of three options which were then carried forward to a full economic appraisal within a business case. This shortlist outlined below:

- Woolwich–Abbey Wood Bus Transit
- Woolwich–Abbey Wood Bus Transit with DLR to Beckton Riverside
- Woolwich–Abbey Wood Bus Transit with DLR to Thamesmead via Beckton Riverside

2.3.5 Potential onward extensions of the DLR from Thamesmead, London Overground extension options, improvements to existing bus services and both new tram and light rail services were discounted at this stage.

2.3.6 Figure 4 summarises the range of options we considered during each stage of assessment and the reasons for discounting or carrying forward options.

2.3.7 Following the business case assessment of the three shortlisted options, an extension of the DLR to Beckton Riverside and Thamesmead, in combination with the Woolwich-Abbey Wood bus transit scheme was endorsed by local authority and developer partners as TfL's preferred option to fulfil the programme objectives. Both interventions were subsequently initiated as stand-alone programmes by TfL.

Figure 4: Summary of options considered at the Initial and Second Sift stages

3. Developing options for the DLR extension to Beckton Riverside and Thamesmead

3.1.1. This section provides an overview of our approach to developing our plans for the DLR extension to Beckton Riverside and Thamesmead, and the stages of option development and assessment we have been through that has led us to the preferred option presented in this public consultation.

3.1.2. The process for selecting a preferred option for the DLR extension to Beckton Riverside and Thamesmead is separate from the multi-modal option assessment that was undertaken to identify the best performing public transport option to unlock the development of Beckton Riverside and Thamesmead and fulfil the programme objectives.

3.1.3. Underpinning our approach to the development of the DLR extension has been a robust option selection process to ensure that the proposals we are consulting on represent the best strategic fit, as well as being deliverable, affordable, and offering value for money. Alongside this, the potential impact on environmental topic areas has been considered through the optioneering process. This has included looking at impacts on ecology, noise, air quality, communities, archaeology, built heritage, contaminated land, townscape and visual impact, water resources and flood risk.

3.1.4. In developing plans for the scheme, we have worked with our partners to navigate the challenge of development funding availability. This has required an incremental approach to progressing the design of the DLR extension, with the key stages of the design development process summarised below and described throughout this report.

3.2. Stage 1 - Initial option identification and assessment

3.2.1. This stage of scheme development and assessment took place between 2021-2022 and focused upon exploring the alignment and station location options at Beckton Riverside and Thamesmead, as well potential turnback options located across the DLR network. Option development comprised of a longlist and shortlist sift for each design component. At the longlist stage, options were assessed against a set of high-level criteria focussed on feasibility, complexity of delivery, and environmental impacts. Options taken forward to the shortlist stage were subject to further design development and a detailed multi-criteria assessment.

3.2.2. In Stage 1, an initial corridor for the cross-river connection of the DLR extension was identified, with work focussed on defining the river crossing type and assessing potential alternatives. Work was also undertaken to explore potential options for providing a connection between Beckton Depot and the proposed DLR extension, with an initial layout developed for the tie-in junction between the existing Beckon and proposed Thamesmead branches.

3.2.3. The work undertaken in Stage 1 informed the assessment of the DLR extension to Beckton Riverside and Thamesmead alongside other potential options for providing new public transport to serve both areas, enabling its selection as the preferred modal option. This assessment took account of work undertaken to explore the feasibility, affordability, and value for money offered by a potential DLR extension.

3.2.4. This work also enabled us to define an emerging design concept for the DLR extension, the principle of which we presented at public consultation in February 2024[2]. We used the feedback from this consultation to inform the next stage of design. As part of the consultation, we also presented some of the modal alternatives that were discounted in the second sift for the Thamesmead & Beckton Riverside Public Transport Programme.

3.3. Stage 2 - Further option refinement and assessment

3.3.1. Following the selection of an extension of the DLR as the preferred modal option to serve Beckton Riverside and Thamesmead, the scheme was established as a stand-alone programme. As part of this, the over-arching programme objectives of the Thamesmead and Beckton Riverside Public Transport Programme were updated, with individual objectives defined for the DLR extension and bus transit scheme.

3.3.2. The DLR programme objectives describe the contribution of the programme to the outcomes that are sought as part of the overarching Thamesmead and Beckton Riverside Public Transport programme, based on the national, regional, and local planning / transport policy objectives, as well as local needs and challenges. The objectives are outlined below:

- **Place –** In line with the principles of Good Growth, provide high quality new transport hubs in Thamesmead and Beckton Riverside that will sit at the heart of building strong and inclusive communities, by acting as catalysts for creating green and connected town centres with high quality public realm and a sense of place.
- **Homes –** Provide access to high quality public transport infrastructure with adequate capacity and connectivity, to unlock the delivery of the long-term vision for Thamesmead and Beckton Riverside of providing new high quality and affordable homes, to support London's growth.
- **Good Growth** – Deliver access to a rail network connecting Thamesmead and Beckton Riverside with the rest of London, to promote economic growth and regeneration; contribute towards tackling local deprivation; create enhanced social infrastructure, public services, and employment opportunities; improve access to jobs, education, and amenities; and create a sense of pride and belonging at Beckton Riverside and Thamesmead.
- **Connectivity -** Improve cross-river public transport connectivity, integrated with more local modes of transport, to reduce barriers to movement between east and south east London to the rest of London and the wider Thames Estuary Growth Area.
- **Net zero -** Deliver a cross-river transport network that supports low carbon, low car ownership and mode shift away from the car and the delivery of low car use developments and energy efficient homes, to make progress towards the UK's commitment to Net Zero by 2050.

3.3.3. The conclusions from the longlist and shortlist option sift undertaken in Stage 1 were carried forward, with further work taking place between summer 2024 and spring 2025 as part of Stage 2. This focussed on scheme development and assessment of specific design components including tie-in junctions, the cross-river tunnel, and station options at both Beckton Riverside and Thamesmead. This also provided an

[2] We responded to all issues raised and reported on the outcomes and next steps from the consultation in the Consultation Report, published on the consultation website https://haveyoursay.tfl.gov.uk/dlr-extension in August 2024.

opportunity to undertake further testing and validation of the work undertaken and decisions made in Stage 1.

3.3.4. During this stage of work, additional data on existing conditions such as historic land use, ground investigation conditions, and environmental constraints were used to shape scheme development, alongside continued engagement with landowners and local authorities.

3.3.5. The multi-criteria assessment framework used in Stage 1 was updated and refined to sift the options developed during this stage of work. Criterion were grouped to assess the development, environmental, feasibility, and transport impacts of the options, with examples of the key types of criteria we assessed listed below:

- **Impact on the environment (during construction and operation):** People, communities, green and brown environment, carbon, and climate change adaptation
- **Feasibility:** Requirement for land, technical complexity, capital cost, and town planning & consents risks
- **Connectivity:** DLR customer impacts, operational feasibility, interchange experience, impacts on other transport modes and strategic planning

3.3.6. This framework was used as a tool to guide the selection of the preferred option for the scheme that is presented in this consultation, alongside other considerations including feedback from the earlier public consultation, landowner engagement, and the affordability and deliverability of the overall scheme.

3.3.7. The remaining sections of this document present details of the options associated with each design component of the proposed scheme and details the assembly of the proposed option for the DLR extension to Beckton Riverside and Thamesmead.

4. DLR Extension option development and assessment

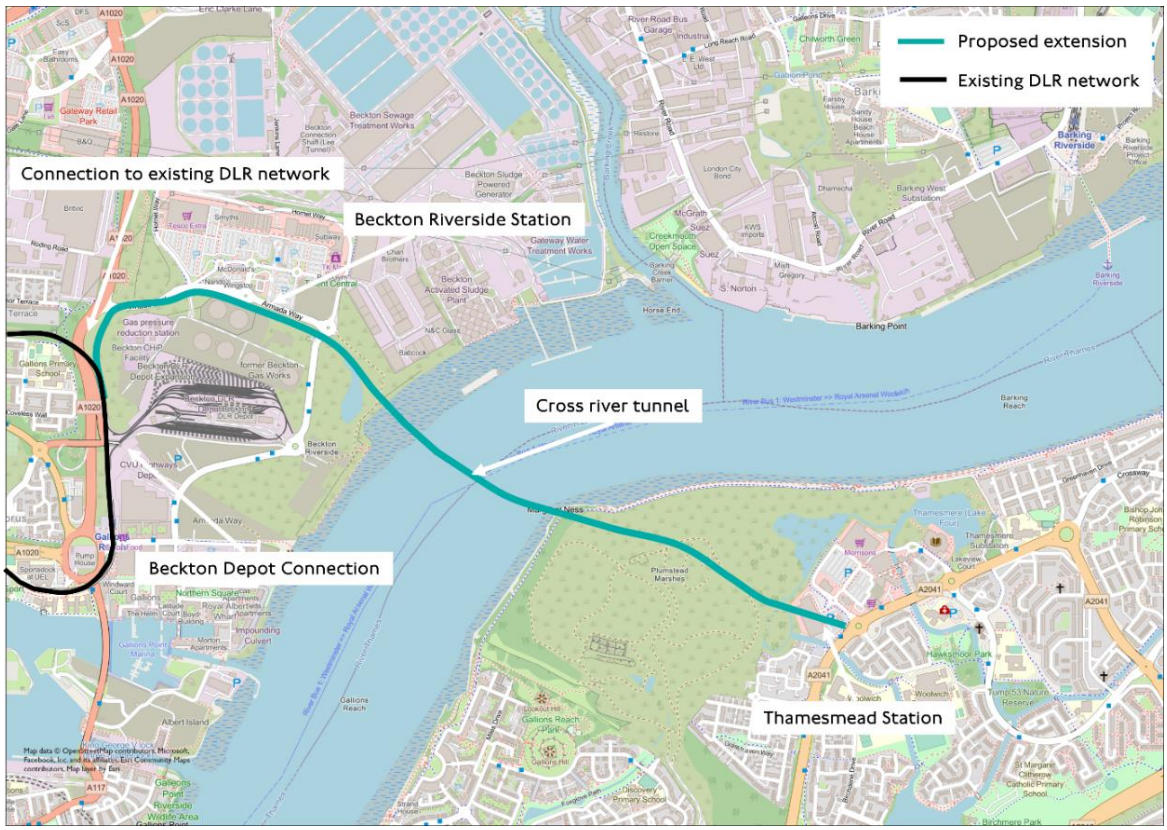
4.1. Overview

4.1.1. This section provides an overview of the range of options identified and assessed for the scheme, summarising the key factors that have influenced our proposals for the preferred option for the scheme.

4.1.2. The proposed DLR extension can be broken down into five component parts each with specific physical, operational and land use constraints which influence the preferred solution. These constraints are described throughout this section. The components of the scheme are described below and are illustrated in Figure 5.

- Beckton Junction and Depot connection
- Beckton Riverside station and the alignment approach
- Cross-river tunnel
- Thamesmead station and the alignment approach
- A turnback facility[3]

Figure 5: Component parts of the DLR Extension to Beckton Riverside and Thamesmead scheme



4.1.3. The design development process, the outcomes of the Stage 1 and Stage 2 option assessment and confirmation of our preferred option for each design component is detailed in the remainder of this section.

[3]A 'turnback' would be a new piece of track infrastructure located to the west of the proposed extension (and is therefore not mapped in Figure 5) and could include either a siding (a short piece of track branching off from the main line) or an additional platform at a station. This would allow additional trains to terminate, reverse, and re-enter service in the other direction, without impacting other DLR services.

4.2. Beckton Junction and Depot Connection

Background

4.2.1. The proposed tie-in junction between the existing Beckton branch and a future extension to Beckton Riverside and Thamesmead would be situated approximately 250m to the north of Gallions Reach station. The position of the proposed junction is fixed by the following constraints:

- The existing DLR route to Beckton
- Beckton DLR depot
- Royal Docks Road
- Armada Way
- Utilities infrastructure to the south of Armada Way including Beckton Combined Heat and Intelligent Power plant and a gas pressure reduction station.

4.2.2. Whilst the location of the proposed junction is fixed by surrounding constraints, there is flexibility as to the form of the junction, with this explored in Stages 1 and 2.

Stage 1 Option Assessment

4.2.3. In Stage 1, a grade separated junction was identified as the option which would likely maximise operational flexibility and minimise delays for both Beckton and Thamesmead services. This would connect the existing Beckton branch to the proposed Thamesmead branch, by providing viaduct bridge structures to allow services to / from Thamesmead to pass over the Beckton branch and continue towards Beckton Riverside along a viaduct for around 500m. This structure could also provide passive provision for potential future extensions of the DLR network towards Barking.

4.2.4. As part of the junction layout, it is assumed that the proposed Thamesmead branch would be connected to Beckton depot. This is because the majority of DLR trains are launched from Beckton Depot at the start of service, with provision of sufficient launch capacity critical in enabling the operation of early morning and AM peak services across the network. The extension to Thamesmead would add further complexity to the launch operation from Beckton, requiring the launch of trains to be balanced with passenger services operating to / from Beckton and Thamesmead.

4.2.5. The proposed depot connection would utilise land within the existing boundary of Beckton depot and would provide a direct connection to the proposed Thamesmead branch, with trains not required to use the existing Beckton branch.

4.2.6. These conclusions were carried forward into Stage 2, with further assessment of a potential alternative to a grade-separated junction then undertaken.

Stage 2 Option Assessment

4.2.7. During this stage of assessment, a total of six options were identified for the junction tie-in between the existing Beckton branch and a future extension to Beckton Riverside and Thamesmead with different combinations of junction type and vertical alignment towards Beckton Riverside assessed[4]. These alternatives included potential grade-separated and flat junction arrangements, as well varying lengths of ground level and elevated running for the section of railway which would connect the tie-in junction and proposed extension. The options and the rationale for selection / discounting is described in Table 1, with the options also illustrated in Figure 6.

Table 1: Options developed and assessed in Stage 2 for the tie-in junction

Tie-in junction option	Tie-in junction option description	Optioneering outcome
1	Grade-separated junction with a viaduct over Hornet Way	**Selected as preferred option**- Maximises integration with existing DLR network and future masterplan permeability, enables future onward extension and maintains existing access arrangements.
2	At-grade flat junction with a viaduct over Hornet Way	**Discounted-** Likely to adversely impact existing DLR operations and network resilience. Future onward extension not feasible.
3	At-grade flat junction, with a ground level route to Beckton Riverside	**Discounted-** Impacts as with option 2, with additional severance impacts on existing occupiers and future masterplan**.**
4	Grade-separated junction, ground-level route to Beckton Riverside	**Discounted-** Adverse severance impacts on existing occupiers and future masterplan**.**
5	Grade-separated junction with viaduct over a relocated Hornet way, with an extended ground level route to Beckton Riverside compared to Option 1	**Discounted-** Insufficient definition of future access requirements from impacted parties. Could be revisited at a future design stage, pending landowner agreement.
6	Alternative grade-separated junction which would facilitate an alternative alignment (Alignment Option 4) through Beckton Riverside	**Discounted**- Alignment Option 4 at Beckton Riverside was discounted and this tie-in option would not be compatible with Alignment Option 3. See Section 4.3 for further details.

[4] The tie-in options developed were assumed to connect to either Alignment Options 3 or 4 at Beckton Riverside. This aligns with the outcomes of the assessment of alignment options through the Beckton Riverside development area which are presented in Section 4.3.

4.2.8. In terms of option performance, a grade-separated junction would allow services to / from Thamesmead to pass over the Beckton branch, options comprising of a flat junction (at-grade) would require trains towards Thamesmead to pass across (rather than over) the existing Beckton branch at ground level.

4.2.9. This means that a grade-separated junction would prevent conflicting train movements, reducing the risk of delays and impacts on network resilience resulting from the extension, compared to a flat junction. A grade-separated layout would also allow future provision of a further onward extensions of the DLR network towards Barking, which was considered not to be feasible with a flat junction (at grade) arrangement.

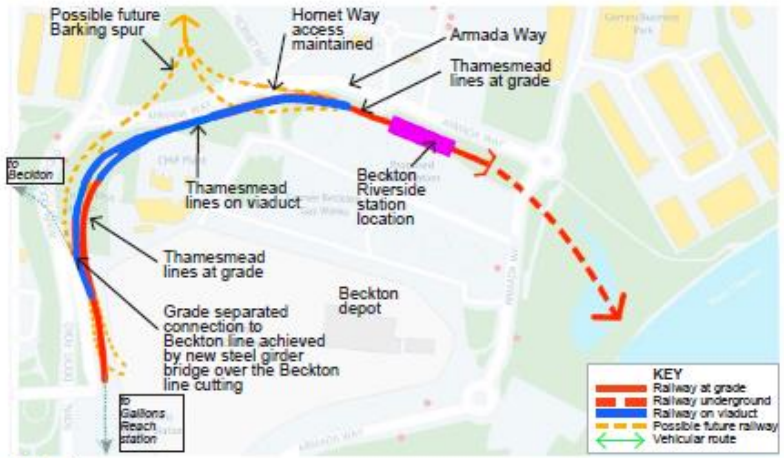
4.2.10. Whilst a grade-separated junction would have a larger physical footprint comprising of sections of ramp and viaduct, a flat junction was considered unlikely to represent the overall best value option as it would have additional signalling requirements, with higher operational costs likely to result from a less resilient DLR network.

4.2.11. There would also be a clear benefit in maintaining an elevated route alignment on the approach corridor to Beckton Riverside station, as this would minimise severance for existing occupiers and the planned development site which lie between the alignment of the proposed DLR extension and Beckton Depot.

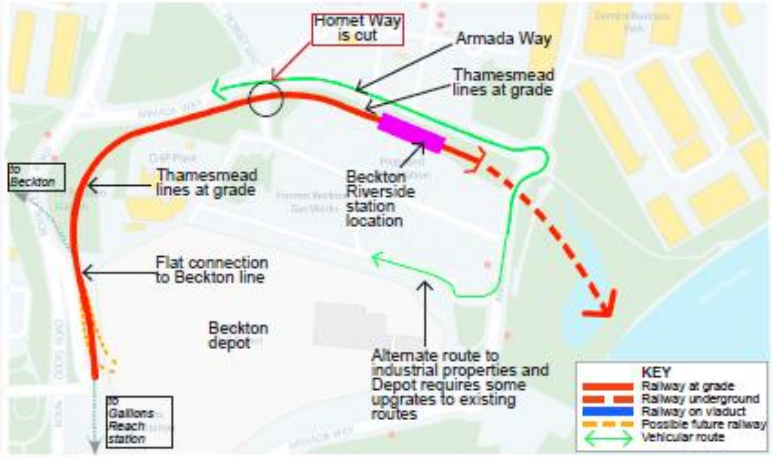
4.2.12. Whilst a ground level approach corridor to Beckton Riverside would be cheaper to construct than a viaduct, it would sever the existing highway connection to Hornet Way, potentially increasing land & property costs, as well as consents risk associated with the scheme, given that the re-provision of this link would require a lengthy diversion via Armada Way for existing users accessing properties in this area.

4.2.13. Based on this assessment, Option 1 was selected as the preferred option for connecting the existing network and the proposed extension of the DLR to Beckton Riverside and Thamesmead.

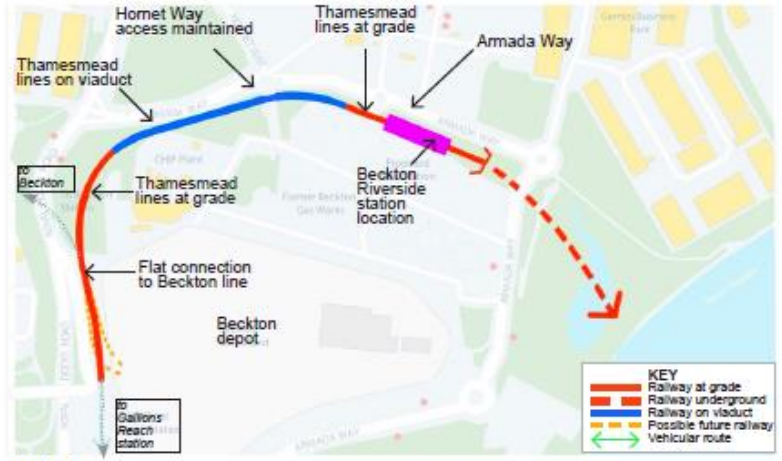
Figure 6: Beckton tie-in junction options



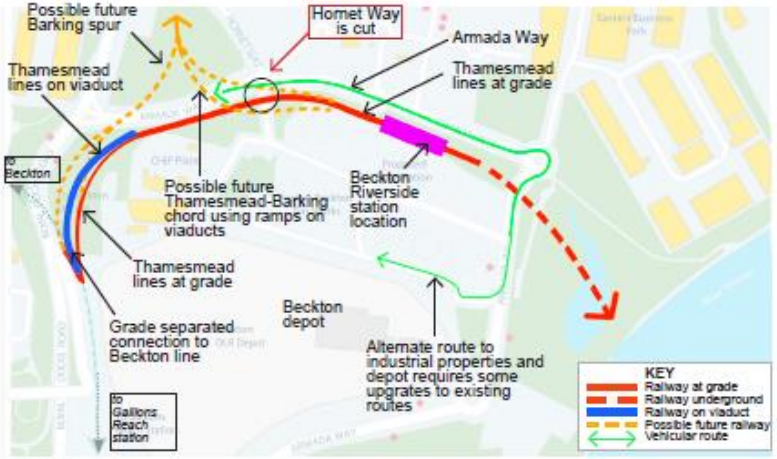
Option 1



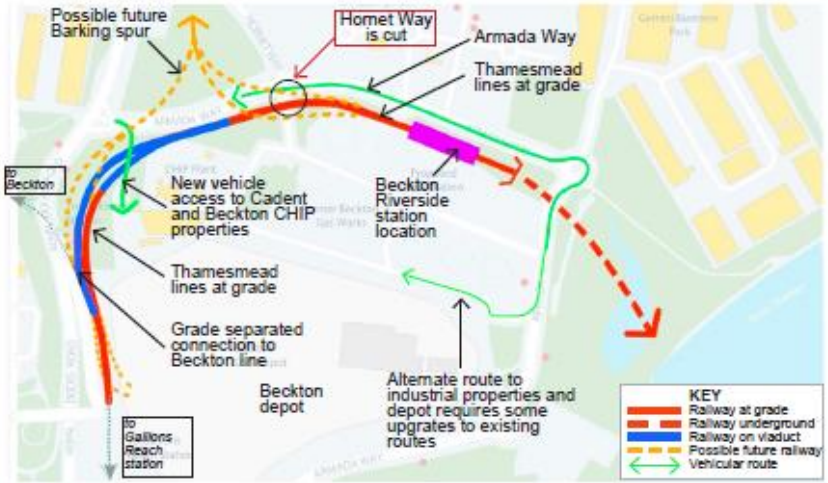
Option 3



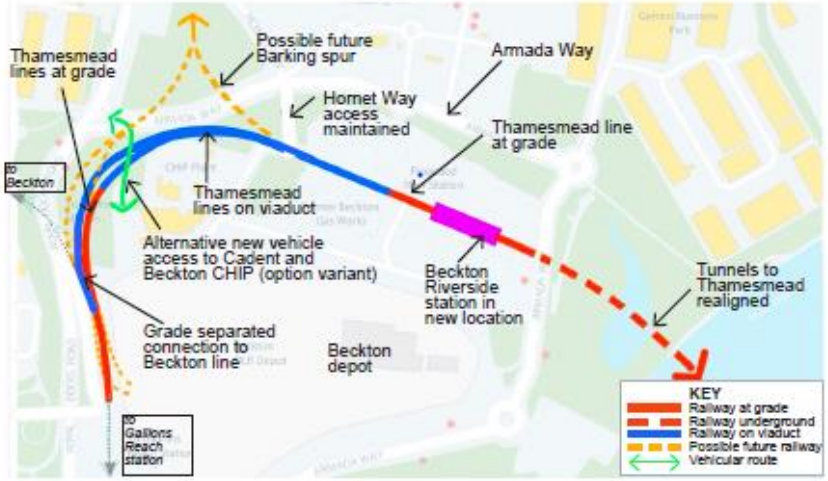
Option 2



Option 4



Option 5



Option 6

4.3. Route Alignment and Station in Beckton Riverside

Background

4.3.1. Building on Section 4.2, this section details the option identification and assessment process for the section of the proposed DLR extension which would run through Beckton Riverside, focused on potential alignment options, station locations & typologies and station layout & access arrangements.

4.3.2. Situated in the LBN, Beckton Riverside is the primary development opportunity on the north side of the River Thames which would be unlocked by the proposed DLR extension and which would be served by the new station. The development area lies within the former Beckton Gas Works site which was once the largest gasworks in Europe, covering over 500 acres and playing a crucial role in gas production for London. The site operated until 1969 and remained largely derelict for many years following its closure.

4.3.3. The development area comprises of two sites bounded by the Royal Docks Road, Beckton DLR Depot, the river Thames and Beckton Sewage Treatment Works. To the south of Armada Way lies the remaining vacant land of the former Beckton Gasworks site owned by St William. To the north of Armada Way, Gallions Reach Shopping Park owned by Aberdeen Investments also forms part of the development area, adjoining Royal Docks Road and Beckton Sewage Treatment Works.

4.3.4. The design principle of the DLR route alignment through Beckton Riverside is set by the form of the tie-in junction described in Section 4.2, crossing the development area from west to east initially on a viaduct, before descending below ground to cross the river Thames in a tunnel[5]. The alignment would also serve the proposed intermediate station at Beckton Riverside.

[5] The river crossings options assessed are described in Section 4.4.

Stage 1 Option Assessment

4.3.5. In Stage 1, five options for potential alignment options through Beckton Riverside were identified for the scheme. The options and the rationale for selection / discounting is described in Table 2, with the options also illustrated Figure 7.

Table 2: Alignment Options at Beckton Riverside development and assessed in Stage 1

Alignment Option	Alignment Option description	Optioneering outcome
1	Northern alignment through Gallions Reach Retail Park	**Discounted-** Adverse impacts on operations of current Gallions Reach Retail Park site. Not supported by landowners.
2	Alignment situated to the north of Armada Way	**Discounted-** Potential adverse impacts on access to current Gallions Reach Retail Park site. Not supported by landowners.
3	Alignment situated to the south of Armada Way	**Selected for further development and assessment in Stage 2-** Alignment and station location supported by landowners as future town centre location.
4	Alignment situated through vacant site previously associated with Beckton Gasworks	**Selected for further development and assessment in Stage 2-** Relatively central location for future station and potential deliverability benefits**.**
5	Southern alignment situated adjacent to Beckton DLR Depot	**Discounted-** Station accessibility restricted given proximity of Beckton DLR depot to the south of the alignment.

4.3.6. Whilst all options were considered feasible, Alignment Options 1 and 5 were discounted as these would locate the proposed station at the fringes of the development area, potentially restricting access to the DLR for future residents and town centre users at Beckton Riverside. Alignment Option 2 was also discounted, given the potential impacts on future access and the operation of the current Gallions Reach Shopping Park site.

4.3.7. Alignment Option 3 would remove this potential conflict and was supported by landowners St William and Aberdeen Investments on the basis it would facilitate the provision of a new DLR station in the heart of the future town centre that is planned for Beckton Riverside. Alignment Option 4 was also selected to be taken forward for further development in Stage 2 as it had potential to maintain a relatively central station location, whilst also potentially having a lesser interface with existing utilities and below ground obstructions (including a high-pressure gas main which currently runs parallel to Armada Way).

Figure 7: Alignment options at Beckton Riverside

4.3.8. With an initial sift of the potential alignment corridors complete, an assessment of potential station forms for each corridor was then undertaken assessing potential elevated, ground-level, and sub-surface station options for each corridor.

4.3.9. For Alignment Option 3, all three station typologies were considered feasible, with a ground-level station selected for further assessment in Stage 2. This was considered the lowest cost typology for delivering a station in the heart of the planned town centre. A sub-surface station alternative was considered more expensive without providing any additional benefit in placemaking terms, whilst an elevated station option could only be accommodated further to the west and would be less effective in serving the development area, as well as likely to be more expensive than a ground-level station.

4.3.10. Assessment of Alignment Option 4 identified that only an elevated station could be provided as part of this option, as this alignment would be shorter in length than Alignment Option 3, meaning there would be insufficient space for the DLR tunnel to pass below flood defence structures and serve a ground level or sub-surface station.

4.3.11. Alignment Option 3 and the principle of a ground level station in the town centre were selected to be taken forward for further development in Stage 2. Alignment Option 4 was also selected for further development in Stage 2 as the positioning of the alignment relative to site constraints was considered potentially advantageous from a delivery perspective, by avoiding key utilities and below ground obstructions.

Stage 2 Option Assessment

4.3.12. With a narrower range of alignment options, and station locations and typologies identified, Stage 2 of the option identification and assessment process focused on determining the layout, configuration, and access arrangements for the proposed station at Beckton Riverside.

4.3.13. Further development of Alignment Option 4 was also undertaken which determined that a ground-level station in proximity to the planned location of a future town centre would be feasible, with this concept developed instead of an elevated station option.

4.3.14. In total six options were identified, comprising of potential side platform, island platform and access alternatives. As the station would be at ground-level**,** access to the platforms would be facilitated by overbridges. It should be noted that the transition of the DLR alignment from an elevated to underground railway in the Beckton Riverside development area would sever ground level connections across the railway for a corridor of around 300m on the approach to the proposed ground level station and tunnelled section. The proposed overbridge(s) would provide station access, as well as provide a publicly accessible connection across the railway to the new neighbourhoods either side of the station.

4.3.15. The options and the rationale for selection / discounting is described in Table 3, with the options also illustrated in Figure 8. The numbering of the station options is based on the alignment option upon which the station would be situated.

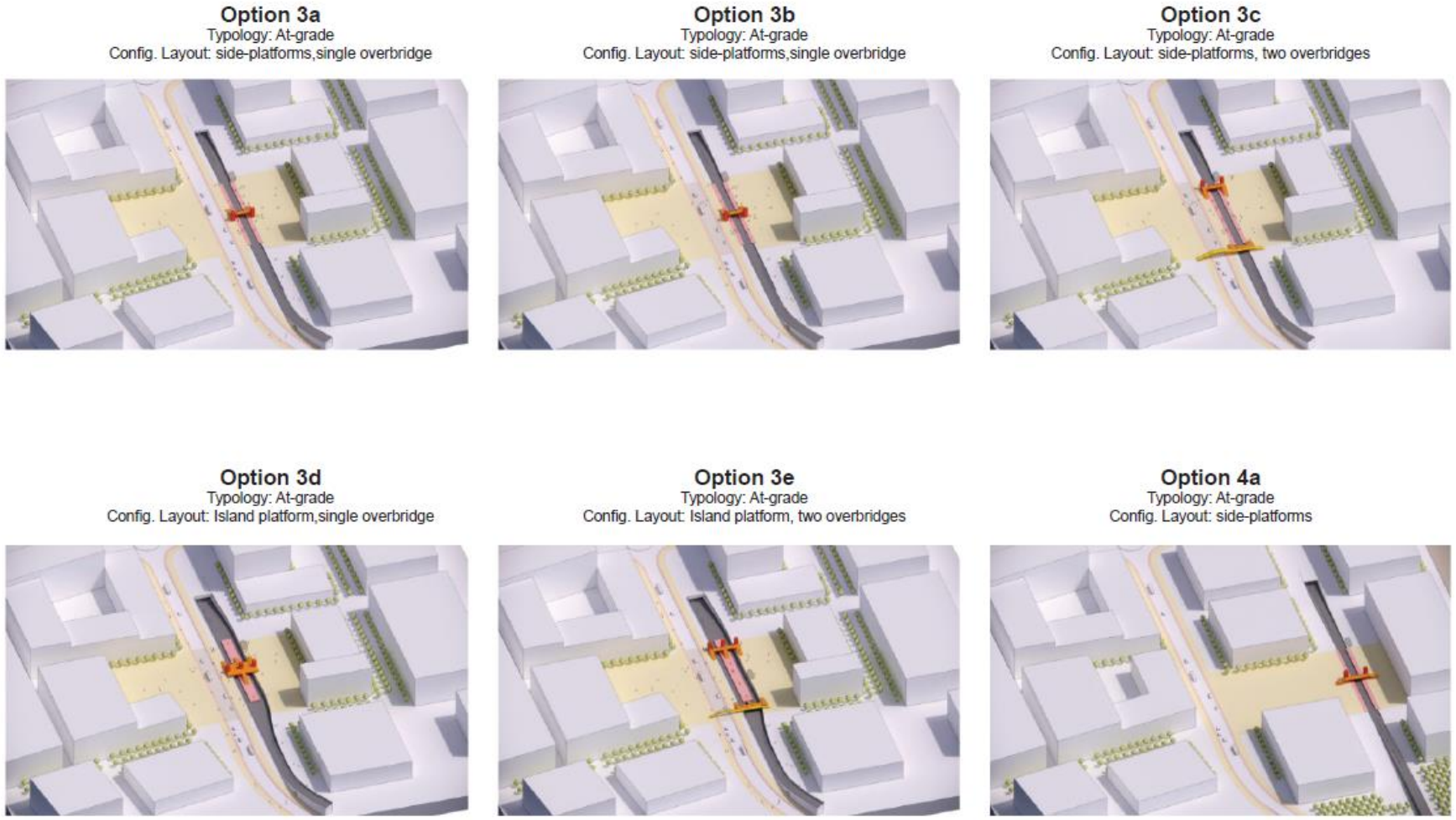
Table 3: Station Options developed at Beckton Riverside in Stage 2

Station Option	Station Option description	Optioneering outcome
3a	Side platform layout with single pedestrian overbridge (access to overbridge restricted to DLR traffic hours only)	**Discounted-** This arrangement would meet functional station requirements but would restrict movement between future neighborhoods located either side of the railway outside of DLR traffic hours.
3b	Side platform layout with single overbridge (access to overbridge maintained at all times for DLR and non-DLR users)	**Selected as preferred option-** As this option could be used by station and non-station users it addresses the challenges of the above option.
3c	Side platform layout with overbridge access at both ends of station	**Discounted-** Whilst a station with dual access could be beneficial, it would be higher cost. There is currently insufficient definition of masterplan to assess benefits of this station concept. Potential to review in a future stage of design.
3d	Island platform layout with single overbridge access	**Discounted-** This layout would have a greater footprint and vertical access requirements (number of staircases and lifts) whilst being less integrated with new town centre at Beckton Riverside).
3e	Island platform layout with overbridge access at both ends of station	**Discounted-** This layout would have a greater footprint and vertical access requirements (number of staircases and lifts) whilst being less integrated with new town centre at Beckton Riverside).
4a	Side platform layout with single overbridge (Station location c140m south of Armada Way)	**Discounted-** Alignment option and station typology discounted on basis it would constrain surrounding land uses due to proximity of Beckton depot.

4.3.16. The assessment undertaken across Stage 1 and Stage 2 confirmed the selection of Alignment Corridor 3 and a ground-level side platform station (Option 3b) located to the south of Armada Way as the preferred option for the DLR extension at Beckton Riverside.

4.3.17. Whilst an indicative access arrangement between platforms, comprising of a single footbridge. has been selected, this will be reviewed in future stages of design development when there is greater definition of the future pedestrian routes in the wider Beckton Riverside area.

Figure 8: Station options at Beckton Riverside



4.4. River Crossing

Background

4.4.1. The proposed station location at Beckton Riverside lies within 500m of the River Thames, requiring the river crossing structure to commence as the alignment passes beyond the station and continues towards Thamesmead. There are a number of constraints which influence the structure, form, and alignment of the river crossing for the DLR extension including:

- Flight approaches to London City Airport
- Clearances for ships using the navigational channel of the River Thames
- Flood defence structures on either side of the River Thames
- Existing pier structure situated on the northern foreshore of the River Thames
- Buried obstructions including remnants of former industrial uses at Beckton Riverside
- Thames Water Pumping Station situated to the east of Armada Way
- The Thames Path

Stage 1 Option Assessment

4.4.2. Work in Stage 1 focussed on assessing potential crossing alternatives and developing an initial design concept for this component of the scheme.

4.4.3. Crossing alternatives assessed included:

- Bored tunnel
- Immersed tube tunnel (consisting of a pre-cast structure that is installed under water and would sit in a trench on the riverbed)
- Bridge options

4.4.4. The assessment concluded that the DLR extension should cross the River Thames in twin bored tunnels. Railway crossings of the River Thames in twin bored tunnels in east London are very well understood in construction, operation, and safety terms. There have been several recent successful examples, including the DLR Lewisham Extension at Greenwich, two Jubilee line tunnel crossings at North Greenwich, DLR and Crossrail tunnels at Woolwich and the Silvertown Tunnel.

4.4.5. In respect of alternatives, the very large navigational channel of the River Thames, and the proximity of London City Airport, would impose very significant and almost conflicting constraints on a bridge option. As any bridge would need to stay above the shipping channel and stay below the protected flight surfaces, it would be heavily constrained in its form, as well as its construction methods.

4.4.6. An alternative immersed tube tunnel option would likely be associated with much greater disruption and cost than a bored tunnel equivalent. It would also likely have a greater level of stakeholder objection, given the potential severe impact of construction on the marine environment and flood defences.

4.4.7. With a bored tunnel selected as the preferred option for providing a river crossing between Beckton Riverside and Thamesmead, work was then undertaken to identify the form and alignment of the tunnel option for the river crossing (Tunnel Option 1). This arrangement comprised of an initial cut and cover section which would pass under Armada Way before entering a tunnel portal and bored tunnel section to pass under the flood defence structures and continue under the River Thames to Thamesmead.

4.4.8. At this stage of programme development, there was limited information available regarding below ground obstructions with the tunnel alignment designed to pass around the foundations of a former pier structure on the north side of the river.

Stage 2 Option Assessment

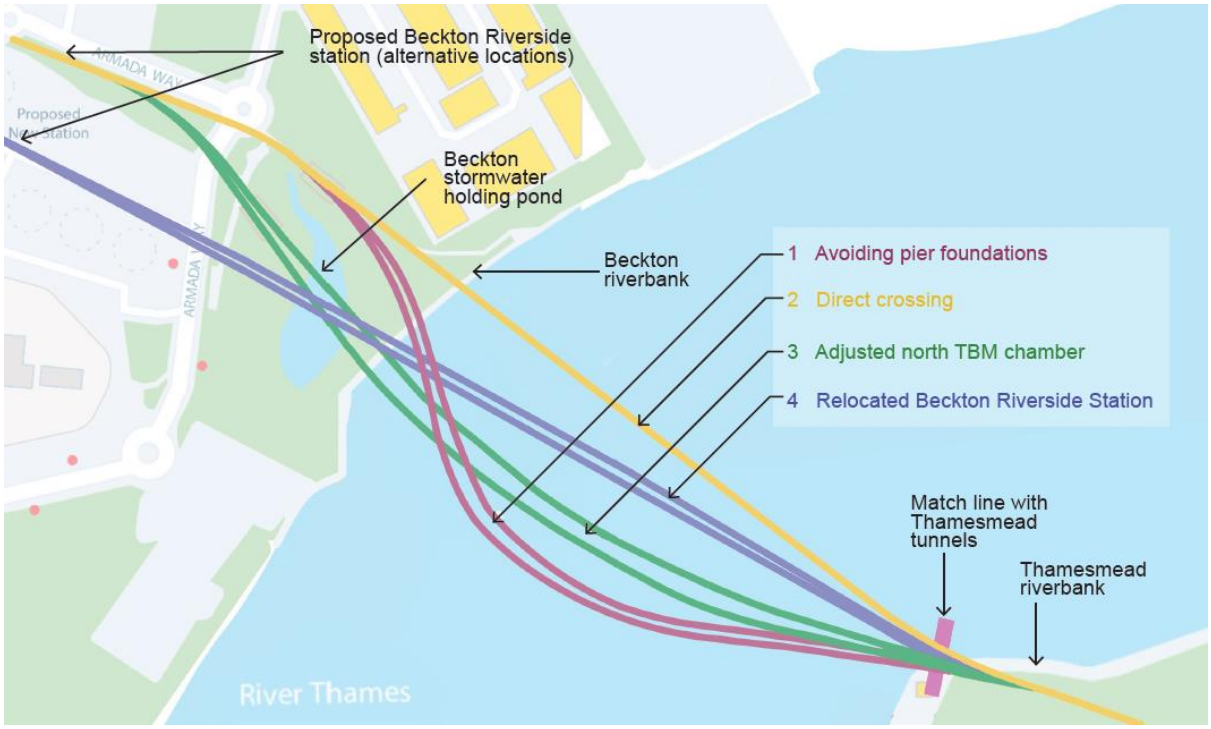
4.4.9. In Stage 2, we undertook a more detailed assessment of existing geotechnical conditions along the proposed route alignment. This provided new information on ground obstructions (particularly with regards to river wall foundation depths and the historic foundations of Beckton Gasworks), which presented an opportunity to consider potential alternatives to the tunnel alignment identified in Stage 1.

4.4.10. Three additional options were identified for the potential bored river tunnel crossing, with two of these representing a refinement of the initial option developed in Stage 1. A further option was identified however this would only be compatible with Alignment Option 4 in Beckton Riverside. All options for the tunnel alignment are described in Table 4 and are presented in Figure 9.

Table 4: Potential Tunnel Options for the cross-river connection developed and assessed in Stage 2

Tunnel Option	Tunnel Option description	Optioneering Outcome
1	Curved tunnel alignment to avoid existing river pier foundations at Beckton Riverside	**Discounted-** Assessment in Stage 2 identified that alignment could be designed to pass below rather than around existing river pier foundations given anticipated depth of these structures.
2	Direct alignment passing beneath the foundations of the river pier at Beckton Riverside	**Discounted**- Would deliver the most direct and shortest tunnel alignment but would require relocation of existing Thames Water Pumping Station and large-scale excavation of foundations relating to former use of Beckton Gasworks. Added cost, complexity risk.
3	Alignment avoiding known buried obstructions (including historic foundations of Beckton Gasworks)	**Selected as preferred option**- Would deliver a shorter tunnel alignment compared to Option 1, whilst also avoiding the constraints of the Thames Water Pumping Station and potential clashes with foundations of Beckton Gasworks structures.
4	Alternative tunnel alignment compatible only with Alignment Option 4 at Beckton Riverside	**Discounted-** Alignment Option 4 was discounted as part of the assessment to identify the preferred option for the alignment through and station location at Beckton Riverside. This option would not be compatible with Alignment Option 3. See Section 4.3 for more details.

Figure 9: Tunnel Options for the cross-river connection between Beckton Riverside and Thamesmead



4.4.11. Following the assessment of these options, we selected Tunnel Option 3 to be taken forward as part of the preferred option for the DLR extension.

4.4.12. This option is considered likely to represent the most efficient option as it would be shorter in length and therefore cheaper to construct than Tunnel Option 1. It would also avoid complex and uncertain excavation works associated with the foundations of the previous gasworks and the relocation of a stormwater pumping station (required in options 1 and 2) which is located to the east of Armada Way. This would likely present programme and cost efficiencies, as well as an opportunity to reduce overall risks associated with construction of the extension.

4.5. Route Alignment and Station in Thamesmead

Background

4.5.1. This section details the option identification and assessment process for the section of the proposed DLR extension which would run through the Thamesmead Waterfront site, focused on potential alignment corridors, station locations & typologies and station layout & access arrangements.

4.5.2. Situated in RBG, Thamesmead Waterfront is set to transform the easternmost part of Thamesmead, one of London's largest regeneration areas. Spanning 100 hectares and 2km of river frontage along the River Thames, this initiative led by the TMJV, would be unlocked by the proposed DLR extension.

4.5.3. Currently, the site consists of largely underutilised land, including expansive open spaces, industrial areas, and a mix of natural and man-made waterways. Thamesmead Town Centre is also situated to the east of the site and forms part of the redevelopment vision.

4.5.4. There are a series of environmental and historic site constraints which influence the form of potential options for the DLR extension in Thamesmead. These include designations relating to historic and active landfill, Metropolitan Open Land (MOL), and the Twin Tumps and Thamesmere Site of Importance for Nature Conservation (SINC) which lies between the vacant part of the Thamesmead Waterfront site. The site also includes remnants of its historical use, such as former military and industrial facilities, though these have largely fallen into disuse.

4.5.5. Thamesmead Waterfront lies within an area that is designated by the Environment Agency as a Flood Zone 3, which is identified as having a higher likelihood of flooding. Thamesmead is afforded protection from the River Thames through extensive flood defences, but there is an elevated risk from surface water and localised flooding. These constraints have also been considered in the optioneering for the alignment and station design.

4.5.6. In developing options for the alignment and station in Thamesmead, we have considered how the DLR could potentially be extended beyond Thamesmead in the future. Whilst areas including Belvedere and Abbey Wood are already served by the rail network, a potential onward extension of the DLR could increase public transport connectivity and support housing delivery in these areas in future. Although our focus is on connecting Beckton Riverside and Thamesmead, it is important that we do this with consideration to future opportunities to expand the DLR network even further. The potential for an onward extension was supported in the 2024 public consultation and is also supported by key stakeholders such as the London Borough of Bexley.

Stage 1 Option Assessment

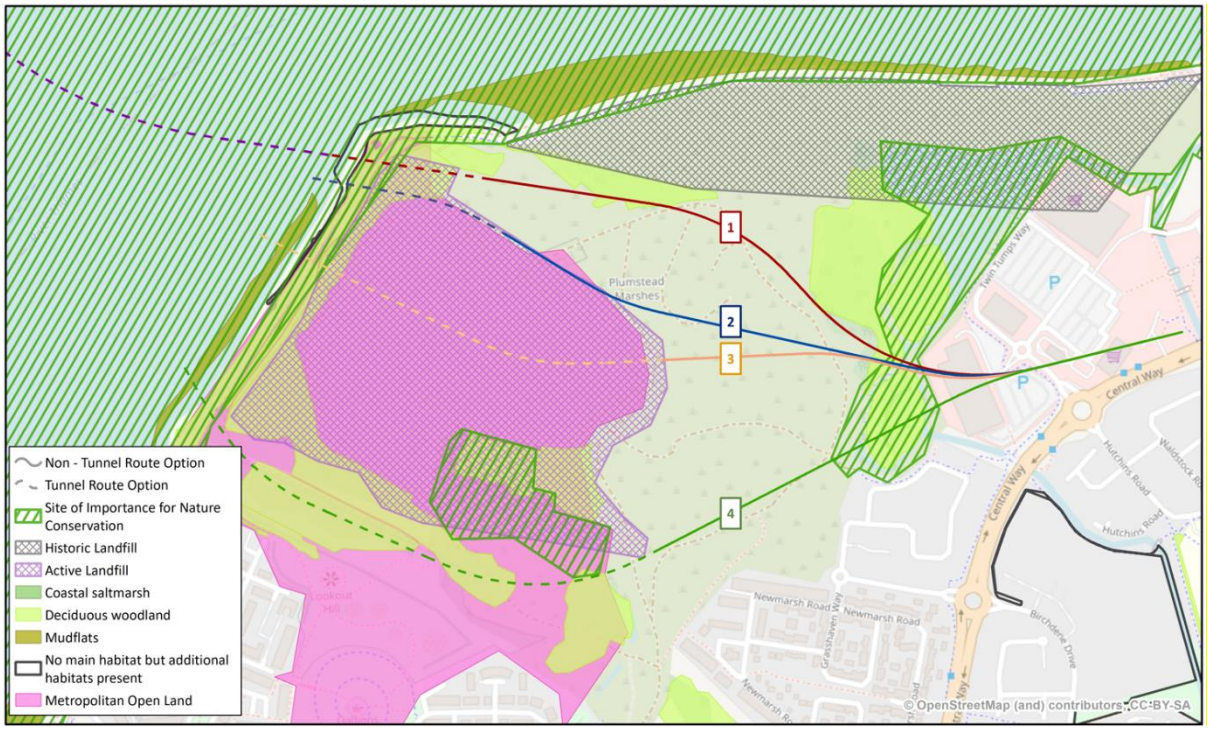
4.5.7. In this stage of assessment, four potential alignment options positioned north-south across the Thamesmead Waterfront site were developed and assessed, each having the potential to be underground in their entirety or transition from an underground alignment to an elevated station.

4.5.8. These options and the rationale for selection / discounting is described in Table 5, with the route of these options illustrated in Figure 10. This also includes the environmental constraints of the Thamesmead Waterfront site upon which the options are overlaid.

Table 5: Potential Alignment Options at Thamesmead developed and assessed in Stage 1

Alignment Options	Alignment Option Description	Optioneering Outcome
1	Passes the southern edge of the Barking Reach historic landfill and through the Twin Tumps and Thamesmere SINC before reaching a station in the Thamesmead Town Centre	**Taken forward to Stage 2-** Option refined during Stage 1 following engagement with the TMJV, resulting in the selection of preferred alignment to be taken forward into Stage 2. This incorporated elements of both Alignment Options 1 and 2.
2	Passes the northern edge of the Tripcock Point Landfill, a short section of Metropolitan Open Land, and the Twin Tumps and Thamesmere SINC before reaching a station in the Thamesmead Town Centre	**Taken forward to Stage 2-** Option refined during Stage 1 following engagement with the TMJV, resulting in the selection of preferred alignment to be taken forward into Stage 2. This incorporated elements of both Alignment Options 1 and 2.
3	Passes through the Tripcock Point Landfill, and the Twin Tumps and Thamesmere SINC before reaching a station in the Thamesmead Town Centre	**Discounted-** Would require substantial tunnelling works in an area of landfill and would occupy an area of Metropolitan Open Land.
4	Passes to the south of Tripcock Point Landfill, then cuts across the Twin Tumps and Thamesmere SINC, before reaching a station in Thamesmead Town Centre	**Discounted-** Would extend the DLR route compared to other options, increasing journey times and scheme costs, with potential environmental challenges.

Figure 10: Alignment options in Thamesmead



4.5.9. Alignment Options 3 and 4 would locate the DLR alignment to the south of the Waterfront site, creating an interface with MOL and an active landfill site. These alignments were discounted given the anticipated environmental impacts, risk and complexity posed, compared to Alignment Options 1 and 2 which would avoid both constraints. All options would require the demolition of existing retail units in Cannon Retail Park.

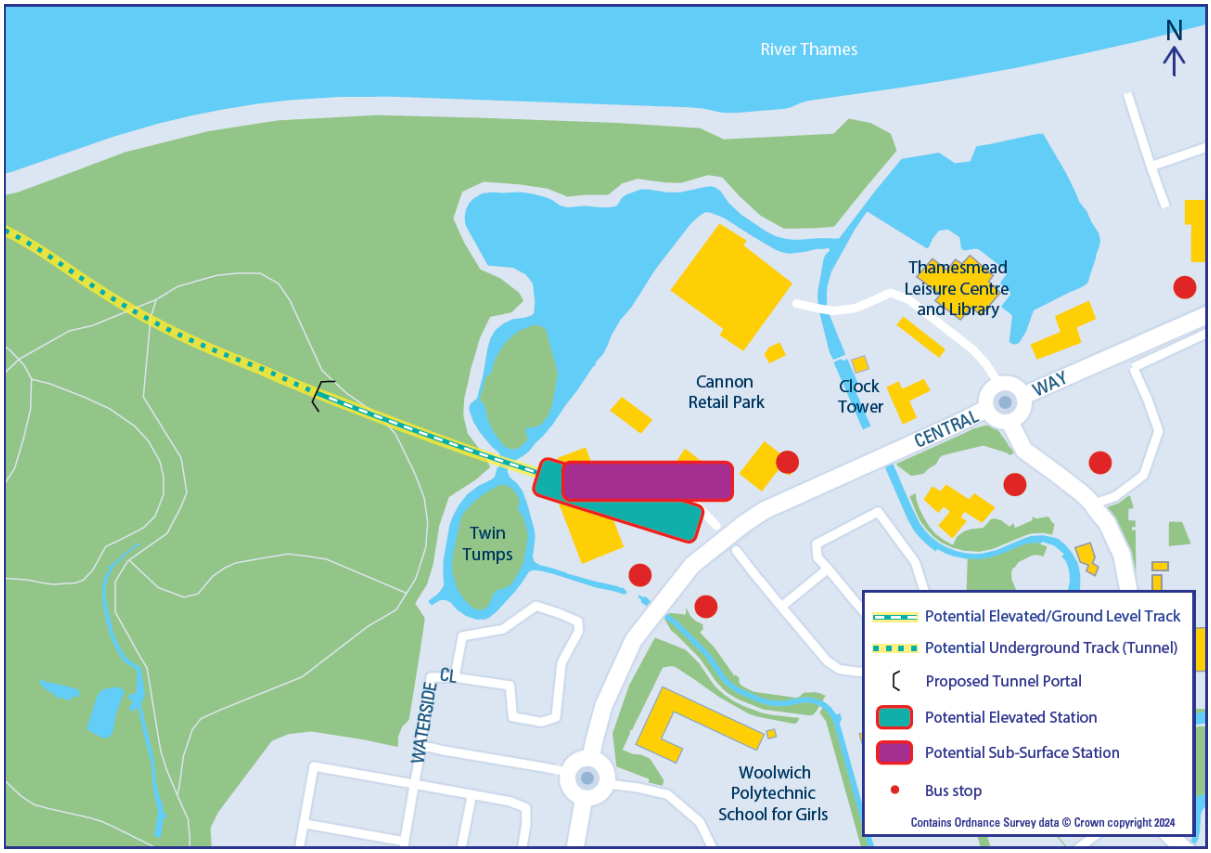
4.5.10. Alignment Options 1 and 2 were subsequently developed as design concepts which would initially run through the Thamesmead Waterfront site below ground, before transitioning to a viaduct and an elevated terminus station in Thamesmead Town Centre.

4.5.11. Locating a DLR station at Thamesmead Town Centre is considered a key design principle by TfL, RBG and the TMJV, aligning with the principles of the Thamesmead & Abbey Wood OAPF. It would provide a gateway to a rejuvenated town centre and Thamesmead Waterfront site, whilst also maximising rail access for existing residential communities which lie to the south of the town centre.

4.5.12. Towards the conclusion of Stage 1, partnership working between TfL and TMJV resulted in the optimisation of Alignment Options 1 and 2 to create a single corridor for the DLR extension within which two station typologies would be compatible: an elevated viaduct station and partially open-air sub-surface structure.

4.5.13. Whilst the proposed station typology remained open at the end of Stage 1, a notable outcome of this stage was the refinement of the station orientation to provide for a future onward extension of the DLR beyond Thamesmead and to maximise integration with the existing / planned town centre, the wider Thamesmead Waterfront site, and Central Way. This is illustrated in Figure 11.

Figure 11: Alignment and station options in Thamesmead under consideration at the end of Stage 1



Stage 2 Option Assessment

4.5.14. In Stage 2, a full range of station typologies were assessed for the preferred DLR alignment option including elevated, at-grade, open-air sub-surface, and fully underground options[6]. Additionally, TfL also explored an alternative station location to the west of the Twins Tumps and Thamesmere SINC.

4.5.15. All options would share a common tunnelled alignment as the DLR extension crosses the Thamesmead Waterfront site beyond the river crossing. The differential between options relates to the form of the alignment as it approaches the terminus station at Thamesmead and station typology.

4.5.16. For elevated station options, the alignment would ascend from the tunnelled section onto a viaduct to pass over the Twin Tumps and Thamesmere SINC and serve an elevated station. At-grade station options would also follow this concept but would cross the Twin Tumps and Thamesmere SINC at a lower elevation and would serve a station situated at ground level.

4.5.17. Both the open-air sub-surface and fully underground options would remain below ground for the entirety of the route through Thamesmead Waterfront, passing below the Twin Tumps and Thamesmere SINC to connect the proposed station in the town centre. It should however be noted that an open-air sub-surface station would have a significant ground level footprint similar to Stratford International DLR Station.

4.5.18. For the station located to the west of the Twins Tumps and Thamesmere SINC, this would comprise of an open-air sub-surface station as there would not be sufficient distance between the foreshore of the River Thames and the station location for the alignment to ascend to ground level or a viaduct.

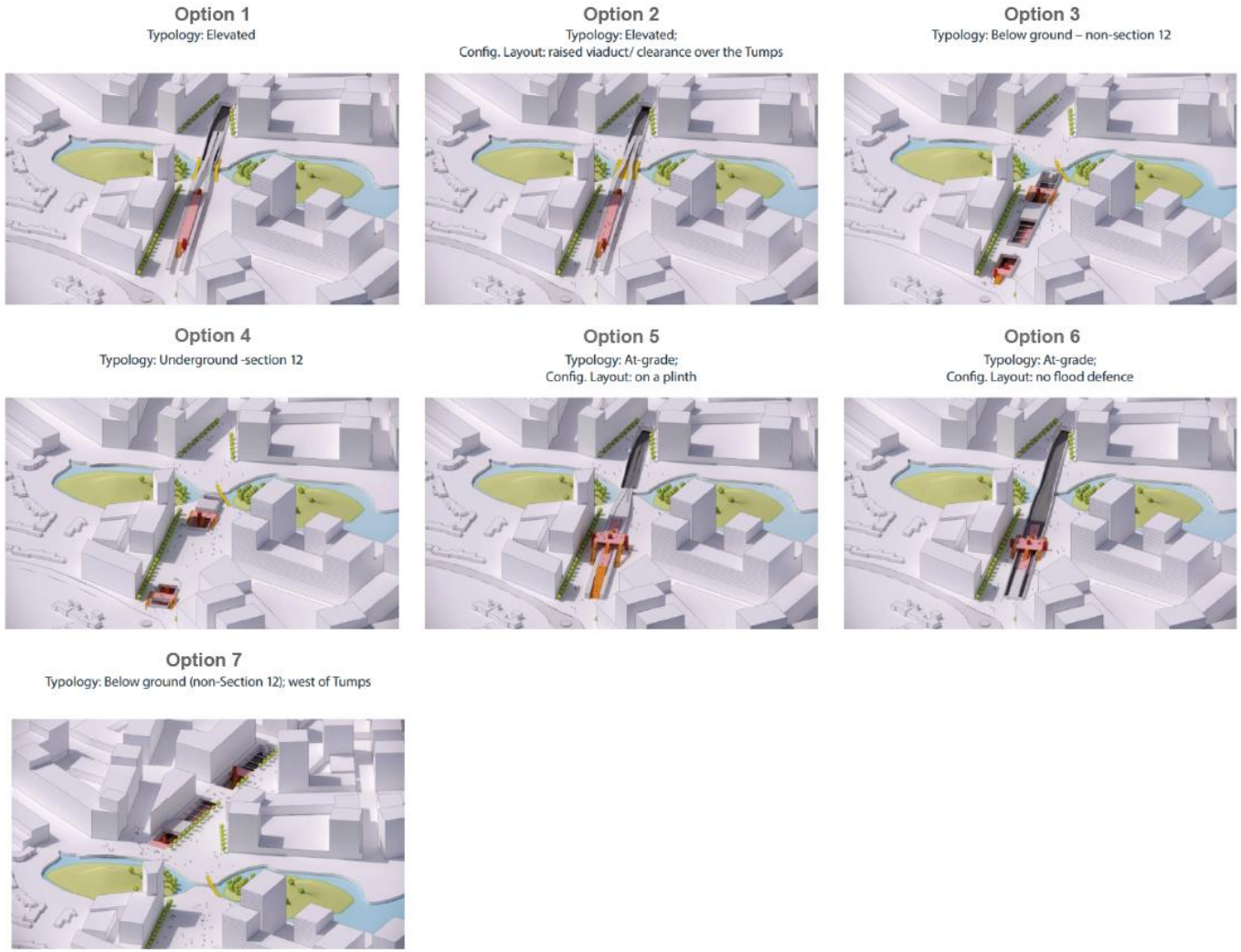
4.5.19. These options and rationale for selection / discounting is described in Table 6, with the layout of these options illustrated in Figure 12.

[6] As the planned terminus of the extension, all station options would comprise of an island platform layout.

Table 6: Potential station typologies for DLR station in Thamesmead developed and assessed in Stage 2

Station Option	Station Option Description	Optioneering Outcome
1	Elevated station on viaduct in Thamesmead Town Centre	**Discounted-** Potentially limits the permeability of a key movement corridor across the Twin Tumps which is likely to connect Thamesmead Town Centre and the wider Thamesmead Waterfront site in future.
2	Raised elevated station on viaduct in Thamesmead Town Centre to provide increased clearance across Twin Tumps	**Selected as preferred option-** Addresses the challenges of option 1 by providing a greater level of permeability and connectivity across the Twin Tumps. Likely to represent the most affordable option that could be integrated within future town centre. Least complex option for providing future onward extension.
3	Below ground / open-air sub-surface station	**Discounted-** More complex and expensive to deliver than elevated and ground level options. Ground level footprint of the station would significantly restrict placemaking and movement opportunities in future town centre.
4	Fully underground station	**Discounted-** Most complex and expensive option to deliver and operate with additional fire safety, ventilation, and staffing requirements compared to all other options.
5	Ground level station on raised plinth structure to provide flood protection	**Discounted-** Would significantly compromise functionality and permeability of future town centre. Likely to have the greatest environmental impact on sensitive locations such as the Twin Tumps.
6	Ground level station with flood defense walls	**Discounted-** Would significantly compromise functionality and permeability of future town centre. Likely to have the greatest environmental impact on sensitive locations such as the Twin Tumps.
7	Below ground / open-air sub-surface station located to the west of the Twin Tumps	**Discounted-** Station would not be situated in area anticipated to become future town centre and would restrict access to DLR services for existing communities to the south of Central Way.

Figure 12: Station options in Thamesmead



4.5.20. The assessment of these options resulted in the following conclusions:

- At-grade station options (options 5 and 6) were discounted as they would sever future pedestrian connections in the town centre, adversely impact placemaking, and make any future onward extension of the DLR network difficult to deliver.

- An open air-sub-surface station (option 3) was discounted as it would require flood and safety protection with a c.3m wall protecting large parts of the station. This would create an impermeable ground level box in the centre of Thamesmead Town Centre.

- A fully underground option (option 4) would be the most expensive and complex station option to construct and operate. Whilst this option would maximise the integration of a station within the planned town centre, this option was discounted given it would have substantial additional capital cost, as well as requiring additional staffing, ventilation, and fire safety infrastructure above ground. This would have a materially adverse impact on the overall cost and affordability of the DLR extension.

- An alternative station location (option 7) was discounted on the basis that its location would restrict access to existing residents of Thamesmead, as well as preclude a future onward extension of the DLR being delivered in future.

- An elevated station option would likely represent the most deliverable Thamesmead station typology, integrating well with the ambitions of the TWJV and the principles of the Thamesmead & Abbey Wood OAPF, whilst balancing customer needs for good passenger experience and accessibility. An elevated station structure would also represent the simplest option for any future onward extension of the DLR beyond Thamesmead.

4.5.21. On the basis of this assessment, we have selected option 2 to be taken forward as the preferred option for the station at Thamesmead. Compared to option 1, this option is likely to offer a marginal benefit in maximising pedestrian connectivity across the Twin Tumps by reducing the impact of a viaduct structure in an area which is likely to become a key corridor for pedestrian movement between Thamesmead Town Centre and Thamesmead Waterfront in future.

4.5.22. With an elevated station selected as the preferred station typology in Thamesmead, we will continue to work with the TMJV and RBG to refine the design of the alignment and station as plans for the wider area are developed.

4.6. Turnback

Background

4.6.1. The DLR extension to Beckton Riverside and Thamesmead would support delivery of up to 30,000 new homes. The regeneration of Beckton Riverside and Thamesmead are long-term projects, with the new housing likely to be built in phases. To deliver later phases, we believe that higher frequency services would be required to/from Thamesmead.

4.6.2. We would therefore need a location to the west of the proposed extension where additional trains could terminate, reverse, and re-enter service in the other direction. This is called a 'turnback' which could either be a siding (a short piece of track branching off from the main line) or an additional platform. A turnback should be set up so that trains waiting for their next journey do not impact other services, as this would reduce capacity on the lines and cause delays for customers.

4.6.3. The geographic area for where a turnback could be located is driven by line capacity and timetable constraints, requiring this to be located between an area to the east of Westferry station and Gallions Reach station.

Stage 1 Option Assessment

4.6.4. In Stage 1, a longlist of potential turnback options was identified within a corridor extending from an area to the west of Poplar station to Canning Town station. This area was selected as it would allow all trains which would terminate at the turnback to connect with interchanges including Custom House and Canning Town, as well as potentially connecting with key destinations such as Canary Wharf. This corridor was later expanded eastwards in Stage 2.

4.6.5. Seven options were developed in Stage 1, with potential design concepts varying by location and included provision of new platforms, new sidings, track reinstatement and use of existing platforms coupled with service changes on the wider DLR network.

4.6.6. These options and rationale for the selection / discounting of these options in Stage 1 is described in Table 7, with the location of these options illustrated in Figure 13.

4.6.7. The majority of these options were discounted on feasibility, environmental and operational grounds, with two options in proximity to Canning Town and Poplar stations selected for further assessment in Stage 2.

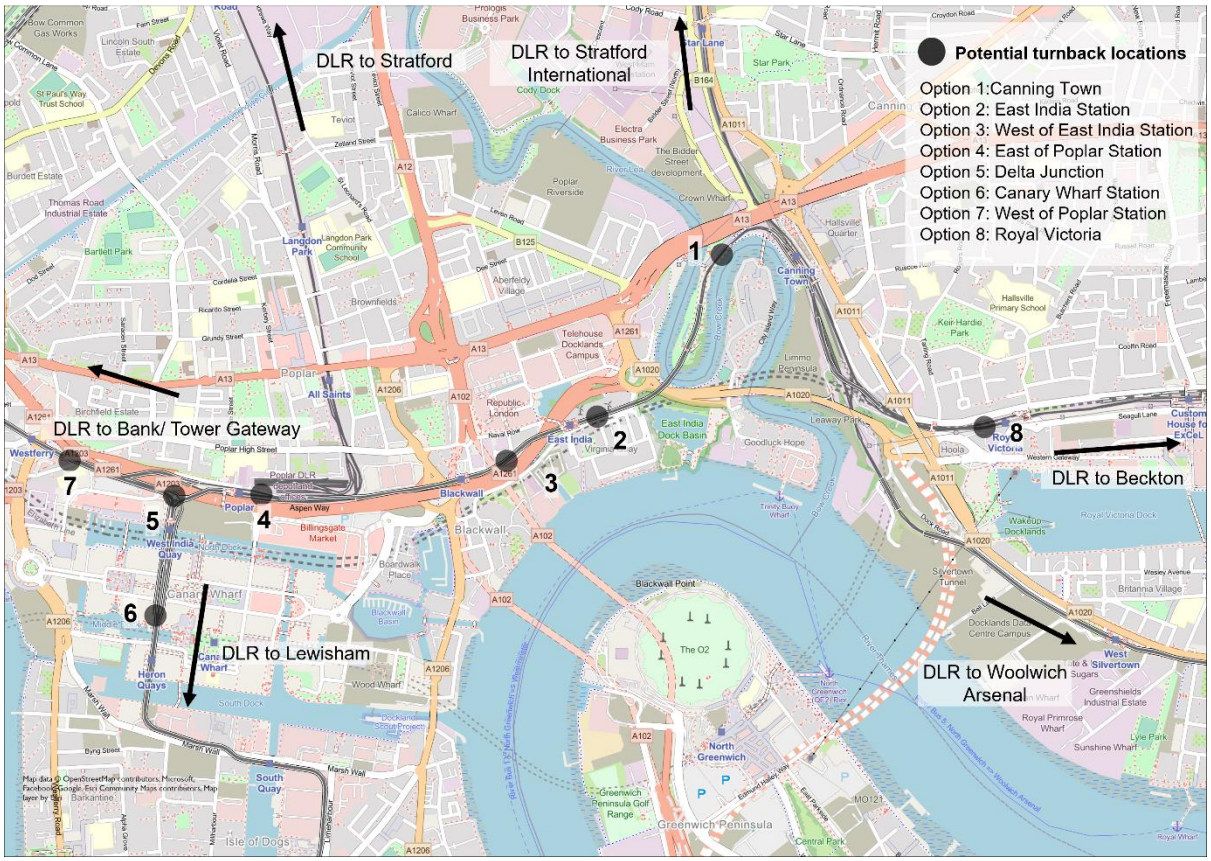
Table 7: Potential turnback options developed and assessed

Turnback Option	Option Description	Optioneering Outcome
1	New turnback siding located to the west of Canning Town Station in proximity to the Limmo Peninsula Ecology Park	**Proceed to Stage 2**- Option considered feasible with mitigable impacts. Beneficial for DLR customers by allowing interchange at Custom House and Canning Town.
2	Additional platform at East India Station	**Discounted-** Adverse environmental impacts on streetscape and existing development.
3	New turnback siding between East India and Blackwall stations	**Discounted-** Option would be extremely complex and challenging to deliver.
4	New turnback siding east of Poplar station	**Discounted-** Option considered infeasible due to constraints of existing rail alignment.
5	Reinstatement of track at Delta Junction[7] to provide turnback siding	**Discounted**- Feasibility challenges and reduce capacity on wider DLR network.
6	Use of central platform at Canary Wharf station accompanied by timetable changes on wider DLR network	**Discounted**- Option would reduce capacity on wider DLR network.
7	New section of viaduct constructed between Westferry and Poplar to facilitate relocation of eastbound DLR track to the north of West India Dock, with existing track used as a turnback siding	**Proceed to Stage 2-** Option considered beneficial for DLR customers but feasibility of option challenging, with environmental impacts likely.
8	*New platform at Royal Victoria station and diversion of existing DLR alignment*[8]	***Identified in Stage 2-*** *Option could be delivered within existing railway corridor. Some connectivity benefits by allowing interchange at Custom House, but less effective than options situated further to the west of the DLR network*

[7] Delta Junction is a major grade-separated junction located to the north of West India Quay station which connects the Lewisham branch to lines which connect to central London and Stratford.

[8] This option was developed and assessed during Stage 2 of design development.

Figure 13: Location of potential turnback options



Stage 2 Option Assessment

4.6.8. In Stage 2, Turnback Options 1 and 7 were developed in further detail, with an additional option also identified at Royal Victoria station (Turnback Option 8)[9]. The location of this option is also illustrated in Figure 13.

4.6.9. Of the options assessed in Stage 2, Turnback Option 1 was considered relatively simple to construct, located along a section of railway located between the station and Bow Creek Ecology Park, which borders Bow Creek, part of the River Lea. The existing railway corridor would be expanded, realigning parts of existing DLR track to create a new siding in-between the eastbound and westbound lines. The indicative location of this option is illustrated in Figure 14.

[9] This was not initially assessed in Stage 1 as it was outside of the preferred corridor for a turnback, and as such would be less effective in connecting additional trains on the East Route to key stations further to the west of the DLR network. A potential feasibility benefit of constructing a turnback at Royal Victoria however would be that construction of a new platform could be delivered within the existing railway corridor, minimising potential land take.

Figure 14: Photograph of approximate location of Turnback Option 1 close to Limmo Peninsula Ecology Park

4.6.10. Turnback Option 7 would require a more substantial intervention, requiring construction of a new track between Westferry and Poplar stations, to allow the existing eastbound track to be used as a turnback siding for westbound services which would terminate at Poplar. The new track would cross West India Dock Road, passing to the north of the Limehouse Link tunnel and running above Castor Lane on a viaduct.

4.6.11. Turnback Option 8 at Royal Victoria station would comprise of a new platform, and diversion of the eastbound track towards Beckton from its current alignment to serve a new platform on the opposite side of the current eastbound platform. The current platform would become the new platform for terminating westbound services, with trains remaining on the platform until they are timetabled to depart eastbound. The location of this option is illustrated in Figure 15.

Figure 15: Photograph of Turnback Option 8 location at Royal Victoria Station

4.6.12. We have not yet concluded a full assessment of Turnback Options 1 and 8, but have taken the decision to discount a potential turnback option at Poplar station (Turnback Option 7).

4.6.13. This would be a high-cost option which would have a number of feasibility challenges and significant risks, with anticipated impacts on local residents and existing road and DLR infrastructure. As such, we are not taking this option forward for further consideration at this time.

4.6.14. Turnback Options 1 and 8 are now being presented for further consultation feedback to inform further design development.

5. Overview of Preferred Option for public consultation

5.1.1. The work undertaken in Stages 1 and 2 of option development has identified a preferred option for the DLR extension to Beckton Riverside and Thamesmead which is presented in Figure 16. The scheme is proposed to extend for approximately 3.5km from Gallions Reach to Beckton Riverside and Thamesmead, and would comprise of a detailed route alignment as follows:

- The extension would spur from the existing Beckton branch of the DLR network via a grade-separated junction, turning eastwards towards Beckton Riverside and passing over the existing Beckton branch. This junction layout would include a connection between the proposed extension and Beckton Depot, as well as provide passive provision for a future onward extension of the DLR network towards Barking.

- The route alignment would initially run on a viaduct through the Beckton Riverside development area, before transitioning to ground level to serve an intermediate station on the proposed extension.

- The proposed station at Beckton Riverside would be situated to the south of Armada Way and comprise of two platforms configured in a side platform layout, with a pedestrian overbridge, providing station access and connecting the station platforms. Step-free access would be provided between street level and train.

- Immediately east of the proposed station at Beckton Riverside, the extension would transition below ground and enter a twin bored tunnel to pass under the River Thames and continue towards Thamesmead.

- The extension would run below ground in a tunnel for approximately 1.3km. We would need shafts either side of the river to connect the proposed new tunnels to the surface. These shafts would provide an emergency access and evacuation route in the event of a fire or other incident. They would also provide access for maintenance and ventilation for the tunnels, without which the extension could not operate. The location and design of these structures will be developed in the next stage of design.

- The extension would transition from an underground to an elevated alignment, to run above ground for approximately 400m on the approach to a terminus station at Thamesmead, passing across the Twin Tumps and Thamesmere SINC on a viaduct.

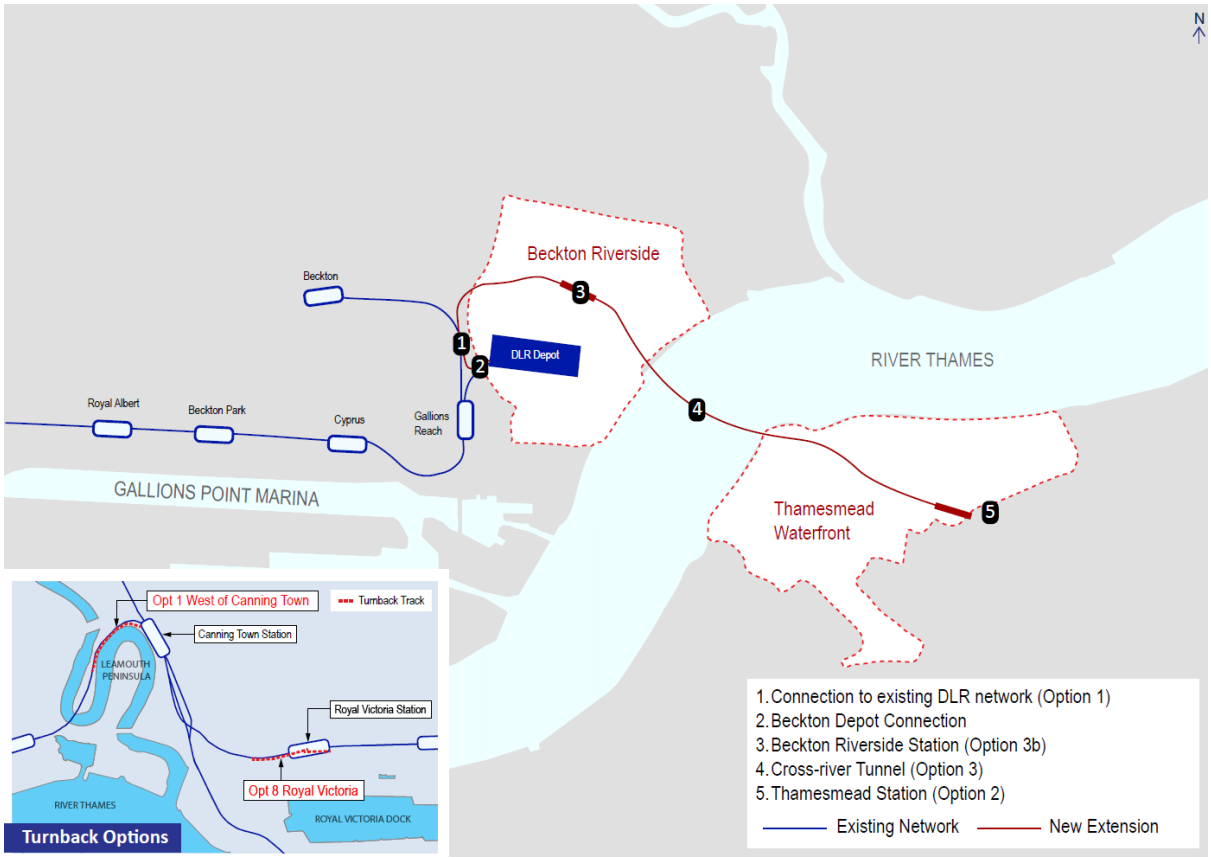
- The station at Thamesmead would be situated on a viaduct in the heart of the future town centre, adjacent to Central Way. Station access is currently envisaged to provide connectivity to both the proposed Thamesmead Waterfront development area, as well as existing communities in Thamesmead situated to the south of Central Way. Step-free access would be provided between street level and train.

- The elevated station would provide passive provision for a potential onward extension of the DLR network from Thamesmead in future.

- A number of turnback options to the west of the proposed extension have been developed and sifted. We have not yet confirmed a preferred option for the

proposed turnback and are continuing to develop and assess options at Royal Victoria station and in an area to the west of Canning Town Station.

Figure 16: Preferred option for public consultation



5.1.2. In selecting the preferred option for the scheme, we recognise that there is potential for some environmental impacts to arise during both the construction and operation of the scheme, which may include:

- Potential impacts on ecology and existing habitats in Beckton Riverside and Thamesmead, e.g. Twin Tumps and Thamesmere SINC.
- Potential impacts on local residents and communities.
- Potential impacts on the river associated with construction.
- Potential impacts from contamination due to the former uses of the areas.

5.1.3. In assessing and addressing these potential impacts, the scheme would be subject to a detailed Environmental Impact Assessment (EIA). The EIA process ensures that the likely significant environmental effects of the proposal and potential mitigation measures are properly and clearly set out in an Environmental Statement (ES).

5.1.4. Whilst the principles of the preferred option for the proposed extension of the DLR to Beckton Riverside and Thamesmead have been set out within this document, the scheme would be subject to further design development in confirming a Reference Design for a Transport and Works Act Order (TWAO) application and progressing future stages of Concept and Detailed design. This may result in the future evolution and optimisation of the components which make up the preferred option as design development progress. A further public consultation will be undertaken ahead of the submission of a TWAO application for the scheme.

6. Next steps

6.1.1. Following this round of public consultation, we will publish a report containing an analysis of the responses received. The feedback to this consultation will help us as we move to the next stages of design and development for the project. We will then run a further consultation, ahead of submitting an application under the Transport and Works Act to build and operate the proposed extension. This consultation will focus on the environmental and construction impacts of the proposed scheme. Should our application for powers be successful and we are granted permission to build and operate the extension, we could begin construction in the late 2020s, with the extension and new stations open in the early 2030s, subject to funding.