Docklands Light Railway Capacity Enhancement Project
Station Closure – South Quay (DLR) Station

Explanatory Note
October 2004

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1. REASONS FOR THE CLOSURE

1.1. Usage of the Docklands Light Railway (DLR) is expected to increase from the current 50 million passengers per year to over 80 million passengers by 2009, with much of this growth expected to take place on the section running through the Isle of Dogs. In response to this, DLR is planning to upgrade the railway to allow the operation of longer (3-car) trains between Bank and Lewisham. The current system operates 2-car trains, but for longer trains to operate platforms need to be extended and other works carried out to a number of stations on the network. DLR is part of the Mayor's Transport Authority, Transport for London (TfL), and this project forms a key part of the Mayor's Transport Strategy and provides much needed additional transport capacity to support the regeneration plans set out in the Mayors London Plan.

1.2. An application has been submitted to the Secretary of State for Transport for an Order ("the Order") under sections 1 and 3 of the Transport and Works Act 1992 ("the 1992 Act") to authorise the construction and maintenance of works to deliver the project. The current programme assumes that work would commence in 2007 and be complete by 2009 when 3-car trains would be operating between Bank and Lewisham.

1.3. DLR has considered a number of options for increasing the capacity of the DLR network and attached to this document is Section 4 of a Supporting Statement submitted by DLR in support of its Transport and Works Application which summarises the options considered for increasing capacity on the DLR network. A detailed engineering assessment has also been undertaken to assess the extent of necessary works in order to accommodate longer trains at each station between Bank, Tower Gateway and Lewisham including South Quay.

2. SOUTH QUAY (DLR) STATION

2.1. The existing South Quay station is at the heart of a major development area within Docklands. This area, know as Millenium Quarter, has been identified by the London Borough of Tower Hamlets as a location for the provision of new jobs and homes through the redevelopment of existing sites and the intensification of land uses. This means that there is likely to be a significant increase in the numbers of passengers using this station in the future.

2.2. The existing station (rebuilt following IRA bomb damage) has 60m length platforms which currently accommodate 2-car trains but would have to be extended by up to 30m to accommodate 3-car trains. Furthermore, the existing platforms are relatively narrow and would need to be widened in places to allow for the future growth expected at the station.

2.3. DLR has considered a number of different options for upgrading South Quay Station and extending the platforms. Extending the existing platforms is extremely difficult because of the track alignment either side of the station platforms. DLR platforms have to be relatively straight to ensure that the gap between train and platform is kept to a minimum to comply with the regulations for disabled access.

2.4. The only way the existing platforms could be extended would be to realign the track either side of the station which would involve rebuilding the viaduct. This would be a high cost option with a major impact on some of the neighbouring land owners. Whilst enabling platforms to be extended, it would not allow DLR to introduce some of the other improvements that are required at the station such as escalators and wider platforms and would have a major impact on the day-to-day operation of the railway whilst the works are underway. On this basis, DLR has concluded that the station would have to be relocated to accommodate 3-car trains.

2.5. It is essential that the new station continues to serve the existing community but also takes into account future development plans for the area. DLR has worked closely with the London Borough of Tower Hamlets to ensure that the location of the new station is consistent with the Council's plans for the area and is proposing that a new South Quay station will be constructed at Millwall Cut, which is approximately 200m to the east of the existing station. The existing South Quay station will be demolished once the new station is complete and open for passenger service.

3. THE PROPOSED NEW STATION

3.1. DLRL has sought as part of its TWA application permission for the demolition and subsequent construction of South Quay Station in its new location. DLR is seeking detailed permission to develop the new station. Figure 1 illustrates the location of the proposed new station in relation to the existing station.

3.2. DLR has made a number of commitments to the Council that the station will be developed to a high architectural standard with improved facilities for passengers. This includes lift and escalator access to each of the platforms and full length canopies. An artist impression of the proposed new station is attached to this document (Figure 2).

3.3. The station will have two entrances – one either side of the Millwall Cut. This means that the station will provide improved links to the area of jobs/homes to the east of Millwall Cut and continue to serve the area west of the Cut.

4. THE EFFECTS OF THE CLOSURE OF THE EXISTING SOUTH QUAY (DLR) STATION

4.1. Upgrading the DLR network will allow 3-car trains to operate between Bank and Lewisham. The frequency of the network will be largely the same as the existing service pattern, with trains operating at intervals of 2-3 minutes in the peak periods, but more capacity will be provided for passengers because of the longer trains.

5. TIMING OF THE CLOSURE

5.1. Construction of the new station is due to commence in 2007 and be complete and open for passenger service during 2009 (subject to DLR receiving all the necessary powers). Once the new station is open, the existing station would close and the process of demolition would commence.

6. TEMPORARY ARRANGEMENTS DURING CONSTRUCTION WORKS

6.1. The works associated with constructing the proposed new South Quay Station should not materially affect the number of trains passing in each

direction between Heron Quays and Crossharbour Stations. The vast majority of the work is planned to take place when the railway is operational, although some works will have to be done when the railway is closed either at night or during planned weekend closures.

6.2. Closure and demolition of the existing station will not place until the new station is open for passenger service.

7. HARDSHIP

7.1. DLRL does not anticipate that any hardship will result to any users of the DLR as a result of the closure of South Quay (DLR) Station. The new station serves the same catchment as the existing station. For some users of the station the walk distance will be reduced but for others there may be a longer walk distance to the station (maximum of 200m). Some people living to the west of the existing South Quay station may in the future find it more convenient to use Heron Quays Station via the new footbridge over the dock. Given the number of DLR stations serving the Isle of Dogs, we do not perceive there to be any significant disadvantages to users of the existing South Quay station as a result of its proposed relocation.

7.2. For passengers with a mobility impairment, the new station will be fully accessible. Walk links to the new station already exist with pedestrian crossings provided at a number of points on Marsh Wall.

7.3. The new station will provide improved passenger facilities including escalators, which will be of overall benefit to existing and new users of the station.

8. FURTHER INFORMATION

8.1. Any further request for information concerning the proposed application may be made to:

Paul Crosby,
Transport Planner, Docklands Light Railway Limited,
PO Box 154, Castor Lane, Poplar,
London E14 0DX.

Telephone Number: 020 7363 9525.
E mail: pcrosby@dlr.tfl.gov.uk

SUPPORTING STATEMENT – Section 4: Project Development

Transport and Works Act 1992
Docklands Light Railway
(Capacity Enhancement) Order

June 2004

4 PROJECT DEVELOPMENT

Identifying Options

4.1. A number of options for enhancing the capacity between Bank and Lewisham on the DLR were considered by a specially convened 'capacity group' within DLRL in January 2001. Figure 3 illustrates the options considered which are explained below.

Option 1 – Shuttle Services

4.2. The introduction of more shuttle services between key stations and a reduction in the number of through services could create additional capacity on the network. However, this would be at the expense of passenger benefits as passengers would incur additional waiting time due to more changes for trains being made. This option was deemed to be a possible interim or emergency measure to be implemented when additional capacity is required for short periods such as special events and other projects not being implemented, although as a long term measure, it was recognised that this would have disbenefits for passengers.

Option 2 – Closing Tower Gateway Station

4.3. Closing Tower Gateway station during peak hours would eliminate the need for trains operating to and from Bank to cross the paths of trains operating into Tower Gateway. This constraint occurs at a point known as Royal Mint Street junction where the tracks to Bank and Tower Gateway stations divide. To illustrate the point, the current timetable for the DLR has to allow for trains entering Tower Gateway which block the path of trains leaving Bank and travelling east towards Shadwell. This constraint reduces the operating flexibility of the line and in effect reduces the capacity of the line to and from Bank and limits the number of trains that can be operated.

4.4. Removing this constraint by closing Tower Gateway station would allow more trains to operate into Bank. However, as this is not the only operational constraint on the network, the benefits of doing so would be marginal. Furthermore, there would be disbenefits to passengers who currently use Tower Gateway station during the AM and PM peak periods (currently just over 5000 passengers).

Option 3 – Introduction of 3 Car Trains

4.5. Introduction of 3 car train operation on congested routes at peak times e.g. between Bank and Lewisham. Out of all options considered, this option would provide a step change in DLR capacity (up to 50%) and meet all business case criteria of providing benefits to passengers.

4.6. An advantage of this option is that it could be pursued independently of all other options.

Option 4 – Improved Shadwell Interchange

4.7. Improving the interchange arrangement at Shadwell could provide localised passenger benefits but would not increase the capacity of train services on the railway.

4.8. This option could be pursued as a separate specific interchange project subject to funding being available and depending on the future proposals for the East London Line station.

Option 5 – Dwell Optimisation

4.9. The utilisation of the existing signalling system could be enhanced by improving the efficiency of dwell times at stations i.e. the amount of time a train is stationary whilst passengers are boarding and alighting by optimising the time from when doors close at stations to the time when a train starts moving to leave a station. Potentially, a few seconds could be saved at each station and the cumulative effect of this could reduce overall dwell times and improve journey times and potentially marginally increase frequency of trains. However, the main benefit would be reliability improvements to ensure that times between trains remain as even as possible. This could be pursued as an independent project with the manufacturers of DLR's signalling system. A step change in capacity would not be provided by this option.

Option 6 – Royal Mint Street Junction Reconfiguration

4.10. Reconfiguration of the Royal Mint Street junction arrangement could be made to remove the current 'pathing' constraint of Tower Gateway and Bank trains. This would involve construction of a new 'grade separated' junction to separate tracks and remove conflicts. This would improve timetabling and would allow a higher service level to Bank or Tower Gateway but only if capacity constraints at North Quay junction and the Stratford single line were also resolved.

4.11. Without other constraints being removed (such as North Quay junction and the Stratford single line) this option provides few additional benefits at significant cost and disruption to passengers. It would be very difficult to keep the railway operational during major civil engineering works to reconfigure junctions. Furthermore, there would be a number of significant environmental issues with this option.

4.12. There are various works needed in this option which are interdependent. The overall cost would likely to be at least the same as option 3, but with

significantly more disruption and the additional capacity provided would be less making this option more difficult to justify.

Option 7 – Removal of Some Seats in Trains

4.13. The removal of some seats from existing vehicles could provide additional capacity by increasing standing room around doorways. This would generate both passenger benefits (more capacity) and disbenefits (less seats for passengers and less comfort). It would help provide marginal additional capacity, which would be insufficient on its own in comparison to predicted demand. Prior to the Jubilee Line opening this exercise was carried out on twenty vehicles in order to provide additional capacity as a short term measure. Although this exercise was not particularly popular with passengers, it did meet a short-term requirement until the Jubilee Line opened.

Option 8 – Additional Pedestrian Links

4.14. Additional pedestrian links over water between Canary Wharf, Heron Quays and South Quay could reduce the numbers of passengers making very short journeys between these stations. This could result in journey time savings and accessibility benefits to the wider Isle of Dogs community, not just DLR users. However, this is unlikely to free up significant capacity and any benefits would be very localised.

Option 9 – Improved Information Systems

4.15. Use of information systems, education of staff and education of passengers could ensure that any spare capacity is utilised on trains. For example, on some occasions the distribution of passengers on trains can be loaded unevenly, particularly when trains are heading to stations where an exit is situated at one of the platform only.

4.16. This option would utilise all available capacity, but would be insufficient on its own in comparison to predicted passenger demand by 2009.

Option 10 – Additional Railcars

4.17. Purchasing and running more railcars could provide additional capacity by increasing frequency. Increasing frequency would only be a complementary project once other capacity constraints in option 6 have been removed. The extent of additional capacity that this option could provide would depend on the removal of constraints described in options 6, 11 and 13. Without the removal of all those constraints additional capacity as a result of higher frequency would be very limited. Expansion of depots would also be required as DLR currently has 94 railcars which are stabled at both Poplar and Beckton. Both depots are now full when trains are stabled at night.

Option 11 – Reconfigure North Quay Junction

4.18. Reconfiguration of the North Quay junction arrangement could alleviate the 'pathing' conflict between trains running on the Stratford and City routes and would improve scheduling options. However, essential timetabling constraints imposed by the Stratford single-track section would remain.

4.19. This option would be beneficial in its own right and would provide the potential for marginal improvements to train frequency. However, to ensure that full utilisation of a grade separated junction at North Quay is made, all other constraints in option 6 and 13 would need to be resolved, although additional capacity provided would not be as significant as capacity provided with option 3.

Option 12 – Second Platform at Stratford

4.20. A second platform at Stratford station would provide DLR with the ability to improve the frequency of trains on the Stratford line, if required. This option is currently being pursued independently of the Capacity Enhancement Project in response to specific capacity issues related to Stratford station.

4.21. However, this would not help overall scheduling for trains heading towards the Isle of Dogs as North Quay junction and the single-track section between Bow Church and Stratford would continue to impose timetabling constraints on the Bank route.

Option 13 – Bow Church to Stratford Double Tracking

4.22. Double tracking between Bow Church and Stratford would improve operational flexibility, particularly with regard to timetabling trains to cross North Quay junction.

4.23. The additional capacity provided would only be a fraction of the capacity provided in option 3 and would provide capacity benefits to a part of the network where much lower passenger growth is anticipated. Initial pre feasibility work in relation to this option indicates that it would be less cost effective than other options considered. This could, however, be a separate project in the future.

Option 14 – Operational Changes

4.24. Improvements to acceleration and deceleration on existing trains could improve timetabling options and generate marginal capacity improvements. This option is similar to option 5. Journey time savings would produce some passenger benefits, but passenger comfort may

suffer from stronger acceleration and deceleration. The capacity increase provided with this option would be very small.

Additional Considerations

4.25. In addition to the options above a study was commissioned to examine the use of higher capacity railcars on the DLR network which concluded that in order to provide the necessary capacity required in relation to the predicted demand by 2009, all existing 94 railcars would have to be converted for standing room only. This would provide significant disbenefits to passenger comfort and would be unlikely to be accepted by various regulatory bodies due to safety implications.

4.26. The introduction of double decker trains was also considered. However, this option was discounted due to significant civil engineering work requirements such as enlargement of tunnels, lowering of platform levels and major strengthening of all bridges and viaducts, which would be both costly and disruptive to passengers. The cost of this option would be further increased by the need to purchase new railcars which are significantly different to the existing railcars. It would not be possible to operate both the existing types of railcar and double decker railcar together due to the differences in height requirements for platforms.

4.27. An assessment of the options above was undertaken in Spring 2001. It showed that the only project to fully meet the capacity requirements by 2009 would be option 3 – the introduction of 3 car trains.

The Preferred Project

4.28. Once a preferred project had been identified which caters for demand predicted on the network, a pre-feasibility study was undertaken between Spring 2001 and September 2001 to consider the key constraints of running longer trains. The report highlighted key stations where extensions to platforms would be difficult but not impossible and recommended feasible options to be considered in more detail.

4.29. The overall conclusion was that running 3 car trains would be feasible and that further feasibility and outline design work should be progressed.

Conclusion

4.30. Services on the DLR have recently been enhanced and during peak hours are operating near to the capacity of the current system and infrastructure. Further significant changes in service frequency between Bank and Lewisham would be dependant on changes to infrastructure and signalling systems or alterations to the existing timetable to reduce through services from other destinations. These improvements would

have a cost amounting to at least the same as works related to running longer trains and would not offer comparable benefits and in some cases could lead to major disadvantages for passengers. The use of alternative higher capacity vehicles has also been explored, which again would deliver marginal capacity benefits but lead to significant disbenefits for passengers.

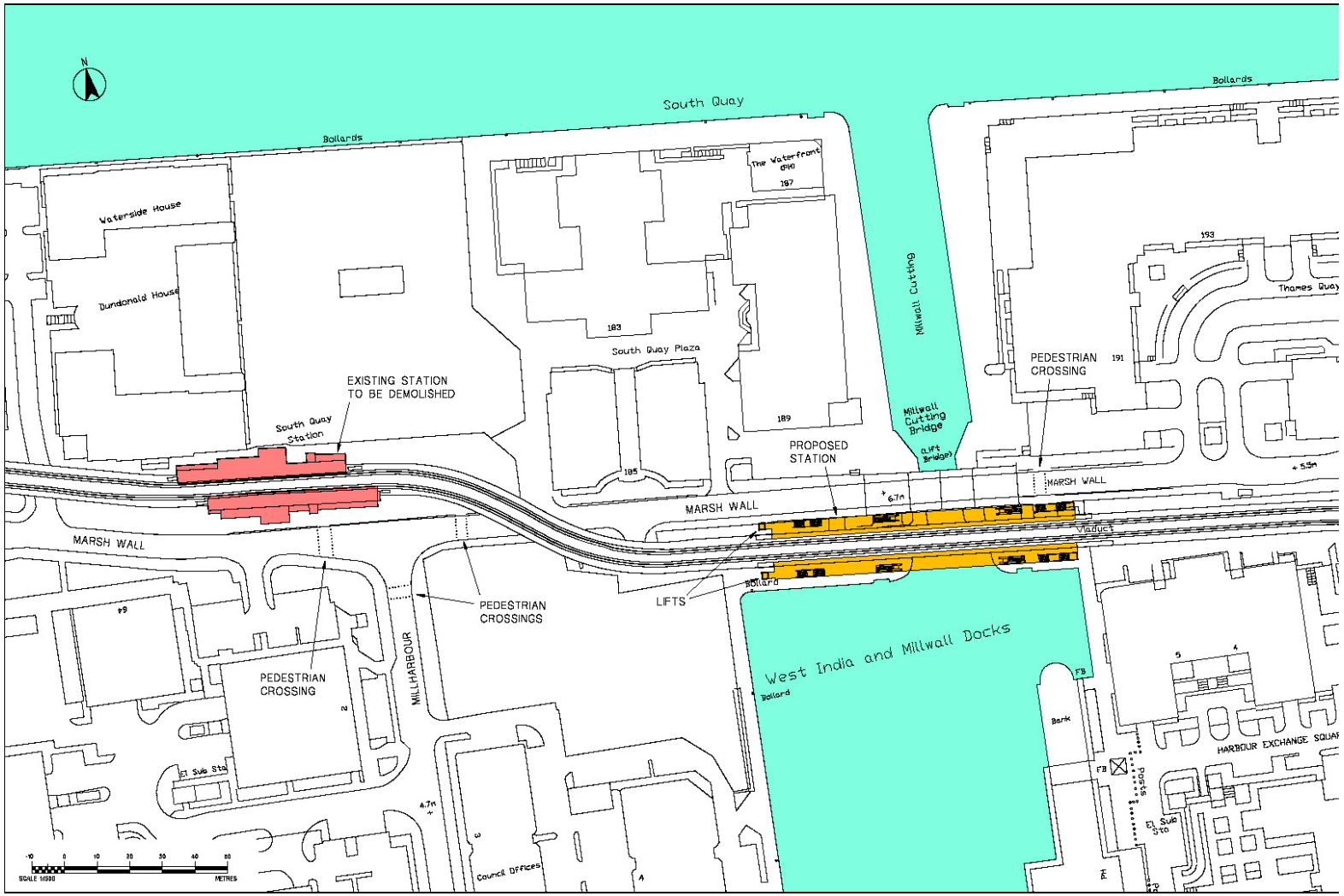

Figure 1: Proposed new location for South Quay Station

MAYOR OF LONDON

DLR

Figure 2: Artist's impression of proposed new South Quay Station