Funding the Infrastructure and Affordable Housing for the East West Corridor

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Centre for
Progressive
Capitalism

*dynamic markets,
inclusive societies*

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Contents

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Executive Summary

The 2017 general election engendered a surprising but welcome cross-party consensus that local authorities should be able to benefit from the rise in land values to fund infrastructure, thereby opening up new land for housing. Indeed, it was mentioned in both major party manifestos. Extensive research by the Centre for Progressive Capitalism has estimated that land value capture across England could unleash up to £185bn of incremental investment in infrastructure and affordable housing over the next 20 years.[1]

This report sets out how the rise in land values could potentially support a £14bn investment in infrastructure and affordable housing along the Cambridge – Milton Keynes – Oxford corridor (East West corridor). The proposal is predicated on Parliament passing primary legislation to enable local authorities participating in large scale infrastructure projects to receive a greater share of the uplift in land values to fund the project.

The aim of this report is to demonstrate how the rise in land values can be applied to a specific set of infrastructure projects and provide the basis for how the capital market might be accessed to provide the necessary financing. The East West corridor is a good test case given that the National Infrastructure Commission (NIC) has already published considerable detail, including the necessary costed infrastructure projects and identified vacant land where incremental housebuilding can take place once the infrastructure has been delivered.[2]

Critically, the NIC has identified that the lack of housing and connectivity across the corridor may well result in damaging one of the most productive regions of the British economy. As the economy starts to slow, partly due to the uncertainty over Brexit and higher inflation dampening consumption, it is incumbent upon the government to take a long, hard look at what it might do to boost investment and productivity. Enabling large scale investment in housing and infrastructure to support some of the most dynamic and productive enterprises surely must be a priority for any government wishing to improve the economic welfare of its citizens.

The prize of investing £14bn along the corridor is substantial, including:

- 150,000 houses to be constructed along the East West corridor doubling housing output, with over a third affordable housing, and without the need to build on green belt land
- £8bn of transportation infrastructure investment including the East West railway, a new expressway and numerous small scale transportation projects, as well as £1bn of additional investment in green space and utilities

These investments could be funded by up to £22bn of income over the project derived from:

- £9.3bn from the sale of residential and commercial plots with planning permission where the windfall gain in land values flows to local authorities
- £8.6bn in income from social housing
- £4.4bn from business rates supplement, track charges from the new railway and revenue from utilities infrastructure

1. http://progressive-capitalism.net/2017/03/estimating-land-value-capture-england-updated-analysis/

2. https://www.gov.uk/government/publications/the-national-infrastructure-commissions-interim-report-into-the-cambridge-milton-keynes-oxford-corridor

To what extent these costs and revenues are accurate over the longer term will require a much more detailed analysis of the mechanics of the project, which in turn will be key to understanding how the project could be financed from the capital market. However, without being able to benefit from the uplift in land values, the project is not viable unless the government decides to fund the project directly. Hence channeling the uplift of land values remains the critical element in unlocking large scale investment in infrastructure and affordable housing.

The conditions along the East West corridor are extremely conducive to such a project, however, this model could also be applied to a number of other economic zones across the country. Analysis by the Centre for Progressive Capitalism suggests that the greatest immediate returns could be across the West Midlands, the Edinburgh City region[3], as well as supporting the funding of projects such as Crossrail II.

The importance of the corridor

The National Infrastructure Commission (NIC) highlighted in its interim report on the East West corridor, that a lack of housing and connectivity are putting the future success of one of the most dynamic and productive parts of the UK at risk. As the reports states:

> The Cambridge-Milton Keynes-Oxford corridor is home to 3.3 million people and hosts some of the most productive, successful and fast-growing cities in the United Kingdom, as well as world leading universities, knowledge intensive high-tech firms and highly skilled workers.
>
> The success of the area has fuelled exceptionally strong demand for housing across the corridor and in its key cities, which has not been matched by supply. Lack of housing supply is leading to high house prices and low levels of affordability, for both home ownership and private rental. The ratio of median house prices to earnings is 13:1 in Cambridge and 12:1 in Oxford making them two of the least affordable cities in the UK.
>
> This situation is exacerbated by poor east-west transport connectivity and limited 'last mile' capacity into certain centres and other employment locations. In contrast to strong north-south radial links extending from London, east-west trips across the corridor are difficult, slow and unreliable. As a result, commuting between key hubs on the corridor is almost non-existent and the area does not function as a single labour market.
>
> Meeting the corridor's housing and connectivity needs is a significant financial and planning challenge. It will require radical thinking to enable new and expand current settlements at the scale needed. Crucial to this will be creating settlements that build on the attributes that make the corridor an attractive place to live and work. This will require different approaches to infrastructure and development in different locations. This could include the densification of existing towns and cities, the development of substantial urban extensions, or the construction of wholly new settlements. It may require all of these things.
>
> Sustainable communities need to be supported by the right infrastructure. This includes the immediate, local connections into specific sites and developments, as well as the broader

3. Legislation related to the land compensation rules that determine who benefits from the increase in land values is a devolved power, and therefore is in the remit of the Scottish government.

transport links that connect homes to jobs and services, allowing people to access the wider economy and supporting their quality of life. It also includes utility, flood and digital networks.

Infrastructure and housing must be planned together. The current development of new strategic east-west links, particularly if combined with other more targeted local infrastructure improvements, provides an opportunity to achieve this and prepare an ambitious long-term strategy for the development of the corridor.

As the NIC analysis shows, the East West corridor does not currently function as a unified economic geography. All three cities have developed successful distinct, high value-added economies independent of each other, and hence are not well connected in terms of transport. Although the populations of the cities in the area are relatively small, Oxford, Milton Keynes and Cambridge are important centres of employment, experiencing high levels of net in-commuting and relatively large labour market catchment areas.

The levels of growth in employment and output have been significantly higher than the national average, which is driven by high levels of innovation and a high-quality skills base. As a result of these factors, the corridor has sustained high levels of job and population growth, with the increasing demand for housing and office space driving up land values.

It has been estimated by the NIC that the area could see job growth of 335,000 to 2050, with further analysis suggesting that the economic potential to be almost double this. The NIC's view is that key constraints on future growth are a lack of sufficient, suitable and affordable housing and weaknesses in the transport infrastructure required to connect cities in the area to each other and to labour supply.

The NIC has proposed a strategy of investment in transport infrastructure across the corridor to link up with new areas of housebuilding to meet the current excess demand for housing in addition to ensuring that as the economy develops future supply can also keep up with demand.

The project

As part of this strategy, NIC commissioned the firms Arup and Savills to provide a detailed analysis of the costs and timelines of the transport projects in conjunction with understanding to what extent this incremental investment might increase the rate of housebuilding, assuming employment prospects continue to grow. Based on the detailed infrastructure projects, Savills estimated that the rate of housebuilding across the entire corridor could double from 15,000 units per annum to 30,000.

The Centre for Progressive Capitalism (Centre) has taken this detailed framework but reduced the scale of the corridor to ensure that the core infrastructure is beneficial to the entire local authority. The rationale for doing this is related to the specific funding mechanism proposed by the Centre. As a result, the following local authorities were removed from the analysis: Daventry, East Hertfordshire, Luton, North Hertfordshire, Northampton, South Northamptonshire, Stevenage, Swindon and Wellingborough.

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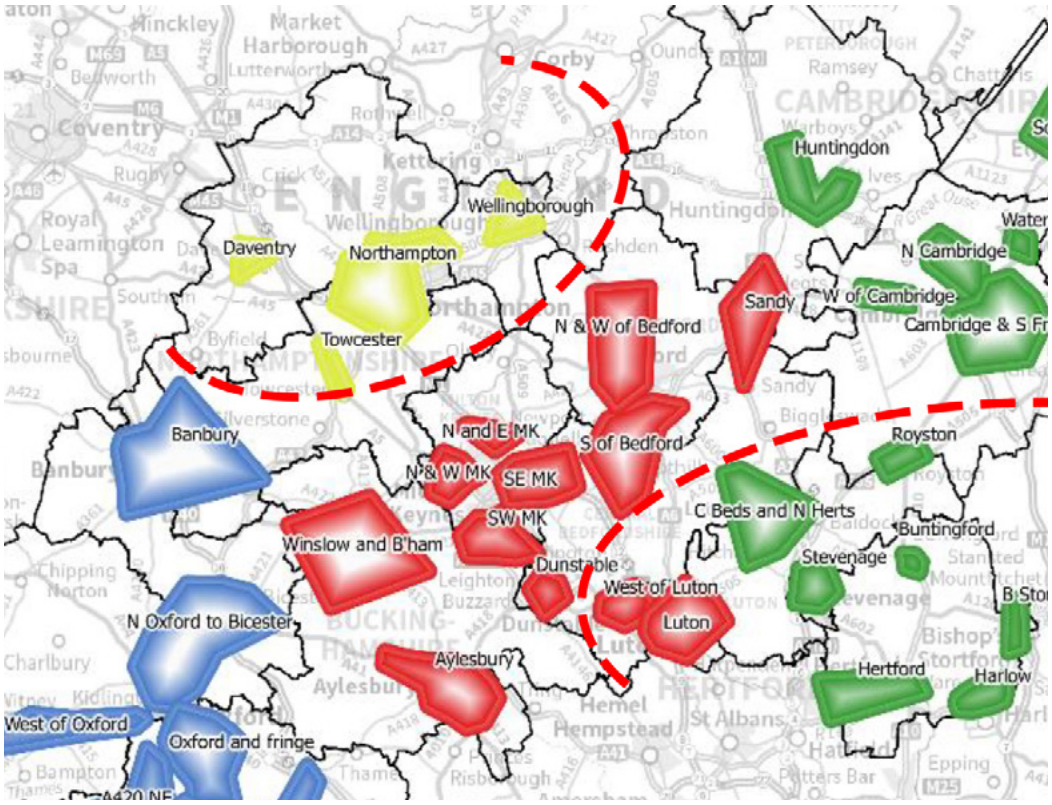
An analysis of the Savills data across the core local authorities suggests that housebuilding based on current local plans could be doubled if the infrastructure investment was forthcoming. The promotional sites (sites which currently do not have planning permission) identified along the corridor would allow an additional 148,000 to be built if the identified transportation projects were delivered. Current housing plans along the corridor, if delivered, would generate around 150,000 units over the next 15 years. However, if the additional infrastructure investment was forthcoming, this could double to around 300,000 homes, without the need to build on green belt.

The below map outlines the distinction between the core and peripheral local authorities along the route with the red dashed lines excluding authorities significantly south and north of the east west corridor.

Map 1: Revised core area of the east west corridor



Source: Savills, Centre for Progressive Capitalism

The 13 core local authorities that will more directly benefit from the east west corridor include: Oxford, West Oxfordshire, Vale of White Horse, South Oxfordshire, Cherwell, Aylesbury Vale, Milton Keynes, Central Bedfordshire, Bedford, South Cambridgeshire, Huntingdonshire, East Cambridgeshire and Cambridge.

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Estimated project costs

The Centre estimates that the relevant transportation projects for the core local authorities, including the incremental and transformational scenarios, as identified by Arup, will cost in the region of £7.9bn.[4] The baseline projects listed by Arup have already been allocated funding and therefore have not been included.

Table 1: Core transportation projects

Transportation Projects	£m
Cambridge Incremental	417.4
Milton Keynes Incremental	168.9
Oxford Incremental	926.3
Corridors Incremental	5286
Cambridge transformational	550
Milton Keynes transformational	170
Oxford transformational	50
Corridors transformational	310
Total	**7,878.6**

Source: Arup, Centre for Progressive Capitalism

In addition to transportation costs, other infrastructure such as schools and healthcare facilities need to be funded, as does housing subsidy due to its high cost for many households.

Centre analysis suggests that around 63% of large scale infrastructure projects tend to be for transportation, with an additional 37% of education, health, utilities and open space.[5] This implies that the project will require an additional £2.9bn for non-transportation infrastructure. Of this £2.9bn, an estimated £1.5bn would be required for education and healthcare facilities due to household growth, with the residual allocated to utilities, open space and land preparation.

Moreover, given the on-going housing affordability issues, it is critical that these large-scale projects are able to address the challenge of providing affordable housing for key private and public sector workers, who are unable to pay market rents or get on to the housing ladder. For low income households – earning between the 3rd and 5th decile of take home pay – the cost of renting can be prohibitive. Without addressing this key issue, the East West corridor will struggle to recruit and retain sufficient staff to enable firms to expand and drive productivity growth.

Owner occupation is equally unaffordable for new entrants to the labour market along the East West corridor. Based on the most recently published house price and mortgage data only three local authorities are affordable for individuals earning the local median wage or less.

4. See list in appendix, p16

5. Bridging the infrastructure gap Table 3.1

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Analysis undertaken by Shelter for this project estimates that at least £3.4bn would be required to subsidise housing for rent and sale along the corridor. This is based on current local authority affordable housing policies, and would deliver more than 26,000 homes at social rent for those on the lowest incomes, 13,000 shared ownership homes for those seeking to buy but unable to, and more than 13,000 Shelter Fair Rent homes [6] affordable to low-income workers in the region.

The Centre believes that the government should commit itself to funding the additional capital expenditure of £1.5bn for new schools and healthcare required for the additional households along the corridor. This would demonstrate that the government is truly committed to supporting housebuilding with these new public services providing additional benefits to existing residents in areas of increased housebuilding. Indeed, there remains little incentive for residents to support increased housebuilding if there is not a significant improvement in infrastructure to take account of an increase in the population.

Finally, an additional £1bn is required to manage the track and operations of the development corporation over the period.

Assuming that the government is willing to fund the necessary education and healthcare services, this would still leave £13.6bn of affordable housing and infrastructure to be funded in addition to ongoing operational and maintenance costs related to the infrastructure.

Table 2: Costs 2019 - 2058

Costs	**£bn**
Transportation	7.9
Additional Infrastructure	1.3
Affordable Housing	3.4
Operational costs	1.0
Total	**13.6**

Funding mechanisms

The various potential funding mechanisms were discussed by Metro Dynamics in a paper written in conjunction with the Arup and Savills report for the NIC which specifically highlighted the benefits of land value capture, although there are many ways in which this might be implemented.

The Centre agrees that the majority of the revenue streams will need to come from land value capture if this project is to be financed. However, the current legislative framework in England & Wales is not conducive to supporting the funding of these kind of projects unless the landowners are all public. This is because the difference between use value and residential land values flow to the landowner as a result of the current land compensation arrangements.

6. https://england.shelter.org.uk/professional_resources/policy_and_research/policy_library/policy_library_folder/briefing_living_rent_homes

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Recent attempts to improve the "no-scheme world" system in the Neighbourhood Planning Act, which aims to capture a rise in residential land values associated with an infrastructure project, will likely provide some additional funding. However, these additional revenue streams are unlikely to be of a sufficient scale necessary to finance infrastructure. It is the rise between use and residential value where most of the value is derived, rather than incremental residential values as a result of the "scheme".

Hence the Centre believes that to fund this critical project, new legislation needs to be passed by Parliament as part of a new Housing & Investment Act. This Act would need to designate specific responsibilities to local authorities for the drawing up of infrastructure and housing plans and for the funding of the infrastructure to use land value capture. It would detail how private landowners can become risk sharing partners in large-scale public infrastructure projects and would also amend the 1961 Land Compensation Act with respect to the terms of compensation.

Central to capturing the windfall rise in land values will be the need for a development corporation to be set up and assemble the strategic land designated in the plan. The development corporation would need to raise the necessary finance, commission the infrastructure, capture the revenues from the sale of plots with planning permission and revenues associated with the infrastructure including social housing, and any other agreed taxes to fund the project.

The Centre believes that the following recommendations are critical for the successful funding of the identified £13.6bn costs identified above, and would enable the necessary infrastructure and housing to be built to support one of the most dynamic growth engines of the country.

Legislative recommendations

1. Set out the responsibility of local authorities across the relevant economic geography to provide a strategic infrastructure and housing plan. In addition, there would be a responsibility for the local authorities to fund the local public infrastructure using the rise in land values as a result of development through a jointly owned development corporation.

2. Remove section 106 obligations and the community infrastructure levy from the designated area of the infrastructure and housing plan, thus making the whole development process far simpler.

3. Provide the development corporation, on behalf of the respective local authorities, the right to acquire undeveloped land to be used for the purpose as set out in the infrastructure and housing plan.

4. Enable private land owners to become risk sharing partners of the scheme if the owner agrees to put the land concerned to the stated use within a reasonable period of time. The uplift in land values as a result of the development measure will be paid out to the infrastructure provider. However, the returns above this agreed level will flow to the landowner and can be considered to be the financial reward for the risk sharing of the project.

5. Where an owner cannot for economic reasons reasonably be expected to implement the development project, the development corporation can take possession of the property in

keeping with the amended land compensation arrangements. (see point 7)

6. Once land for large scale sites has been assembled by the development corporation, it would immediately be awarded planning permission for the use specified in the project.

7. The 1961 Land Compensation Act is to be amended so:

   a. No account shall be taken of prospective planning permission in land designated in an infrastructure and housing plan by development corporations on behalf of a local authority or group of local authorities for compensation purposes.

   b. Section 17 of the 1961 Act to be amended so certificates of appropriate alternative development would cease to apply in those areas designated by local authorities for development.

   c. The market value principle as set out in section 5 of the 1961 Act will still determine the value of the land. This is defined as the price which would be achieved in an ordinary transaction at the time when the assessment is made, taking into account the actual characteristics, general condition and location of the property but which would exclude all planning permission assumptions which would have been removed from the compensation arrangements. This will change the way in which the land market trades making the market more efficient.[7]

In this instance, an "East West Development Corporation (EWDC)" could be founded to deliver an agreed infrastructure and housing plan. The EWDC would assemble all the public and private strategic land sites, defined as sites able to deliver greater than 250 units across the 13 local authorities without planning permission.[8] The EWDC would then commission the infrastructure and ensure that the building up of the sites proceeds according to the plan.

The legislative changes recommended would also open up the opportunity for private landowners to become risk sharing partners on large-scale infrastructure projects. Landowners would be able to profit from higher returns generated by the quality of their development after the infrastructure costs have been paid for based on the uplift in land values.

Both the private and public landowners would need to implement the commercial and residential units within reasonable timescales, and of acceptable standards. Given all landowners would also be shareholders in the investment vehicle, the incentives to build good quality homes in reasonable time frames would be in place. Those landowners who do not wish to become risk sharing partners would be obliged to sell their land to the development corporation based on the new compensation rules.

It is envisaged that the equity structure of the EWDC would be allocated based on the value contributed through land holdings. However, the revenue streams would need to flow into a single pot. As the EWDC will need to provide the financing for the infrastructure, a detailed understanding of how the revenue streams would be generated is key to the project. The life time of the project with regards to financing is expected to be around 40 years.

7. This point appears to have been misunderstood by a number of commenters on our research. For example, TFL made the erroneous assumption that we recommended to acquire land at use value. This is inaccurate as our argument requires the market rules to be amended to reduce the effects of monopoly pricing. https://www.london.gov.uk/sites/default/files/land_value_capture_report_transport_for_london.pdf

8. Savills refers to these sites as "promotion"

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Revenue streams

Residential property uplift

The Centre estimates that the total potential land value capture along the route for the additional housing units identified by Savills would generate around £8.6bn. The land value capture from residential housing would only apply to 64% of market units as the 36% of affordable housing units would generate rental income instead.

Table 3: Incremental housing units enabled by the identified transportation investment

Local Authority	# housing units identified from strategic sites
Oxford	15,132
South Oxfordshire	31,500
Vale of White Horse	5,732
West Oxfordshire	10,816
Cherwell	7,546
Aylesbury Vale	17,506
Milton Keynes	19,063
Central Bedfordshire	10,971
Bedford	15,300
South Cambridgeshire	3,500
East Cambridgeshire	5,495
Huntingdonshire	3,750
Cambridge	1,300
Total	**147,611**

Sources: Savills, Centre for Progressive Capitalism

The Centre has taken these estimates of future housing construction, the % of affordable housing and computed the total potential land value capture within each local authority using density data, local industrial, residential and agricultural values. An assumption has been made that all sites within Oxford and Cambridge are industrial sites, whereas the rest of the strategic sites are largely greenfield (90%).

The estimates are nominal and assume constant house prices, hence any additional value created by developers therefore would be incorporated into their profits.

Table 4: Potential land value capture by local authority

Local Authority	housing units	market value housing units	Density per hectare	Total residential land value £m	Total agricultural land value £m	Total industrial land value £m	Total Uplift £m
Oxford	15,132	9,684	55	763.73	0.00	194.15	569.57
South Oxfordshire	31,500	20,160	30	2,482.92	13.34	74.10	2,395.48
Vale of White Horse	5,732	3,668	30	325.56	2.43	13.48	309.65
West Oxfordshire	10,816	6,922	24	867.93	5.72	31.80	830.40
Cherwell	7,546	4,829	30	417.13	3.20	17.75	396.19
Aylesbury Vale	17,506	11,204	28	1,457.98	7.94	44.12	1,405.92
Milton Keynes	19,063	12,200	34	986.45	7.17	39.82	939.46
Central Bedfordshire	10,971	7,021	26	653.74	5.85	18.27	629.62
Bedford	15,300	9,792	40	523.90	5.30	16.56	502.03
South Cambridgeshire	3,500	2,240	30	241.38	1.62	5.05	234.71
East Cambridgeshire	5,495	3,517	18	202.70	4.23	13.22	185.25
Huntingdonshire	3,750	2,400	27	133.21	1.92	6.01	125.27
Cambridge	1,300	832	50	95.49	0.00	11.26	84.23
Total	**147,611**	**94,471**					**8,608**

Sources: Savills, Centre for Progressive Capitalism, DCLG

The sale of any newly built property will generate an income stream for the EWDC based on the increase in land values. The model uses the land price data for 2015 from DCLG and assumes these nominal values are constant throughout the period to keep it simple. So, if a developer sells 1,000 units in the Bedford region, if house prices rise over the period, the land value captured would be computed on the constant price. Hence any incremental rise in house prices would lead to incremental profits for the landowner/developer.

The model makes the assumption that house prices will not fall over the period. To what extent this assumption is valid remains to be seen. However, as the NIC has shown, the East West corridor is an area of above average employment growth, high housing demand and with a strong skills base implying that the outlook for housing demand along this corridor remains positive. Based on these factors, house prices can be expected to grow, implying a positive outlook for potential profits from housebuilding.

Social housing income

In addition to the capturing of land values from sales of plots with planning permission, the EWDC will also be able to capture the revenue streams from social housing, given that the construction of the social housing will be funded by the corporation. It is expected that around 36% of the new housing units will be affordable housing which equates to nearly 53,000 units.

Analysis by Shelter for this report estimates that a mixture of social rent, fair rent and shared ownership revenue streams over the forty year period is around £8.8bn. This analysis assumes a mix of 50% social rent, 25% fair rent and 25% shared ownership and is based on current income streams per unit. Hence, revenue streams from land value capture and social housing will be expected to provide the bulk of the funding.

Commercial property uplift

The commercial property land uplift is difficult to compute using a bottom approach as there is insufficient data to do this. However, the section 106 / CIL revenue streams as analysed by DCLG note that three quarters of planning agreements relate to residential housing with the rest roughly evenly spread across offices, industrial and retail space.[10] Additional research by GLA economics[9] also suggests that the ratio between commercial and residential demand for space is around 1:4, but with land values around a third lower. This would compute to around £700m of uplift over the period. To capture this increase would require there to be sufficient demand for the new commercial property as set out in the project.

Savills analysis demonstrates that the supply of office space has not kept up with demand across the corridor and is not expected to do so over the next five to ten years. In both the Cambridge and Oxford and spillover property market areas, the vacancy rate has fallen below 4% which is a key indicator of supply not having kept pace with demand.

There is a similar trend for industrial and warehousing across the corridor, with vacancy rates around 6%. Savills estimates that on current projections, demand for industrial and warehousing property

9. Section 106 Planning Obligations in England, 2011-12, DCLG 2014

10. Economic Evidence Base for London 2016, GLA Economics

in the corridor will exceed supply in the next three to eight years. Hence the outlook for capturing revenue streams from commercial property in addition to residential property looks extremely positive, assuming constant land values over the period.

Business Rates Supplement

One of the key recommendations from Metro Dynamics was to use the business rates supplement for infrastructure. This would require each local authority participating in the project to levy a 2% business rate supplement. Analysis by the Centre of Metro Dynamics research suggests this will generate around £700m of income for the 13 local authorities over a 20 year period.

Track access charges, income from stations & utilities

16% of the construction of Crossrail is financed through revenue streams stemming from track access charges. With regards to the East West rail project, as some of the line is already built, track charges would need to be proportionate to the incremental lines that are built. The sections of the track from Oxford to Bedford are either already in existence, or have been allocated funds to bring them into use over the next few years. However, the section between Bedford and Cambridge still needs to be financed. Arup estimates the cost at around £1.4bn, which is classed as a medium-term project.

Assuming that the project could be started in 2020, the line could be operational from 2028 resulting in an on-going series of cash flows to the EWDC. Assuming that track charges and income from stations is around £100m per annum, the total over the project could amount to £3.9bn over the period.

Finally, although the EWDC will need to invest in the utilities infrastructure upfront, this investment can be capitalised through a commercial relationship with the utilities companies, who can be expected to pay for the expected £600m investment over time as demand for their services increases.

Table 5: Revenue streams 2019 - 2058

Revenue stream	**£bn**
Sale of residential land plots	8.6
Affordable housing receipts	8.4
Sale of commerical property plots	0.7
Business Rates supplement	0.7
Track charges & station rental income	3.1
Utilities	0.6
Total	**22.1**

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Financial analysis

Using a number of assumptions, the Centre has taken the estimated costs from table 2 and revenues from table 5 and modelled a very simplified set of cash flows. We recognise that a much more thorough and detailed analysis would be necessary to obtain a realistic set of cash flows. However, the purpose of the analysis is indicative to suggest whether such a project is worth pursuing.

The modelling assumes the following:

- A development corporation is set up into which all of the strategic land assets are assembled
- The necessary legislative changes described in points 1-7 above have been implemented
- All private landowners would be willing participants of the scheme [11]
- Future jobs growth along the corridor is sustained, and therefore future housing demand is expected to grow over the period
- The government commits to support the necessary capital investment for new schools and health care facilities
- Weighted average cost of capital of 5%

In terms of the timing of the cash flows, we have used the data provided by Arup on whether the infrastructure projects are short, medium or long term and tied these projects to the incremental number of houses that could be built as a result of these projects as indicated by Savills. Clearly this is not an exact science, particularly given the series of assumptions that have been made. However, it can provide a useful foundation for the discussion of such projects.

The model expects the new housing units to be delivered between 2021 until 2038 with the length of the project extended to 2058 enabling a set of future costs and revenue streams to generate further income for the EWDC. Again, it should be emphasised this has been modelled for illustrative purposes. The project generates a small NPV of £300m and an IRR of 5%, suggesting that the project is indeed worthy of a much more detailed analysis.

In terms of how the initial infrastructure investment might be financed from the capital market, this would clearly depend on having a far greater understanding of the details of the project and the two key risks highlighted below.

Key Risks

- The economy along the Oxford – Milton Keynes – Cambridge corridor slumps, leading to a fall in jobs and therefore a fall in demand for housing and commercial property for firms.
- Delays in the delivery of the transportation and associated infrastructure will delay the delivery of housing units, negatively impacting cash flows.

11. This assumption may be unrealistic, however, we have not been able to ascertain who the owners of the plots identified by Savills are, nor what the split between public and private ownership is of the sites. Private landowners unwilling to participate would impact the cash flows in a limited way given the need to pay compensation according to the new rules.

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Conclusion

The East West corridor has the potential to be used as a test case to transform the way in which the infrastructure and affordable housing, that the country so desperately needs, is funded across Britain. Given the uncertain economic outlook and the ongoing housing affordability crisis, in addition to the challenge in raising the rate of productivity, the government surely has an obligation to explore models that have been widely used across the globe to successfully fund infrastructure and housing. The Centre recommends that the government, in conjunction with the NIC, explore how this land value capture mechanism might be deployed, including a draft legislative programme in the form of a new Housing and Investment Act and to commission a detailed financial analysis to assess how this proposition can enable the required investment for the East West corridor to be forthcoming.

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Appendix: Incremental and transformational transportation projects identified by Arup

Note: The timeline of delivery of the projects was allocated a small, medium or long term indicator (S/M/L).

Incremental and transformational transportation projects identified by Arup	**Cost of included project in £m**	**Delivery S/M/L**
Cambridge - incremental		
Upgrade to high quality bus rapid transit system on A428 (Cambourne) corridor	35	L
Upgrade to high quality bus rapid transit system on western orbital (M11) corridor	25	L
Upgrade to high quality bus rapid transit system on Addenbrooke to Science Park corridor	25	L
Alconbury Station	50	M
Addenbrooke Station	50	M
Soham Railway Station	50	M
Busway between new town at Waterbeach barracks and north Cambridge	46	M
A10 Waterbeach park and ride	12	M
Improving cycling and walking links between new town at Waterbeach barracks, Cambridge and surrounding villages	12	M
Huntingdonshire Growth Capacity Feasibility and Implementation	11	M
Waterbeach Railway Station	50	M
A505 transport corridor study	0.9	S
A14/A142 junction improvements	3.5	S
Ely North junction/Soham upgrade	10	S
Ely area rail improvements	10	S
Cambourne to Papworth cycleway	10	S
A10 Hauxton park and ride	17	S
Total	**417.4**	
Milton Keynes - incremental		
Milton Keynes Strategic Roads - enabling growth to 2050 and beyond	20	M
Steeple Claydon Station	50	M
Stoke Mandeville Outer Link Road (A413 to B4443)	23.4	M
Aylesbury NE Link Rd (also submitted to Large Local Transport Majors)	25	M
Bedford Southern Gateway	5.1	S
Wixams Rail Station	30.2	S
Ridgmont Station interchange	8	S
Grand Union Triangle "Greenways to Growth"	7.2	S
Total	**168.9**	
Oxford - incremental		
SMART Oxford: Culham City	88.2	L
Upgrade of Oxford Science Transit to high quality bus rapid transit system	175	L

A34 Technology Enhancements	25	M
Oxford access to EZ	28.8	M
A34 North Oxford	2.1	M
A40 East to Headington	2.1	M
A40 into Oxford from West	54	M
A40 North Oxford	10	M
A44 North Oxford	3.5	M
B4495	2	M
Oxford Ring Road - A40/A34 serving two purposes	2	M
Science Bridge, Didcot & A4130	53.4	M
Access to Culham Phase 1	15.8	M
Bicester South East Perimeter Road	28.5	M
Eastern Arc Phase 2 – Access to Cowley	10.4	M
Oxford Science Transit Scheme	40	S
Oxford station redevelopment	75	S
Seacourt Park & Ride	2.1	S
Bicester Charbridge Lane Rail Crossing	17.7	S
Culham Rail Station	13.1	S
Didcot Northern Perimeter Road Phase 3	12.5	S
A34 Lodge Hill Junction	31.5	S
Harborough Station	8	S
Harwell Prime Access Road	29	S
Didcot Parkway Station Package A&B	175	S
Connections to Oxford station	13.9	S
Bicester Active Travel – Cycle and WalkingBicester Garden Town Sustainable Transport	7.7	S
Total	**926.3**	
Corridors - incremental		
Inter-urban links in the Milton Keynes – Northampton – Bedford – Wellingborough area	50	L
East West Rail link Central section	1361	M
A418 corridor study	375	M
Oxford to Cambridge Expressway	3500	M
Total	**5,286**	
Cambridge - transformational		
Increased rail service frequency on Cambridge-Cambridge North-Waterbeach, Ely	200	L
Upgrade to high capacity tram system on A428 (Cambourne) corridor	150	L
Upgrade to high capacity tram system on western orbital (M11) corridor	100	L
Upgrade to high capacity tram system on Addenbrooke to Science Park corridor	100	L
Total	**550**	
Milton Keynes - transformational		
A5/A508/A45 improvements between Mk-N	20	S

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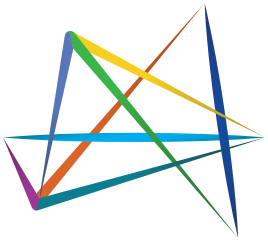
MK Central – Bletchley Transit corridor	150	L
Total	**170**	
Oxford - transformational		
Grove New Station	50	M
Total	**50**	
Corridors - transformational		
A34 link to M40 south of Oxford	75	M
A420 improvements	20	M
Cholsey / Oxford Local PT improvements	15	M
Upgrade East West Rail to four trains per hour	200	L
Total	**310**	
Grand Total	**7,878.6**	



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