



Reviewing the benefit of London rail service improvements on housing density

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Purpose of report

- 1 It has become a standard political desire to consider the role of land value capture to help pay for major urban transport investments.
- 2 The note goes further and considers, through available evidence from the London region, how urban transport improvements can stimulate higher densities of development, which may also be beneficial for land value capture.
- 3 The output can assist with business cases for enhancing urban transport investment, with a clearer view about payback.

JLE Land Value Capture

- 4 The Jubilee Line extension (JLE, 1993-1999) is a good exponent of demonstrating that land values had grown as a consequence of the tube line. However it was built before adequate mechanisms were in place to recover any share of land value gain.
- 5 This is discussed in the website below and with other links nominally available within that. [http://www.livingtransport.com/results.php?t=asset&search=100&content=Jubilee Line Extension Development Impact Study](http://www.livingtransport.com/results.php?t=asset&search=100&content=Jubilee+Line+Extension+Development+Impact+Study) (copy and paste this into a web browser to see the initial material). The main report is linked.
- 6 It is a major study dating from 2003, published by the University of Westminster. It has multiple case studies about the relationship (close, loose or marginal) between the arrival of the Jubilee Line Extension, and the planning policies, local plans and changes in development applications, in the years preceding and following the JLE opening.
- 7 Those were early days in seeking to achieve a high degree of co-ordination of land use and urban transit planning, with the exception of the *dirigiste* Canary Wharf zone. Much was shown to be attributable to existing town and city centre developments, and in the Royals to the various DLR schemes rather than to the new transport hubs created by the JLE, eg at Canning Town.
- 8 Close reading of the report shows that assumed planning+transport linkages didn't always arise, although the report was able to demonstrate that the JLE was helping to pave the way for more closely-knit relationships along the line of the railway in the succeeding decades.
- 9 TfL also published data in 2004, as summarised in an extract from a TfL Press Release (overleaf):

Jubilee line raises land value by estimated £2.8billion at Canary Wharf and Southwark Tube stations

08 July 2004

A report published today by Transport for London (TfL) suggests that the uplift in land values attributed to the Jubilee Line Extension is in the region of £2.8billion in the proximity of Canary Wharf and Southwark Underground stations.

The pilot study, conducted by globally integrated real estate services and money management firm Jones Lang LaSalle*, found that there has been a positive impact on local property market values.

The conclusions of the report, 'Land & Property Value Study - Assessing the Change in Land & Property Values Attributable to the Jubilee Line Extension' are that the estimated uplift in land values is in a wide range, but in the order of:

- £2billion around Canary Wharf Underground station;
- £800million around Southwark Underground station.

Jones Lang LaSalle were commissioned by TfL to undertake a pilot study and assess the impact of the Jubilee Line Extension (JLE) on land values at two stations, Southwark and Canary Wharf.

The methodology agreed at the outset with TfL involved using property market evidence to assess value, applying this value appropriately to the property stock in the defined study areas, and then estimating the effect of the JLE by comparison with controls not materially affected by it.

1. *Jones Lang LaSalle is a globally integrated real estate services and money management firm, operating across more than 100 markets around the globe. The company provides comprehensive integrated expertise, including management, transaction, advisory and real estate money management services, to investors and occupiers locally, regionally and globally. Jones Lang LaSalle is an industry leader in property and corporate facility management services, with a portfolio of approximately 725 million square feet (67 million square meters) under management worldwide. LaSalle Investment Management, the company's real estate money management business, is one of the world's largest and most diverse real estate money management firms, with approximately \$23 billion of assets under management. For more information, visit <http://www.joneslanglasalle.com/>
2. In deciding the extent of the study areas, it was assumed for the purposes of this study that the majority of any value uplift would occur within a 500m radius of each station for commercial uses and 750m for residential uses. The areas used are loosely based on these dimensions.
3. The pilot study examined value uplift from 1992 to 2002. It should be noted that the results of the pilot study are sensitive to the start and end dates chosen, and any different period adopted would give differing results.
4. Jones Lang LaSalle adopted controls based on indices covering large parts of London in an attempt to isolate the effect of the JLE. This approach has the defect of potentially underestimating the impact of the JLE because they include, in some cases, the area affected by the JLE.
5. The estimated land value uplift is sensitive to assumptions made in Jones Lang LaSalle's analysis. These assumptions relate to both property stock and value, because of the nature of the data available, and the need for interpretation in the application of this data. For these reasons the exercise is one of estimate and judgment, not calculation, hence the wide range of figures reported.
6. ATIS REAL Weatheralls were also commissioned to estimate the uplift in land value as a result of the JLE using a different methodology and data sets to those used by Jones Lang LaSalle. The consultants are expected to finalise their work in summer 2004.
7. Download the [full report \(PDF 9.8MB\)](#) and [main report \(PDF 422KB\)](#)

(These links do not now appear to work, TfL may be able to provide up-to-date ones)

JLE densification

- 10 The stations selected in the JLLS report, Canary Wharf and Southwark, are not typical of conventional suburban development areas. However the assessed extent in distance from the station is interesting, as it gives a rough guide to the then expectations about minimum effective station catchment with a decent service frequency. These are not too different to the nominal 960m walking distance (practically, an 800m circle) used by TfL for PTAL purposes.
- 11 Without seeing the actual reports, it is not known whether there was considerable densification as well as land value uplift – and densification might have been taking place in any event, especially around Canary Wharf, rather than it being exclusively a *consequence* of the railway. The University of Westminster report’s assessment with its multiple case studies is probably a good contemporary guide.
- 12 Also, the JLE might have been expected to have been a *cause* of *some* densification, with developers anticipating its opening once large scale construction had got underway and being ready to take some construction and marketing risks. Canary Wharf Group were intimately involved with the JLE project, and would have timed their investments to coincide with line opening.
- 13 However, as seen already the University of Westminster report shows that causation of densification is unreliable as a general assumption, and at that stage in London’s planning maturity was an exception rather than the rule.
- 14 This is similar what had taken place in Docklands once the DLR was extensively under construction after 1984. The risks were lower then, as LDDC was a rate-free and relatively planning-free zone for its early years, but the outcomes were also not directed to specific locations, precisely because of the loose planning environment.
- 15 The density of actual DLR stations means there is a risk of perceiving apparent correlation of location and station when it was happenstance. Indeed the rating and planning regime stimulated the first version of Canary Wharf by 1985 *as an unexpected outcome* (see this link as material evidence: <https://www.londonreconnections.com/2017/diving-fleet-part-5-canary-wharf-years/>).

Crossrail 1 Land Value Capture

- 16 Crossrail 1 become the initial London model to seek land value capture explicitly. An excellent 2017 paper on the subject has been written by former Crossrail commercial director Martin Buck, and is available here: <https://learninglegacy.crossrail.co.uk/wp-content/uploads/2017/09/1C-002-Finance-Funding-and-Value-Capture.pdf>
- 17 In brief, there was early awareness after the JLE experience that land value increases resulting from Crossrail 1 should be recovered to an extent to help pay for the upfront costs of the project, which was much greater than Treasury was comfortable with.

- 18 There was considerable discussion on useful mechanisms, and a Business Rate Supplement and Community Infrastructure Levy were adopted. They have helped to raise about one-third of the total cost, partly by underwriting the issue of £3½bn of bonds by the GLA. The levy would be phased out over time, once the main bonds had been repaid after multiple years of levies. This was then estimated as by the mid-2030s.
- 19 The Crossrail 1 paper also notes that the BRS and CIL are expected to be relatively inefficient in achieving land value capture: “A study commissioned by delivery company Crossrail Limited (CRL) – which replaced CLRL in 2007 – estimated the uplift in land values within 1 km of Crossrail stations between 2010 and 2020 (the railway opens in 2018) to be £5.5 billion (Crossrail, 2012). While this is a very positive reinforcement of the case for constructing Crossrail, the estimate illustrates the very low level of value captured (approximately 10% in this case) by the public sector – the remaining 90% accruing as windfall gains to the owners of the properties impacted.”
- 20 It should be noted that the Crossrail assessment only looked to 2020, not to the full period of time for the levies. Also in 2012 Crossrail was only beginning to realise that its opening date might be later than the previously planned 2016.
- 21 Other relevant Crossrail 1 papers and links are here:
<http://www.crossrail.co.uk/news/articles/crossrail-predicted-to-increase-property-values-by-55-billion>
http://74f85f59f39b887b696f-ab656259048fb93837ecc0ecbcf0c557.r23.cf3.rackcdn.com/assets/library/document/c/original/crossrail_property_impact_study_exec_summary.pdf
http://74f85f59f39b887b696f-ab656259048fb93837ecc0ecbcf0c557.r23.cf3.rackcdn.com/assets/library/document/c/original/crossrail_property_impact_study_main_small.pdf

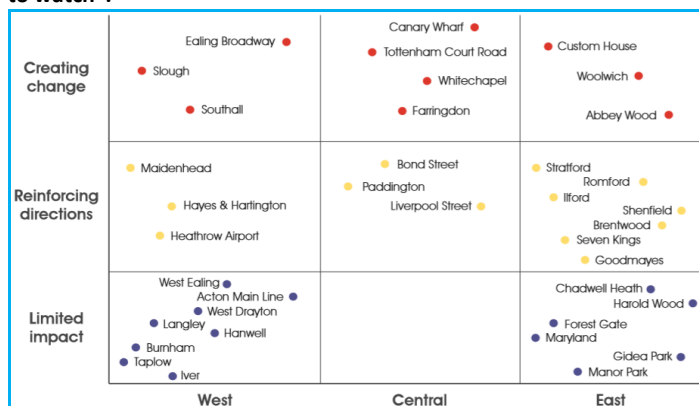
22 The Executive Summary linked above, observes potential groups of localities:

“Places to Watch

With a headline additional effect on value of some £5.5 billion for the period 2012 – 2021 as well as supporting or influencing the delivery of more than 57,000 new homes and 3.25 million square metres of commercial floor space within 1km of stations along the route, Crossrail has the potential to have a transformative impact on the property market in key locations. These can be categorised as:

- Creating change – where a substantial change in current development quantities and types of land use can be expected.
- Reinforcing directions – where support is given to active, in-progress development programmes which reflect changing property values;
- Limited impact – where little change to the current development context can be expected.

Based on this approach and a synthesis of the analysis, it is possible to identify the following matrix of “places to watch”.



23 The commentary on the East London sector is set out below:

<p>East Section – Custom House to Abbey Wood and Stratford to Shenfield</p> <p>The effect on journey times, the ability to make direct journeys into the heart of central London and the significant benefits in terms of route interchange will drive development market interest and activity in Crossrail's eastern section.</p> <p>This potential is likely to be focused primarily on new residential development, due to continued long-term demand for new housing in east London, Brentwood and Shenfield. There will also be improved accessibility and travel times to employment centres.</p> <p>Development locations where the greatest market activity and potential for significant property change will be supported by Crossrail are:</p> <ul style="list-style-type: none">• Custom House – with its supply of significant development opportunity sites, proximity to ExCel, London City Airport, the Siemens demonstration facility and the University of East London will see Crossrail support, accelerate and enhance the wider investment programme for the Royal Docks;	<ul style="list-style-type: none">• Woolwich – transformational change in the immediate station area and more widely in the town centre due to Crossrail and the journey improvements offered;• Abbey Wood – a transformational change, particularly for new residential development as the new station opens up employment opportunities, services and facilities elsewhere along the Crossrail route. <p>Collectively these 'places to watch' are where Crossrail can be expected to lift values and therefore enable, support and advance delivery of housing and commercial schemes. Many of these locations have been identified as priority development locations by central and London government, as well as local authorities across the south east.</p> <p>Crossrail will boost the economies of London, the wider south east and, by extension, the UK. In many locations it will advance longstanding visions for growth and change.</p>
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24 The Crossrail papers point towards the scope for transformational change and significant development opportunities in selected localities in East London. Limited impact was however identified in established largely residential areas. Where changing trends were under way, Crossrail 1 was expected to reinforce those.

Impacts of different rail schemes

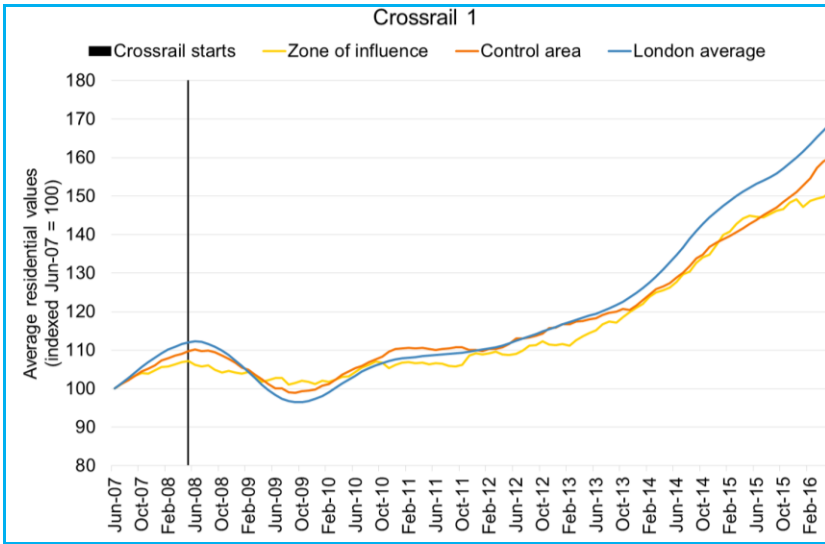
25 A thoughtful paper by Savills (April 2018) is also highly relevant, as it looks at different options for types and timings of land value levies and how those can be defined and imposed: <https://www.savills.co.uk/insight-and-opinion/savills-news/240380-0/infrastructure-investment-and-land-value-uplift>. The main report is here: https://www.london.gov.uk/sites/default/files/land_value_capture_report_transport_for_london.pdf

26 There is direct tension between a transport project wanting to start recovering uplift values early on, and yet needing to recognise that developers are also highly sensitive to cash flow issues and don't want upfront taxation risks. The paper advises that the better time to tax developers is once property investments are fructifying and sales are proceeding. The Savills paper also highlights the scales of land uplift seen by a range of schemes between construction under way and opening, and then for some years later, including Crossrail 1.

27 *Some commentary is set out below by JRC in italics (to distinguish from Savills' own text and graphics).*

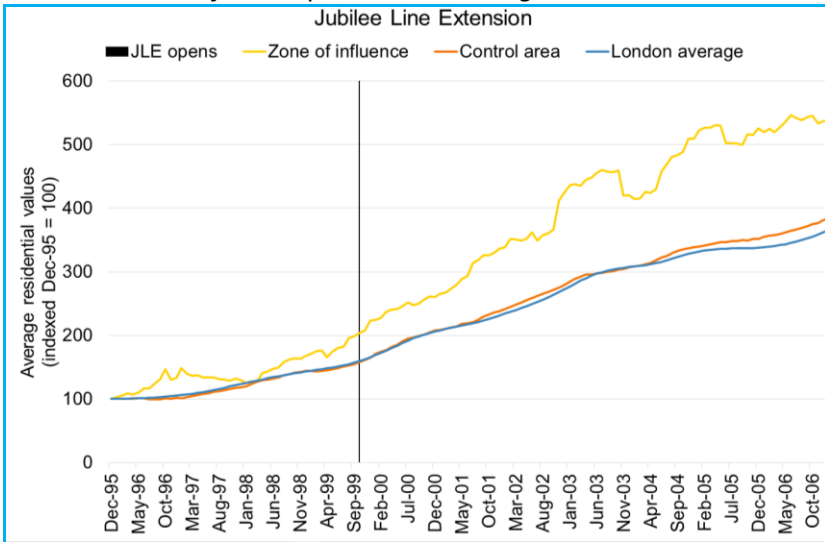
Crossrail 1

This had not yet stimulated changes in land values different to the catchment control area or the London average. This could be as a result of the depressing influence of BRS and CIL, as noted in the Savills paper, and/or by land uptake still waiting for emerging completion of the Crossrail scheme or because of delays in local planning authorisation, or because some land close by was not yet being released on construction (most OSD sites would still have been used for Crossrail works up to 2016). The decline in overall values with the 2007-10 banking crisis is visible. Martin Buck also notes little activity until 2015-16 in his paper, after which CIL started to make a contribution.



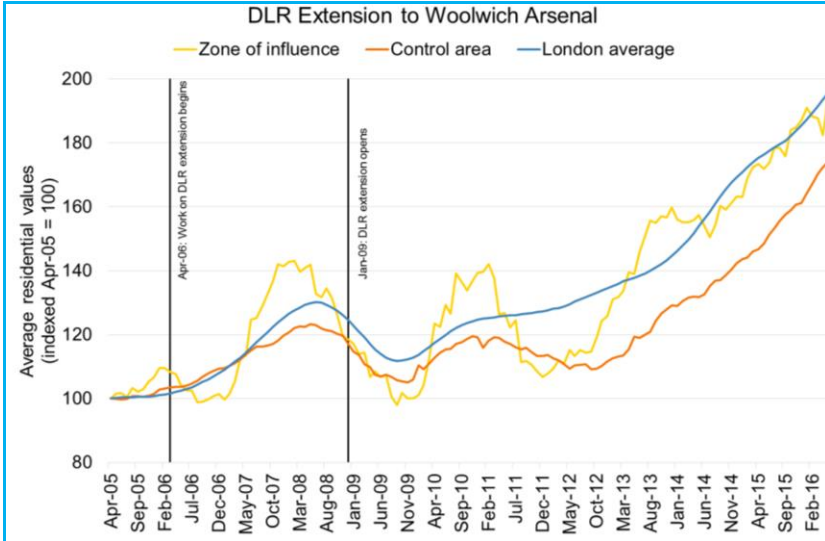
JLE scheme

This scheme preceded land value capture and shows a different result, possibly in the absence of BRS and CIL, with some land impacts early during construction, and growing fast after opening. These results are of course prior to the banking crisis. There is no Land Registry info before 1995.



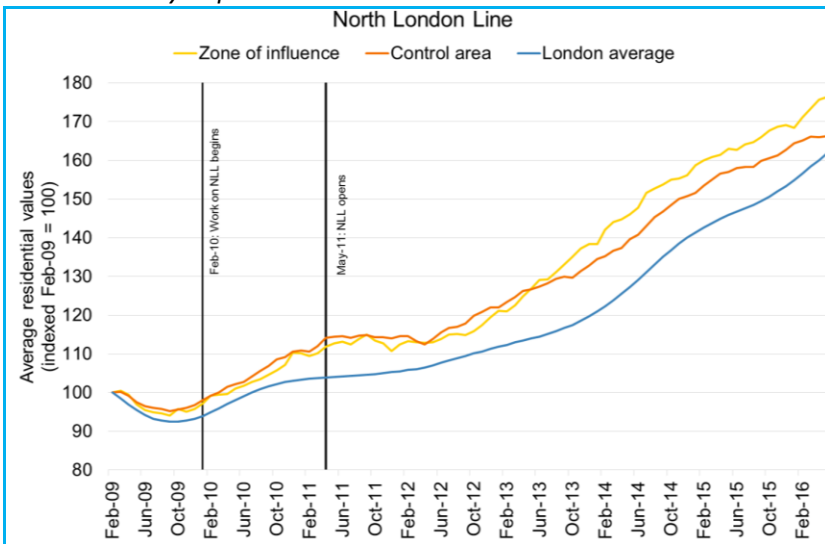
DLR Woolwich Arsenal

This extension shows gains from midway through construction before falling away around opening (is this linked to the banking crisis and non-availability of capital for development?), and a short spurt in 2011-11, then falling until a steadier growth from 2013 by which time the catchment is showing normal London growth rates rather than rates previously associated with the control area. The latter is an interesting outcome in its own right. It may be relevant to observe that RPI+5% real terms pricing was in force over a number of years from 2006-07 on South Eastern Trains, which could have hindered the growth of land values in the Woolwich area in the period until 2012 on top of the banking crisis. Others have also wondered if the social housing policies adhered to by LB Greenwich might have been a factor slowing development.



North London Line Improvement Project

The North London Line Improvement Project, which allowed frequent services on the London Overground west from Stratford and also linked the East London Line to the NLL from 2010-11, showed land gains despite the banking crisis, within an established densely built-up corridor and with the London Olympics taking place in 2012. Resurgence of inner London is hinted at with the steady improvement in residential values.



- 28 The main paper is thoughtfully focused on issues and methodologies to achieve a balanced level of land value capture from future rail schemes, where densification elements if arising are just part of a wider value assessment. It is well worth a read. The paper also make several short remarks about density per se:- **[relevant text shown in bold]**

Page 7: “While there is no clear evidence so far of Crossrail (still in construction) lifting the values of existing residential stock¹, there is evidence that it has produced uplifts on commercial property (around 1-2.5 per cent per annum relative to controls), **and in enabling new residential development (with a 50 per cent increase in density of new housing within 500 metres of a Crossrail station compared to areas further away)**. Looking ahead, KPMG and Savills estimate that future transport schemes in London are also likely to produce large land value uplifts, both in increasing the value of existing properties and by inducing new development.”

Page 12: “First, how do we measure an increase in land values? Sometimes this can be observed directly from the sale of land in the market. But more typically, an increase in underlying land values has to be inferred from the value of what has been built or is going to be built on the land, ie the market prices (sale or rental) of residential and commercial properties, both existing as well as new. That is the method used in this study. We infer that land value uplift has occurred either when the market price of existing properties within the zone of influence goes up faster than that of properties outside it, **or when new properties can be developed on land within the zone of influence through a change in use or densities (so that developers are willing to pay higher prices for acquiring the land from landowners) by virtue of the transport scheme.**”

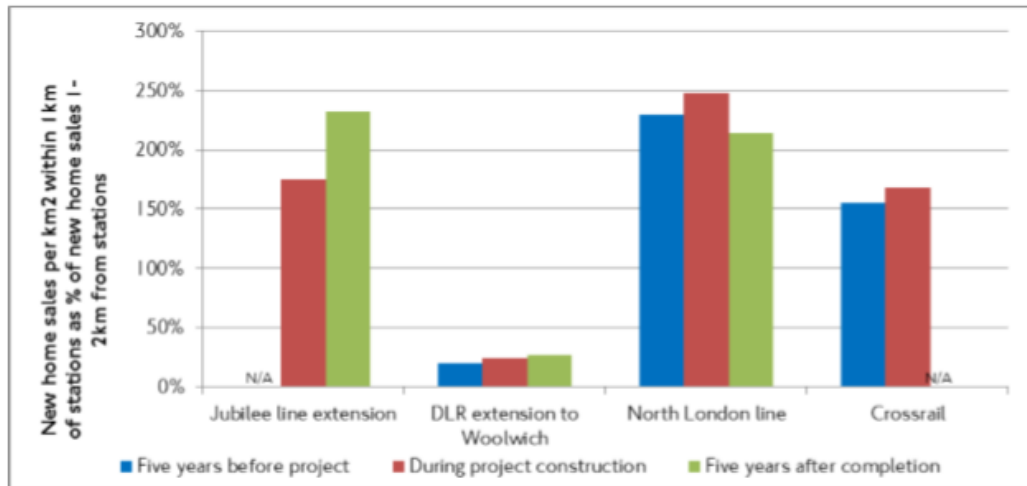
Page 12: “**Nationwide (2014)⁵ found (using mortgage data) that residential properties in London command a price premium of 10.5 per cent for proximity within 500 metres to a Tube or National Rail station. This premium falls to 4.9 per cent for distances up to 1,000 metres**, and to zero per cent beyond 1,500 metres as shown in figure 1... Empirical evidence suggests that for residential properties, the zone of influence extends to a 1-1.5km radius around urban transit hubs. For commercial properties, the radius is shorter, at about 500 metres.”

Page 20: “There is no theoretical reason that property values in the vicinity of a transport project must necessarily rise during its construction period. **This depends on the extent to which the likely benefits of the project are anticipated by property market participants in advance of the facility becoming operational. There certainly appears to have been anticipation in the case of the Jubilee line extension, but none is evident from actual property market data around Crossrail stations.** Significant value uplifts are nevertheless expected once Crossrail is operational, and the transport benefits begin to flow.”

New development

3.8. Savills also extracted data from Land Registry on the density of new residential development adjacent to these historic projects relative to the density of new development in the surrounding areas, to help understand the extent to which the projects were associated with or induced new development in their zones of influence. **Figure 4** below summarises the findings from this research.

Figure 4 – Transport and new development in London



Source: Savills analysis for TfL; Land Registry

3.9. **Figure 4** shows that, in all cases except the DLR extension to Woolwich, the number of new homes delivered per square kilometre was greater nearer the upgraded/new station, reflecting the increased capacity for development within these areas with improved transport connectivity. For the DLR extension, one explanation for the relatively low density of new development around Woolwich Arsenal station could be the very high proportion of social housing in that area, which means there is only limited land available for private development. Higher density of new development within the zone of influence implies a higher planning gain associated with the transport project (see **box 2**).

3.10. There is limited data available to assess the effect of transport projects on the density of new commercial development in the zone of influence compared to control areas for these projects.

Page 23: “In more common urban situations, a **transport scheme** (for example, by creating additional transport capacity) **enables higher densities of development on adjoining land**, rather than being a necessary condition to development occurring at all. The challenge in such cases is isolating the effects of the transport scheme from what would have happened in its absence. This study models the land value uplift (in the context of planning gain) as the difference between the with-scheme and no-scheme market values of land within the zone of influence. The with-scheme market values can be inferred from the gross development value, after deducting the costs of development and a reasonable profit margin for the developer (see figure 5). This is often called the ‘residual land value’.”

Pages 24/25: **“For instance, Crossrail 2 and the Bakerloo line extension are clearly premised on capacity and accessibility improvements, which should lead to large land value uplifts as predicted by the theory, and in line with a project such as the JLE.** But the A13 tunnel or the decking scheme at Poplar produce relatively modest transport improvements. However, they release more land for development, which presents the opportunity for value creation in the surrounding area as a result of ‘placemaking’. Theory would suggest that such schemes should have a limited effect on local land rents adjacent to and near to the scheme (the ‘placemaking’ effect), and most of the value uplift should come instead from the planning gain associated with changing the use or densities of development on the land released by the scheme...

But if we focus on the individual projects, there are some clear differences. **Projects such as Crossrail 2 and the BLE produce the majority of their land value uplifts from the capitalisation of user benefits into residential property prices, with Crossrail 2 (but not the BLE) generating material uplifts also from commercial properties.** In contrast, projects such as the DLR extension, Poplar and the A13 tunnel produce their impacts largely by catalysing new development.”

Page 29: **“In most projects, ‘dependent developments’ are not so easily identifiable, and there is often no single ‘anchor’ landowner or developer. This is generally the case for strategic transport projects or longer rail extensions, for example Crossrail 1 and the JLE. In these instances, the effect of transport schemes can often lead to increases in the density of development and/or acceleration of its delivery, but it is not the deciding factor in whether development takes place at all. With such major transport schemes, planning consents for new development are usually obtained after the scheme has already been announced by the Government, leaving no real incentive for developers to contribute financially. Moreover, the sheer process of capturing land value uplift via individually negotiated developer contributions across a large number of developments becomes prohibitively difficult and expensive.”**

Pages 47/48: **“The major gap is in the context of major transport schemes that serve multiple locations, and induce a large variety of new developments along their route, but don’t have a clear ‘anchor’ developer. The JLE and Crossrail are past example of such schemes, and among our sample schemes, both Crossrail 2 and the BLE appear to fit this pattern. Here, it is more difficult to conduct bespoke negotiations with the numerous developers and landowners involved, nor is it credible to maintain that the project could not proceed without a large contribution from any individual developer. Unsurprisingly, such major projects (where the aggregate value uplifts from new development are actually quite large) struggle to attract large sums by way of developer contributions...”**

“Such ‘high development zones’ (particularly for housing) also tend to be the sort of locations where coordinated planning and consenting of the real estate alongside the transport can produce much better outcomes than fragmented private sector development responding over time to opportunities created by the new transport link. This kind of proactive approach – common in places like Hong Kong – has not historically been the approach adopted in London. But it is becoming more common with the deployment of Mayoral Development Corporations (MDCs) in areas such as Stratford and Old Oak Common; an increasing emphasis on zonal development plans around high potential corridors such as Old Kent Road; and an increasing emphasis on maximising regeneration opportunities from schemes such as Crossrail 2.”

“CIL rates can be varied by geographical area or land use, but cannot be set to reflect the value potential of specific development sites.

The Crossrail Supplementary Planning Guidance (SPG) charge is a way of capturing additional developer contributions from commercial property along the line of route but it produces relatively modest sums. It also does not target residential development.”

- 29 The main Savills paper then moves on to an extensive and worthwhile discussion about options for better ways of raising a fair share of land value gains, in ways which may be less of a deterrent to developers.

JRC commentary from information set out above

- 30 It is possible to draw some generalised views from the main Savills paper (link above), as well as from the project graphs, and also to embrace the preceding reports which have been referenced and discussed.
- 31 Above all, any discussion solely about linkage between densities and transport supply will miss a fundamental point, that in a world where land value capture is part of the policy and funding backcloth, developers will judge the opportunities, incentives, risks and drawbacks in the round from their cash-flow viewpoint.
- 32 The apparently simple relationship between a better rail service and the ability to achieve higher densities as a consequence, will therefore face other barriers, not least the types of land value capture which are adopted. It is not a simple one-to-one-relationship between transport supply and developer willingness.
- 33 The evidence from JLE is that the railway didn't *guarantee* higher densities, though it did occur to some extent during the early years of operation, and most notably where (in the case of Canary Wharf) there was a directed land development policy. However there was an expectation of emerging densification once local planning policies were revised to take full account of the JLE.
- 34 Crossrail 1 also highlights that developers were reluctant up to 2016 to commit themselves, so that CIL had only just started to see some payback by then. This is 8 years after construction had started on Crossrail 1, and nominally when the project had been expected to open.
- 35 Savills identified in 2018 that there were specific groupings of station catchments where there were more development and densification opportunities than elsewhere, particularly those areas in East London which were focused on creating change. It is reasonable to ally many London Opportunity Areas with that grouping, certainly so far as London's Crossrail 2 is concerned.
- 36 The degree of loose or tight planning specification about creating change allied to accessibility and other factors, is likely also to be a key element in land value creation elsewhere in Britain.
- 37 The evidence from the North London Line Improvement Project is that this rail scheme reinforced tendencies which already existed in this high density inner London environment. However it must be assumed that it would be difficult to envisage large scale further densification among existing communities, with the possible exception of major transport hubs and interchanges, and where major employment centres exist.

- 38 The DLR Woolwich Arsenal scheme illustrated that some development interest emerged about halfway through the project construction, but that other circumstances meant this impetus lost its way for some years amidst other significant events and pressures.
- 39 The analyses as a whole have tended to *conflate* higher values from existing land and developments *and* those from greater densities, because the strongest driver for land value capture is to recover a reasonable contribution towards the capital costs of the rail projects. (Additionally there may be other general government taxation priorities.)
- 40 So there is less direct evidence about the effects of urban rail projects specifically on densification, though also generalised acceptance that it happens. This is also reflected in the scope for greater densities in the effective catchment distance accessible from stations.
- 41 However there is clear evidence that it may not happen at the same pace as the rail project, so that it is a later succession of local plans and developments that take advantage of the rail capacity and frequency.
- 42 Currently the land valuation studies reported above, suggest a weak influence on land value and densities over 1km from a station. There is clearer evidence of general development impacts within 750 metres or so, and for commercial developments within 500 metres.

Developer sensitivities

- 43 The ability to capture a fair share of land value uplift is shown to be quite problematical (a full read of Savills' main paper demonstrates this).
- 44 Endeavours to recover values early in a project's life may backfire and deter developers who are themselves sensitive to commercial and opportunity cost risks and cash flow. Crossrail 1 may have suffered in this way.
- 45 Savills has looked at ways of recovering some of the land uplift in a less blunt way, either by undertaking block sales of land zones in managed auctions, and/or by taxation once land/property has been build on and sold as residential/commercial units.
- 46 On reflection the land value capture impact on developers should be a cause for concern, because if a major rail project cannot easily see guaranteed and timely scaling up of development density allied to strong improvements in accessibility, then the case for the main project may be weakened at Treasury level.
- 47 As a minimum there could be additional housing funding support required to ensure some scale of kick start process, and particularly to give the best possible stimulus to developers that high densities will be worthwhile, for example if land value uplift weren't captured until the main rail scheme were nearly ready to open. An interim rail scheme to increase capacity and area attractiveness is highly desirable to reinforce this process.
- 48 Given the rather crude linkages currently in place, the options may need to be identified in terms of designation of development zones to be supported in interim years within acceptable distance of the railway station by active planning and developer support policies.

Crossrail 2 issues to date

- 49 As an exemplar, the assessment now looks as a current rail scheme, Crossrail 2.
- 50 The Crossrail 2 project is being promoted with a policy background where it is the essential means to stimulate high density housing schemes, but lacks enough funding to be assured of go-ahead. It still hasn't convinced Government enough for any scheme to be given the go-ahead to proceed through detailed design towards a Parliamentary Bill – most probably a Hybrid Bill.
- 51 Basically Government needs convincing about purpose and affordability, also against the reality that other parts of the UK are arguing that their projects and economic development need to be given higher priority, and that the London area has been given too much of the investment cake in recent decades.
- 52 There is no disagreement among many national stakeholders that Crossrail 2's basic economic case is strong, measuring the project over its full life. Put simply, there is a 6 to 1 long term wider benefit to cost ratio.
- 53 The problem is that the Government in response to the totality of financial and political pressures has been saying that London (in the broadest sense – the city, the business community, future passengers, ratepayers, and land investors) needs to fund half or more of the entire project, potentially including construction costs *up-front* rather than someone else (eg Treasury) incurring them and recovering the payback later.
- 54 The catch is then how to leverage enough upfront funding. The project is currently subject to severe value engineering (crudely, major capital cost reductions). CR2 has presented Government with 7 options, all aiming to get the costs well below the estimated £30+bn, to below £20bn.
- 55 If controversial stations such as Chelsea King's Road were axed, and the nice-to-have Wood Green branch were deferred, it boils down to two big choices being to prioritise as Phase 1: (1) either a South Western-Central-inner North London corridor, with a depot in or near SW London; (2) or an inner South Western-Central-inner and outer North London/Lea Valley corridor, with a depot somewhere along the Lea Valley.
- 56 There are some sub-options, but essentially the non-Central London preferences to be decided by Government will have to focus, early on, about either relieving known and worsening commuter congestion on the South Western corridor, with some extra housing, or focus on large-scale extra housing and jobs growth along the Lea Valley. Both options face difficulties in securing up-front contributions.
- 57 There are further practical capacity problems with each choice, which don't assist the arguments for land value capture:
- With the outer North London option, how can a satisfactory interchange and capacity relief be achieved in SW London, when the lines are already full and the primary intention

- of a full CR2 is to run CR2 trains directly onto SW London branches to relieve the main line and the Waterloo approaches?
- This might point to a preference for the South Western option, in which case NE London housing developments would be on or beyond the outer northern limits of the initial phasing of Crossrail 2 (Meridian Water or Tottenham Hale are likely termini in that context).
 - That raises significant question marks about the ability of Tottenham Hale on its own to accommodate termini and interchange flows from CR2 as well as the Victoria Line, to and from constrained main line platforms, and needing to handle greatly enlarged commuter flows from the new housing developments along the Lee Valley.
- 58 You can't see developers rushing in these circumstances to commit to a risky size of down-payments towards their enabling rail scheme.
- 59 So these are genuinely hard choices for Government to make. The preceding evidence shows that early land value capture taxation to try to leverage funding to help offset some construction costs, could dent the underlying rationale of CR2, by deterring early and extensive engagement by developers, quite apart from project logistical choices.
- 60 Savills and others have also noted in their reports that, with a large corridor catchment, individual developers can choose to duck the issue and sit on their hands, and refuse to pay by effectively sitting out on the debate and not committing to development but holding on to their land bank. Developers will prefer to watch how the Government decision making proceeds.
- 61 This points to the essential nature of interventionist funding from public sources, to achieve early step changes in transport accessibility, with costs eventually to be recovered from land value gains. This is proposed as a means of leveraging initial development engagement on a tentative and slowly trusted basis. In that way, land value yields can become a shared coinage for both developer payback and for public pump-priming.

Crossrail 2 funding, land value and density evidence

- 62 In March 2018 the Government and the Mayor of London launched an independent affordability review to locate alternative funding streams for the project and to reduce its overall cost.
- 63 The review is currently being looked at by the Department for Transport (DfT) and TfL. It is exploring many sources of funding "including land value capture – a way of monetising the increase in land values that large infrastructure projects can".
- 64 Crossrail 2 MD Dr Michèle Dix is quoted on 11 October 2018 as preferring direct tax rises to pay for Crossrail 2 (<http://www.cityam.com/265442/crossrail-2-boss-michle-dix-says-she-would-like-tax-rises>).
- 65 Dr Dix explained the same day: "As part of our overall infrastructure investment work, TfL published a land value capture report in February 2017 setting out the uplift in value benefits along the route and how people might help contribute towards the cost of a scheme. There is currently no

process, powers or legislation in place to apply land value capture. Any new land value capture proposal would need to be carefully considered and new powers granted." Elsewhere she is quoted as being interested in the 'DRAM' funding option discussed in Savill's April 2018 paper (link above).

66 Other relevant studies have included:

- London First "Paying for Crossrail 2" paper (July 2018) (<https://www.londonfirst.co.uk/sites/default/files/documents/2018-07/PayingForCrossrail2.pdf>)
- PWC report (November 2014) (<https://www.pwc.co.uk/capital-projects-infrastructure/assets/crossrail-2-funding-and-financing-study.pdf>).

67 The **London First** paper noted that the independent review would explore options for improving the affordability of the scheme in three areas: cost and scope, funding and financing. "It is likely that action will be required on each of these fronts for Crossrail 2 to proceed, but at the very least some additional sources of funding are likely to be required."

68 The list of funding sources is considerable. It includes:

- CR2 net operating surplus.
- Business Rate Supplement once Crossrail 1 is paid for in the mid 2030s.
- Mayoral Community Infrastructure Levy: "TfL has consulted on an enhanced MCIL2 to help fund Crossrail 2, which would supersede MCIL1 and the associated planning obligation/section 106 charge scheme from April 2019. TfL's Crossrail 2 proposals then assume a further stepped increase in MCIL rates in the mid-2020s. Taken together this would enable a significantly greater contribution from MCIL to Crossrail 2 than was the case for Crossrail 1."
- Over-station development.
- A one-off fares increase.
- Precept via Council Tax.
- Limited increase in Business Rates.
- Station development partners.
- Sharing future government revenues such as Stamp Duty.
- Land value capture. "TfL has identified a number of potential new mechanisms for capturing value uplifts, including a transport premium charge. While such measures could in principle release substantial additional resources for transport investment, they face significant practical and political obstacles before they could be implemented. The working group therefore encourages the Review to explore and develop these measures further."
- Re-assessing existing financing assumptions.
- Use of private finance.
- Asset sales.

69 London First aspired to a positive independent review outcome by the end of 2018, paving the way for revised route consultation in 2019, and a Hybrid Bill deposited by 2021.

70 JRC notes that even if land value capture didn't proceed rapidly, it is clear that there is a strong desire to continue the existing known mechanisms of a Business Rate Supplement, and a higher CIL charge than adopted for Crossrail 1. These may in their own right risk a dampening effect on early developer commitment, as appears to be the current case with Crossrail 1.

- 71 It is unclear what compensatory developer stimulus might be put in to play, to ensure early developer engagement. Several schemes proposed under the current £5½ bn Housing Infrastructure Funding (HIF) programme, have proposed loans to relieve early developer spend on elements such as basic land remediation, utility provision and road infrastructure improvements.
- 72 This could seem a little perverse, for a Government-funded loan to be turned round and repaid to Government to help pay for Crossrail 2. However such schemes should add net value for all participants though a multiplier (a share of the land value gained), initially to the developer, soon after for initial property sales with the loan repaid to Government, and then *further* dense housing in the area with developers still actively involved, which would be tithed from some form of MCIL or specific land value capture and allocated to Crossrail 2.
- 73 Meridian Water’s now-approved HIF bid for £154m also includes £40m for early rail improvements to raise service levels, which should also stimulate marketing of a higher accessibility catchment.
- 74 The **PWC report** was published earlier, on 27 November 2014, and therefore predates the Martin Buck Crossrail 1 report (2017) and the Savills report on recent rail project impacts and new funding options (April 2018). However it closely echoes a similar but separate 2014 London First report, which is noted here but not discussed.
- 75 PWC says “there must be a credible funding and financing strategy”, in addition to a strong business and economic case. Their feasibility study seeks to address this. The study’s executive summary is mercifully short and blunt with its findings, that many conventional funding sources will not yield the scale of financing that might be desired, and that it is only with a combination of multiple income sources that a 50% cover might be funded, as shown below.
- 76 The underlying reason for this (and this was for an estimated £27½ bn project) was because a large proportion of the CR2 wider benefits arise from better travelling facilities and a better network, not from easily taxable sources.

Figure 1-1: Funding mechanisms

	Percentage of funding target	Cumulative Total
Project Generated Revenue	20.0%	20.0%
BRS	15.2%	35.2%
Enhanced Mayoral CIL	5.8%	41.0%
Resale of Land and Property	1.9%	42.9%
Doubling of Mayoral CIL	5.8%	48.7%
Council Tax Precept	1.5%	50.2%

77 So far as a land value capture process is concerned, the PWC report is not encouraging. The summary of Section 7 is repeated below in full:

Section 7 considers the potential contribution to the funding of the scheme from property related developments and from land owners adjacent to the line.

First we consider the potential for capturing the uplift in business rates and Borough CIL that would be expected to arise from the enhanced investment activity and property values in the areas around Crossrail 2 stations. This is a form of 'Tax Increment Financing' (TIF), which draws on the experience of developing the funding package for the Northern Line Extension (NLE).

Our conclusion is that these funding streams taken together would raise a relatively small proportion of the funding needs of the project. With the assumptions used, value capture around Crossrail 2's stations would only raise an estimated 1% of the project's funding requirement.

This relatively low contribution reflects the broad purpose of the Crossrail 2 project, which would provide relief to existing lines and improved access across a significant area of London. The benefits of Crossrail 2 will be widely spread both within and outside the London boundaries, and there is expected to be relatively limited

⁴ Generally at current rates, but with some changes as described in Figure 5-5.

scope for incremental development around the proposed Central London stations. In comparison, the NLE had a much lower funding requirement, was focused on improving access to a single, short corridor close to the centre of London and was able to draw upon and capture significant incremental property taxes from the transformational Nine Elms/Battersea development.

We have then considered the potential for the scheme to be partially funded by contributions from existing landowners along the route, drawing on the experience of Crossrail 1. Our conclusion from this is that there are fewer large landowners who are likely to contribute directly to the scheme, in the same way that for example Canary Wharf Group and BAA made direct contributions to Crossrail 1.

Finally, we have considered whether value generated from large scale transformational developments could be captured for Crossrail 2. Our conclusion is that only a small proportion of Crossrail 2 could be funded this way. We recognise that there are international examples of large contributions to the funding costs of transport projects being secured through capturing the value from large scale property development. However, the costs and risk associated with development in London make it risky to rely on the proceeds from developing land. Any value contributed by developments is likely to be extremely sensitive to house prices and land values. There are also potential legal issues relating to who should benefit from any uplift in land value following a change of use.

In summary, our conclusion is that the total funding that could be raised through this approach is relatively small in proportion to the scheme costs, and that there would be significant risks attached to it.

78 As with other studies, there is much more interest shown in the gross funding take and how this can build to the required funding percentage, than there is about the direct extent of scaling density (and hence incremental value) in relation to planned train service levels.

79 PWC assumed as the base case that "After discussions with TfL and the Steering Committee, the base assumption that we have used for this study is that major construction works would begin in 2020 and last for approximately 10 years. Full operations are assumed to begin in 2030, with no prior phasing. Two scenarios based on a 2025 and 2030 construction start have also been modelled, with the results shown in Section 5.7."

80 The PWC report has a very useful discussion on revenue-raising possibilities and assumptions on the BRS and Mayoral CIL in Sections 5.2 and 5.3. Page 30 makes this comment, in section 5.3. As shown above, BRS is seen as raising over 15% but CIL under 6%:

Because Mayoral CIL revenue is from new developments it is strongly linked to the economic cycle. This makes it difficult to predict in any specific year. However, the high level of growth forecast for London's population is likely to drive a continuing high underlying level of development activity.

Because of the volatility of Mayoral CIL, it would need to be combined with other more stable cashflows in order to raise debt against this income stream. Debt was not raised against Mayoral CIL on Crossrail 1.

Setting Mayoral CIL rates at an appropriate level could be a challenge. Applying even a very low Mayoral CIL rate will make certain marginal developments unviable; there is a risk that, by setting a rate too high, a significant number of development proposals may be made unviable, damaging economic growth in London to an unacceptable degree. A change in Mayoral CIL would require a review or an Examination in Public (EIP) process.

81 Section 7 is also a useful assessment, in pages 45-56, of the scope for value capture from land and property value enhancement. Some important extracts are set out:

Section 7.2.1:

However, station zone value capture's dependence on increases in property value means that it could be vulnerable to economic downturns. Similarly, station zones which are already built up might also fail to generate material revenues from value increases. Station zone value capture's reliance on at least some fiscal devolution also makes it politically and administratively challenging: depending on the form of value capture mechanism, HMT revenue could be affected, as could Borough CIL revenue.

For each element of station zone value capture, a 'baseline' needs to be established. This baseline would be an estimation of what income from the specific levy would be if the project did not go ahead,²⁷ over the project period. This will clearly involve a degree of judgement. The 'baseline' is illustrated in Figure 7-1 below. Once a baseline has been established, any tax income above this level would be set aside as an additional source of funding.

²⁶ City of Chicago (2014) 'TIF Balance Sheets' CityofChicago.org, available at http://www.cityofchicago.org/content/city/en/depts/dcd/dataset/tif_balance_sheets.html.

²⁷ Institute of Revenues, Rating and Valuation (2013) 'The Localisation of Business Rates' available at http://www.irrv.net/forums_webinar/2013/01/2013_01_07_01/webinar_slides.pdf

Then 7.2.2:

7.2.2 Station Zone Value Capture Mechanisms

Two mechanisms have been considered for station zone value capture model. These are:

- Incremental Business Rate Income (IBRI); and
- Borough Community Infrastructure Levy (Borough CIL) (which is a separate levy from Mayoral CIL which is discussed in Section 5.3).

It is also possible that other forms of property tax such as Stamp Duty Land Tax (SDLT) could be included in value capture mechanisms, but as this would require further fiscal devolution powers, which are by no means guaranteed to be delivered to the GLA, we have excluded them from our analysis.

The amounts generated under these two mechanisms have been calculated by Quod, Steer Davies Gleave and Carter Jonas (TfL's property consultants) on the basis that the zones cover an 800 metre radius around each exit of the 14 Crossrail 2 stations in Greater London. Where part of the zone is cut off by a barrier (for example, the Thames) the area cut off would not be part of the zone.

As part of their analysis Quod, Steer Davies Gleave and Carter Jonas considered site capacity around 35 stations on the route, excluding sites already in the planning system. They looked at three different planning scenarios:

- current/emerging planning policy;
- flexible planning policy (mainly relating to the release of industrial land and some Metropolitan Open Land); and
- flexible planning policy combined with high densities of 405 dwellings per hectare, a similar level of density to the Battersea Power Station site.

The results in the Borough CIL section use the figures provided for the current/emerging planning policy scenario but the impact of other planning scenarios is shown in sensitivities.

7.2.4.5 Estimated funding contribution

On the basis of the above assumptions, it is estimated that Borough CIL could **provide 0.3% of the total Crossrail 2 funding requirement**.

This estimated amount of Borough CIL income is lower than the combined Borough CIL and s106 income on the NLE project, with £203 million of estimated nominal income for Crossrail 2 and £352 million of planned nominal income for the NLE. This is primarily driven by the fact that the NLE benefits from a very substantial anchor development at Battersea Power Station with a high density of units. Applying similar densities and flexible planning in the Crossrail 2 station zones would produce nominal income of £639 million.

While £203 million is a substantial sum of money, it would only cover 0.3% of the funding requirement of the Crossrail 2 scheme. In contrast the £352m of nominal income on the NLE is estimated to cover over 25% of the capital costs of the scheme once finance costs are taken into account. This highlights the difference in the relative size of the two projects.

The following sensitivities have been run to show the potential funding capacity under a range of different assumptions.

Figure 7-5: Station Zone Value Capture (Borough CIL)

Sensitivity No	Description	Nominal Income (£m)	Funding Requirement Percentage	Difference from Base Case
Base Case	Borough CIL capture (existing planning restrictions, 50% capture rate, 30% affordable homes)	203	0.3%	
1	Flexible planning	416	0.5%	0.3%
2	Flexible planning + very high density development	639	0.8%	0.6%
3	Capture Rate 72.2%	292	0.4%	0.1%
4	Affordable homes 50%	145	0.2%	-0.1%
5	Affordable homes 10%	260	0.3%	0.1%

Source: PwC model

Note: The base case assumes 30% of developments are affordable homes and are exempt from CIL

7.2.4.6 Conclusion

A 50% share of Borough CIL in zones around the stations could raise significant amounts in absolute terms. However, in terms of the funding requirement of Crossrail 2, the amounts are relatively minor, in the region of 0.3%. If the developments were to have a higher level of density, similar to the anticipated level for the Battersea site on the NLE, this contribution could almost treble.

In 7.3.3:

Of potentially greater interest for the Crossrail 2 project are areas on the route that are within the London boundary, but have significant development potential. The possibility of developing these suburban greenfield and brownfield sites into large new residential sites could create value that could be captured and put towards the costs of the project. The options for this are discussed in Section 7.4.

In 7.4.2:

An MDC (or MDCs) for the Crossrail 2 route could develop a master plan for each MDC area. The MDC could also ensure that utility, transport and social infrastructure was provided to the MDC developments as appropriate.

However establishing a viable MDC could face significant obstacles.

Continuing:

- Finding suitably large parcels of land represents a significant challenge.
- Landowners and boroughs bordering the MDC sites may have concerns about density of development, which will need to be addressed. Part of any value captured from developments in an MDC may need to be used to address these concerns.
- The investment in the sites by the MDC would be a long-term and substantial commitment. The cost of land purchase and remediation of building the essential infrastructure would need to be found from public sources, and this investment would have a long pay-back period. This is especially true for brownfield sites.

If areas can be identified and agreed for development as MDCs, then it is likely that the value of land in these areas will increase significantly, and the MDC could potentially make a contribution to the Crossrail 2 project.

In the following sections we set out some of the key issues with trying to capture value from developments by using MDCs. Specifically, we have considered two methods

1. applying an MDC specific CIL to MDC areas; and
2. an active role in development of land by the MDC in the MDC areas.

An MDC has planning and CIL-levying powers which are similar to a borough's. Therefore Borough CIL would not apply in an MDC. Instead the MDC can apply an MDC- specific CIL ('MDC CIL'). This could have two purposes:

- To pay for necessary local infrastructure: in the same way as Borough CIL, MDC CIL income would contribute to local infrastructure costs (which are likely to be significant in an MDC area – access roads, medical facilities etc.);
- To capture the uplift in land values: because of the change in the value of land due to changes in planning status and density within an MDC area, MDC CIL could be set at a higher rate than typical Borough CIL, and this additional amount could make a contribution to the cost of the Crossrail 2 project.

Charging a high rate of MDC CIL to extract value from a rise in land values would be a relatively simple way of capturing value. However, setting such a rate for MDC CIL has risks – if it is too high it could discourage development, and if it is too low it could lead to super profits for landowners.

This is less of a problem with existing CILs as they are typically set at a lower level, minimising any effect on development activity.

An alternative option which is available to an MDC is a more interventionist approach, where the MDC would purchase the land, and take risk on its disposal value. The concept is similar to the precedent set by the Olympic Park Legacy Company (OPLC).

The benefit of this approach compared with MDC CIL is that the value captured is related to the specific rise in the value of specific land areas within the MDC. However, this approach has the additional challenges of funding land purchase and the potential risk of claims for additional compensation from previous landowners.

We have done some preliminary modelling for brownfield schemes, and this indicates that achieving a contribution from development is possible, but is especially sensitive to:

- the level of house price increases;
- cost of land purchase (which will depend on its current use); and
- cost of land remediation (which can be significant for brownfield sites).

Therefore, while there is the potential for a contribution from MDC developments to the cost of a scheme, there are substantial risks attached to any such contributions. However, MDCs could be a part of the delivery mechanism for the large number of dwellings that may be required to serve London's growing population, and the developments that deliver these dwellings could utilise the additional transport capacity provided by Crossrail 2.

7.5 Conclusion

Our primary conclusions from this section are:

- The value that can be derived from capturing incremental business rate and Borough CIL in station zones is substantial, but will not fund a large proportion of the costs of Crossrail 2. This is not surprising given that there are no significant 'anchor' developments which are driving the need for the scheme.
- Property owners on the Crossrail 2 route are unlikely to make contributions which will fund a large proportion of the costs of the project.
- Where more transformational developments are taking place around Crossrail 2 stations, an active intervention by an MDC could generate a contribution to the costs of the project, but that there is significant risk associated with such developments.

Therefore, while extra funds from developments can make a contribution to the scheme we do not believe that they are sufficiently large or robust enough to replace the existing mechanisms discussed in Sections 3-6.

Concluding JRC comments

- 82 The latest reports and comments show the increasing urgency to find enough upfront funding, to meet tough Government criteria for contributions to construction costs for major projects.
- 83 This is targeted as 50%+ for Crossrail 2, in a situation where some direct London funding mechanisms were already paying until the 2030s for Crossrail 1, and potentially now until nearer 2040. Not much else is new territory, not covered in the preceding reports.
- 84 The PWC report however is useful in recognising there should be scope to look to flexible planning and very high density development over 405 dwellings per hectare. All the useful caveats are set out, about not deterring or killing the golden goose that lays the eggs.
- 85 Therefore this returns us to the need to find a recourse mechanism that underpins, for developers, the 'creation of a nest and the laying of those eggs', some required to be 'taxable' quickly or in due course.
- 86 However expectations should not be high, about the scale of additional yield from land value capture. Within that broad context, support for underlying infrastructure investment, and additional marketability based on better accessibility, have the rudiments of a beneficial methodology.
- 87 This can be underpinned by a planning determination to focus on stimulating high density development which can yield taxable gains. However this is still newish financing territory within Britain, and with large reliance on willing, participating developers, and a stable economic outlook.