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Message:

A proposal for a new approach to urban planning that allows the creation of high-density corridors along high-quality public transport routes, through the sustainable redevelopment of existing suburbs

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High-quality mobility corridors

A concept for an integrated approach to urban densification and low-carbon mobility

intended as a submission to the National Planning Framework consultation

Thomas Legge¹ & Philip Comerford², 31 March 2016

Introduction

This is a proposal for a new approach to urban planning in Ireland that allows the creation of high-density corridors along high-quality public transport routes, through an incremental and bottom-up process of redeveloping existing low-density suburbs. The scheme is scalable and self-funding even at the smallest scale; at a larger scale it provides a way of funding high-quality, high-capacity transport infrastructure like light rail that can displace private motor transport and thereby reduce greenhouse gas emissions at internationally significant levels, while also addressing other chronic problems, particularly inequality, pollution, congestion, and the shortage of affordable housing.

This concept is offered as a contribution to the National Planning Framework consultation. An adaptation of the concept will also be offered as a contribution to the Citizens' Assembly, addressing the question "How the State can make Ireland a leader in tackling climate change." By showing a willingness not just to plan for the long-term future but also to tackle entrenched vested interests for the public good, Ireland would offer a powerful example to other countries dealing with a similar legacy of unsustainable transport policies that have led to car-centric urban sprawl. Such an example would offer benefits far beyond the reduction of Ireland's small share of global greenhouse gas emissions.



Figure 1: the N11 reimagined as an urban boulevard, where currently wasted space is converted into neighbourhoods of high-quality apartment living close to amenities

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The problem: a car-based transport and land-use planning system that works for no one

Ireland's towns and cities are sprawling, poorly connected, and reliant on a fossil fuel-based transport system centred on the private car. This imposes massive environmental and social costs without providing the economic benefits of mobility either efficiently or effectively. The environmental costs of Ireland's transport system are high: transport accounted for 19.1% of Ireland's GHG emissions in 2013, and this figure is now rising. Other environmental costs include local air pollution, the waste impacts of vehicles, and productive land lost to road building and urban sprawl. The social and economic costs of a predominantly car-centric transport system are almost incalculable: deaths from road-traffic accidents, a dispersed population that robs villages and small towns of their economic vitality, an obligation for many families to own at least one car, and a large proportion of the population locked into a sedentary and unhealthy lifestyle.

Ireland's transport-sector GHG emissions are high by European standards and reducing them will be an unavoidable part of Ireland's contribution to the EU's goal of reducing its emissions by at least 40% by 2030 and by 80-95% by 2050 (and the Paris Agreement will require even greater GHG reductions by 2050). But it is also a welcome obligation. The challenge of tackling Ireland's transport-related emissions can and should be seen a forcing agent to tackle the deep governance failures that have plagued Ireland's land-use, housing and transport sectors. These failures include:

- Failure to price land correctly, leading to land hoarding and rent capture by land owners and developers;
- Non-transparent building costs;
- Reliance on private developers with unaligned interests to provide many social services such as social housing and transport infrastructure;
- Undersupply of housing, especially for lower-income sectors, and too few options of housing type (apartments, townhouses, semi-detached etc.) or residency models (ownership, co-ownership, cooperative, rental);
- Dispersed low-density development, making it uneconomic to supply high-quality transport links like light rail, and imposing social costs associated with high car use.

The proposed solution: integrated transport and housing delivery along high-quality mobility corridors

Many of these governance failures can be tackled all at once in an integrated approach that enables the managed urban densification along high-quality mobility corridors. This will be done through the staged rezoning of land along major existing and potential future transport routes, to allow the redevelopment of existing low-density suburbs in accordance with an agreed masterplan. The uplift in the value of the rezoned land will be leveraged to fund the infrastructure improvements, which will be delivered in tandem with the redevelopment over a 2-decade period. The state will retain a strong role in every stage of the redevelopment to ensure that public goods such as affordable housing are provided at a scale that can transform the property market. The approach is scalable: it is economical at the level of a single house and it could be applied in every Irish city. The densification project would be highly collaborative and would involve partnerships with public bodies at local and national levels, entrepreneurs, investors, community actors and trusted intermediaries, artists, engineers, architects, communication experts and many others.

To test the concept and offer an illustrative example, the proposal provides details of a specific corridor, part of the N11 transport corridor between Montrose and Stillorgan.

Context

All major Irish cities are expected to grow in the coming decades, reflecting a global trend towards urbanisation. The Dublin metropolitan area is projected to grow by 400,000 people by 2030. It is still for us to choose whether that growth be met by further urban sprawl or channelled into a more sustainable model of urban development. Dublin—and other Irish cities—should seize the opportunity to organise and deliver this growth in a way that provides a less congested, more vital city that works for all and removes from most citizens the obligation to own a private car.

The *high-quality mobility corridor* offers a solution to meet this future growth while reducing the overall carbon footprint of the city. The concept is based in part on the hypothesis that new high-quality public transport like the Luas or Bus Rapid Transit makes economic sense at densities of over 47 households per hectare. This kind of public transport has a good chance of enticing those who live along the public transport route out of their cars. The experience of the Red and (particularly) the Green Luas line shows that when tramlines are built, density tends to increase as developers build apartment blocks along the new routes. But there is a chicken/egg problem as developers will not build at sufficient density without the public transport infrastructure, and the State (much less so private developers) is reluctant to build the infrastructure without the necessary density.

Overall approach

The proposed *high-quality mobility corridor* would reorganise the process so that density is increased in tandem with the provision of public transport while providing other social goods such as affordable housing. This approach would allow the State to capture much of the increased value to pay for the provision of the infrastructure and social housing. The governance models would also allow the State to address current market failures that lead to high building costs, land hoarding, lack of social housing, poor quality buildings, and inadequate choice of housing type.

The overall approach is as follows:

- **Masterplan:** Local and national authorities cooperate to create a special masterplan along the corridor. This masterplan foresees an increase in housing density alongside the provision of new transport options (trams, BRT, heavy rail, underground rail, cycling). Housing density is increased to an average of at least 50 households per hectare. These routes would eventually become the component parts of a new urban transport grid.
- **Housing delivery:** New housing and new *types* of housing are delivered along the corridor. This includes attractive, family-oriented apartments that can provide an alternative to the currently dominant paradigm of car-dependent single-family houses.
- **Governance:** Innovative approaches to construction enable new kinds of developers, including self-build cooperatives and international consortia. Cost transparency would reveal opportunities for savings throughout the Irish construction industry.
- **Finance:** the uplift caused by the rezoning of the land is largely captured by the state to pay for the entire project, including the investment in public transport, social housing and other public goods.

A redeveloped transport corridor would allow for the provision of a new high-capacity transport options alongside new residential units. The current capacity of the road for private cars would be maintained (or marginally reduced) but a more efficient reorganisation of the road and peripheral residential land would yield additional space for development.

Methodology

For this illustrative example we have chosen the example of the N11 between Montrose and Booterstown Ave. The plan could be applied on any transport corridor to Dublin or any other Irish city.

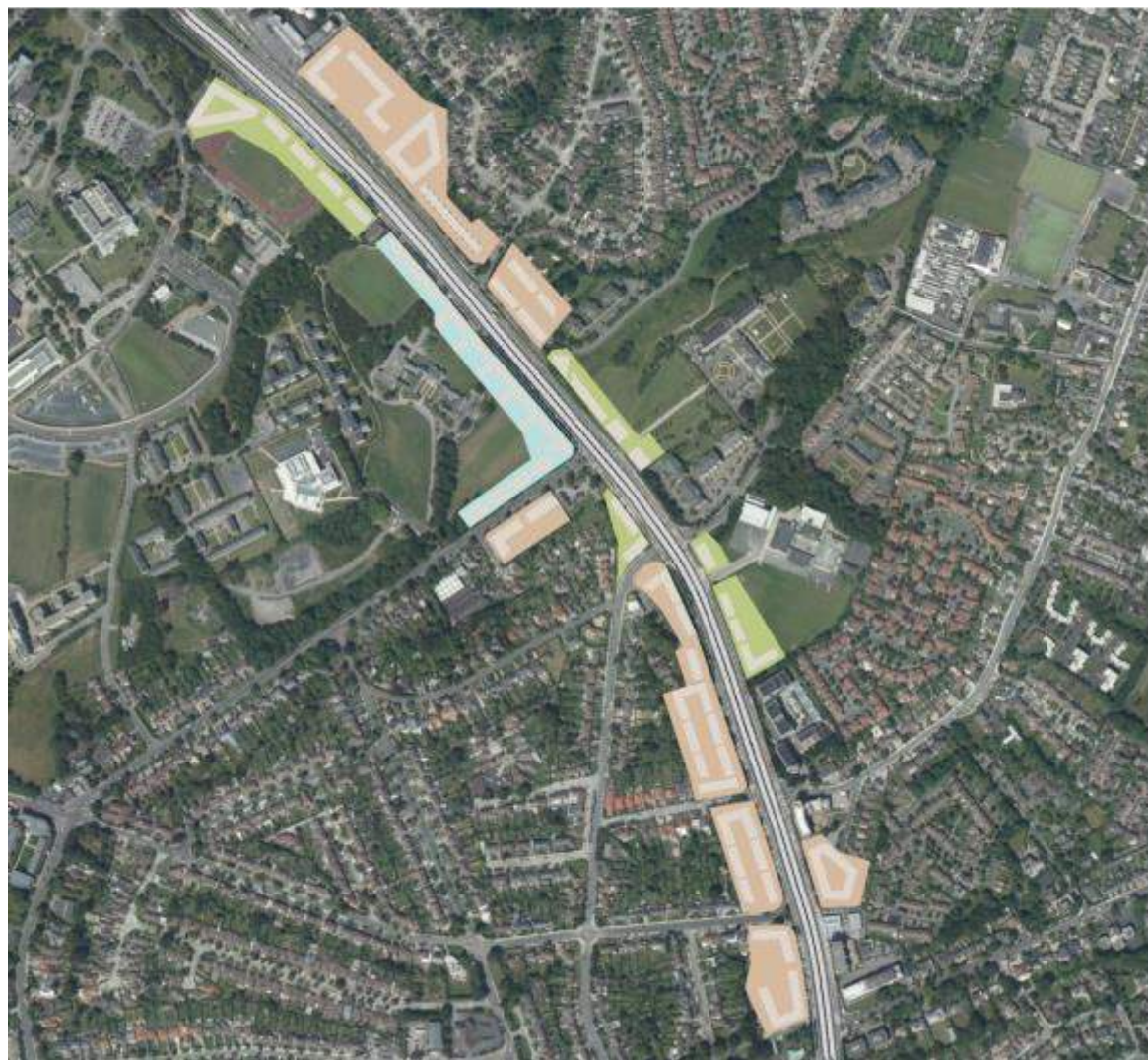


Figure 2: Development of vacant or underused land alongside this 1.5km section of the N11 between Montrose and Stillorgan would yield 12.5 hectares of development land, enough for at least 1,500 homes. Key: blue = student housing; pink = redeveloped existing low-density houses; green = developed on currently vacant land

Step 1. Creating the masterplan

The corridor would be designated as a special development zone and an overall vision developed in cooperation with local communities. An overall plan would be developed for housing, commercial buildings, and public amenities. Housing and offices would be high-density—five storeys or higher depending on the location. The corridor would convert the road from its current function, an expressway for cars, to an urban boulevard providing high-quality mobility through public transport, cycling, walking, and a limited amount of private motor transport. The boulevard would be a clearly defined streetscape of shops and businesses on the ground floor and apartments above, or residential neighbourhoods characterised by terraced townhouses or apartments, with wide footpaths to enable footfall. Land values would increase, because of both the improvements and the increased development potential. The State would capture at least 80 percent of this uplift in value through taxation or the fact of its prior ownership. This would be used to pay for the project and recoup development and

infrastructure costs. Where they exist, adjacent or nearby publicly owned lands would be integrated into the project, e.g. the RTE campus, Donnybrook bus station, and the UCD campus.

Step 2. Reorganising the road

The road space would be reorganised to provide mobility for, in order of priority, pedestrians, cyclists, public transport, and private motor transport. This could be met by: wide pedestrian pathways, segregated bicycle tracks, an electrified BRT or Luas line for high-frequency transport (if Luas, the track would be smooth so that it could also be used for emergency vehicles), and two lanes for motor traffic in either direction (which is the current effective capacity of the N11 for private motor traffic). Such a reorganised road would be 40m in width. It would provide for a greatly increased movement of people than is currently the case while also freeing up a potentially large amount of space for development on the periphery.

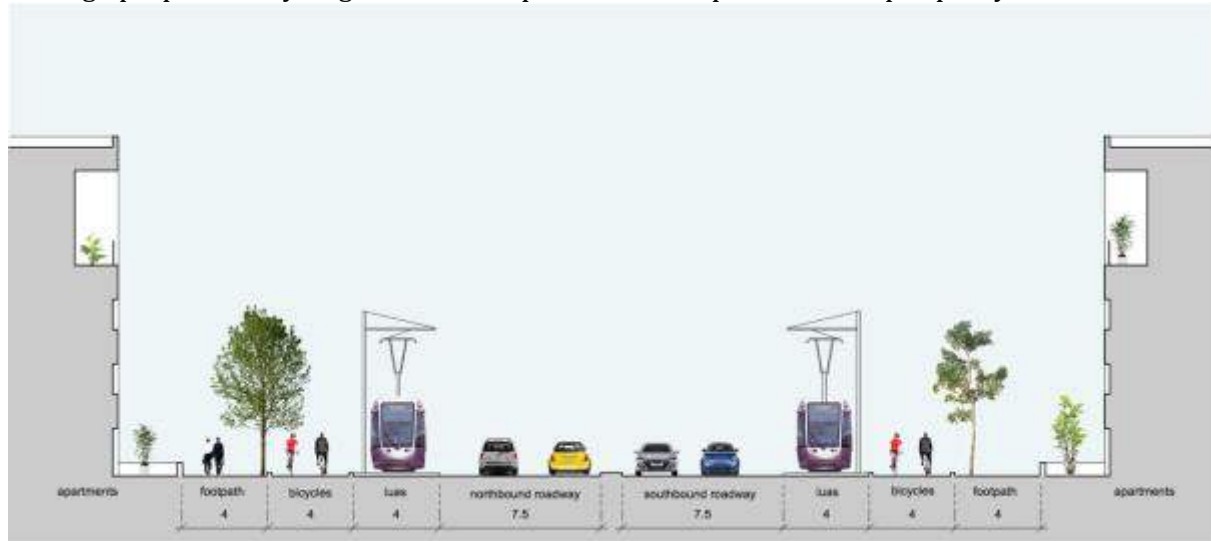


Figure 3: N11 reconfigured to provide more space for public transport and pedestrian & bicycle infrastructure. The low-density housing has been replaced by apartment complexes

Other points to note:

- The bus lane would be removed as bus routes along the transport corridor would be replaced by the Luas/BRT. Single-journey transferring between lines would be an integral part of the new transport system.
- Reducing the width of car lanes to 3.25m, which is more than sufficient for cars traveling at 30km/h, would liberate additional space (current road widths are more suited for inter-urban dual carriageways).
- Turning lanes and the grassy median would be removed.
- Wider space would be needed at tram stations, which could be taken from the footpaths or by setting the buildings slightly further back at these points.
- Speed limits would be reduced to 30km along the entire route.
- Junctions would be redesigned around cyclists and pedestrians. For a more fluid flow, traffic lights could be replaced by zebra crossings and kerbs would be built out.

If these improvements were effected, the overall numbers of people moved per hour would be a multiple of current levels. Average travel time for private car traffic would be equivalent to or faster than today because a) modal shift would remove cars from the route creating more space for those who continue to drive; and b) waiting time at many junctions would be reduced due to the removal of traffic lights. Average real speeds today at rush hour are in fact lower than 30km/h due to congestion along the entire route—in practice, motorists just speed from one traffic-light queue to the next.

Step 3. Densifying the periphery

Land on either side of the transport corridor would be rezoned for redevelopment. Existing houses would be replaced by new, taller buildings on a larger footprint. The masterplan would allow for the collaborative definition of new neighbourhoods and a new street line along which development—businesses and public spaces on the ground floor, with apartments or townhouses above—would be incentivised. Today’s typology of single-family homes with front-and-back gardens, set back from the road, would be replaced by a new typology of high-density neighbourhoods proudly embracing the street and offering their residents the possibility of living within walking distance of their urban needs (shops, schools) and easy access by public transport to the rest of the city. Very few private cars would be foreseen for the development but space would be provided for some car-share schemes. Perpendicular streets to the corridor would be encouraged to join the project, so that development extends back from the boulevard to increase its effective catchment area.



Figure 4: cross-section of the N11 before and after redevelopment. The existing houses and their surrounding land have been replaced by apartment buildings arranged around courtyards for high-quality family living and creating an urban boulevard whose buildings proudly embrace the street. The road has been narrowed to 40m, freeing up additional land for redevelopment while greatly increasing its capacity to transport people without reducing capacity for private cars compared with current levels.

The existing houses along the N11, as in many parts of Ireland, are inefficient in their use of space. The redevelopment would allow this underutilised land to be converted into high-quality, high-density neighbourhoods comprised of apartment blocks or town houses.

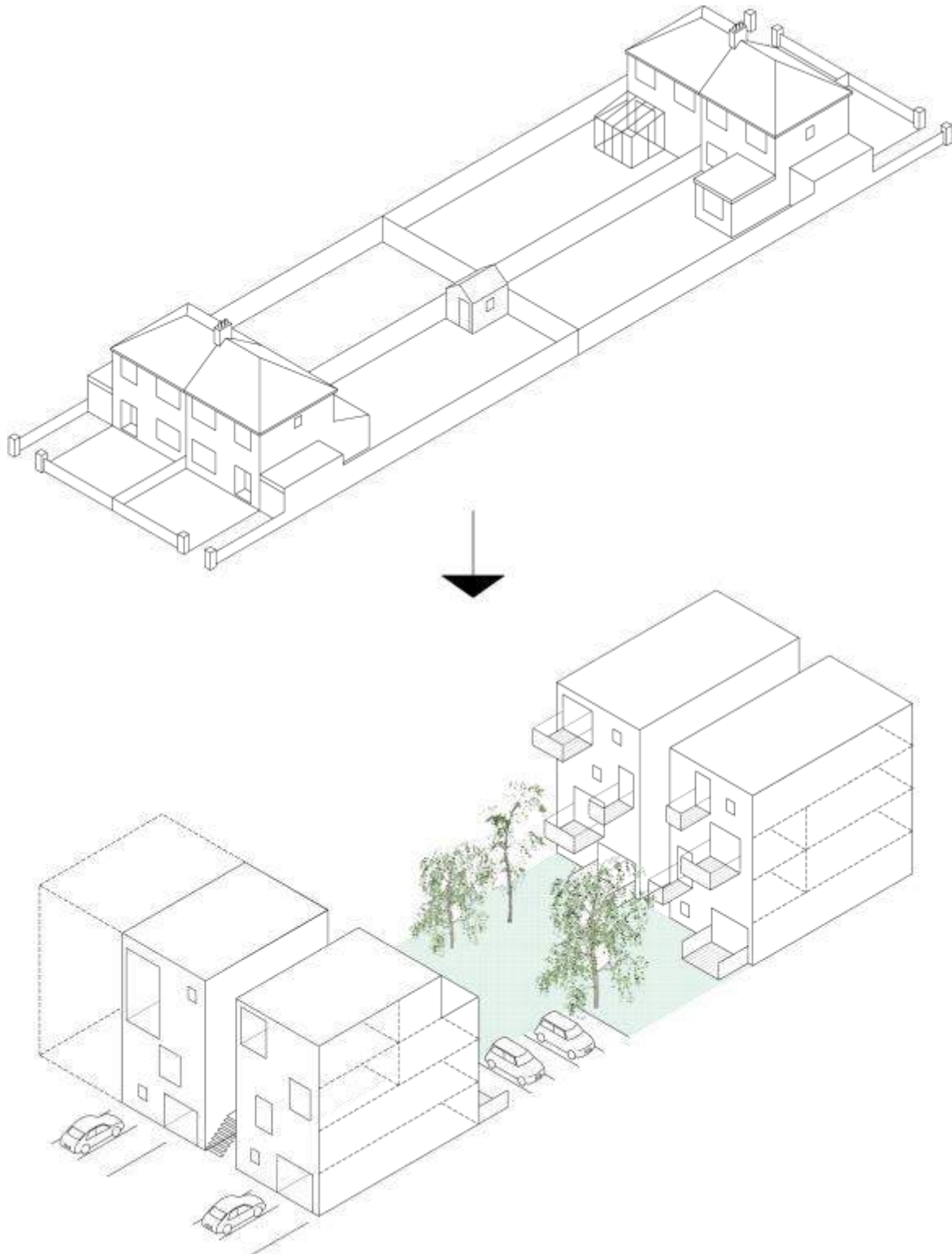


Figure 5: a multiple of homes can be built on the site of existing low-density suburban houses. With the right design, such redevelopment would create beautiful neighbourhoods with many more units per hectare and no loss of quality of life (quite the contrary)

Bottlenecks and capacity constraints

When the corridor meets the inner city (in this case at Donnybrook Church), the narrower streets and older buildings present significant bottlenecks. The Luas/BRT would have to squeeze through a road that, at only 9m wide at its narrowest point, would not be able to accommodate the different modes foreseen up to this point. Road space is severely constrained from this point until the city centre.

To deal with this constraint, we propose that the on-street Luas/BRT continue along the road, in the place of existing bus lanes or by sharing the street with cars at these bottlenecks. Yellow grids and staged traffic lights would allow the BRT/Luas to take priority at junctions. Removing on-street parking would liberate some space.

A more radical solution would be to designate alternate approach roads into Dublin at this point as single direction streets. In this case, the N11 would become a one-way street into Dublin at Donnybrook for cars, with two-way flows for public transport and cyclists. Outbound car traffic would take a parallel road (or vice versa).

A still more radical solution would be to place the motor traffic underground from this point. This is preferable to moving the Luas—which would serve many more people—underground. This kind of infrastructure solution should only be considered in the context of reducing the overall amount of car traffic entering the city centre.

An integral part of the high-quality transport corridor should be a reconsideration of the amount of private motor traffic that is allowed into the centre of Dublin. Employer-provided car parking for both the public and private sectors, as well as commercial-provided car parking, should be progressively removed from the city centre over the project's two-decade period.

Financial model for redeveloping existing residential land

The *high-quality mobility corridor* foresees an innovative financing model that would allow both existing property owners and the general public to benefit from the redevelopment of the residential land along the corridor. This section describes how the incremental densification in neighbourhoods alongside the corridor would work. The following model applies to the residential land; the new development land that would be released by the narrowing the road, or by redeveloping the existing adjacent public land (like the RTE campus or Donnybrook bus station), would be automatically owned by the state and a different financial model applies—this is described further below.

Once Dublin City Council and Dun Laoghaire-Rathdown County Councils have created a common masterplan, outline planning guidance to entire neighbourhoods would specify the boundaries and height restrictions for their redevelopment. Many of the houses along such routes are 1930s or post-War semi-detached single-family homes with long front gardens and even longer back gardens. The scheme would allow the properties on these streets and on the streets perpendicular to the corridor to be redeveloped, either singly or collectively, into higher-density residential neighbourhoods. The increase in the potential value of the residential land would be shared between the current property owners, the future owners, and the State. The guiding principle is that the State should capture 80% of the uplift in the value of property (whose increase in value is entirely a result of public policy interventions), with 20% going to the current property owner as a reasonable incentive to participate in the scheme.³

³ The Kenny Report (1973) set an 80/20 share in the increase in the value of land due to public decisions (e.g. planning permission) as a reasonable and constitutionally sound balance of the public and private interests.

Small-scale apartment building redevelopment

Even using conservative assumptions the model is profitable in most cases. A single two-storey 150m² family home (typical of this part of the N11) with a 75m² footprint would be demolished. Its footprint would be enlarged slightly to 100m² and on this site a five-storey apartment building containing five 100m² units (or a multiple of smaller units) would be constructed.

Single family house converted to five-storey apartment building

	No. units	Size (m2) per unit	Total size (m2)	Market price per unit	Total value
Current site	1	150	150	€1,000,000	€1,000,000
Redeveloped site	5	100	500	€500,000	€2,500,000
Total redevelopment cost (= building cost plus 10% profit margin, minus land purchase, assuming €2,000/m2)					€1,000,000
Increase in value (= final sale value minus redevelopment cost and current market value)					€500,000

Redevelopment to mid-scale apartment building

With cooperation between neighbours, the scope for redevelopment could be much greater. In this scenario, four neighbours collaborate to convert their properties and surrounding lands into a single site for redevelopment that is twice the size of the previous building footprint.

Multiple single-family houses converted to mid-sized five-storey apartment building

	No. units	Size (m2) per unit	Total size (m2)	Market price per unit	Total value
Current site	4	150	600	€1,000,000	€6,000,000
Redeveloped site	40	100	4000	€500,000	€20,000,000
Total redevelopment cost (minus land purchase), assuming €2,000/m2					€8,000,000
Increase in value (= final sale value minus redevelopment cost and current market value)					€6,000,000

Redevelopment to large-scale courtyard apartment complex

Under the proposed N11 *high-quality mobility corridor*, the amount of development land could be greatly increased. In this final example, we have assumed that the building footprint would be expanded to allow the development of a courtyard-style apartment building that encompasses much of the front and back gardens of the former properties. In this projection we have assumed larger units of 150m² on average, which would allow for very large apartments suitable for families. Even under conservative assumptions including a market price of €500,000 for these large apartments, the increase in potential value is remarkable: the value of a row of 10 houses would rise from €15m today to €100m, with €40m profit to be shared between the current and future owners and the State. This would leave ample room in the financial model for the provision of less profitable housing products like social and affordable housing.

Multiple single-family houses converted to large-scale five-storey courtyard apartment building

	No. units	Size (m2) per unit	Total size (m2)	Market price per unit	Total value
Current site	10	150	1500	€1,000,000	€15,000,000
Redeveloped site	200	150	30000	€500,000	€100,000,000

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Total redevelopment cost (minus land purchase), assuming €2,000/m ²					€60,000,000
Increase in value (= final sale value minus redevelopment cost and current market value)					€40,000,000

Incentive structure

To incentivise existing homeowners to participate in the scheme to redevelop their neighbourhoods, the increase in the value of the existing residential land would be shared between the current land owners and the State. At the time of sale of their property, the existing owners would receive 20% of any increase in value in addition to the current value of their house; the rest of the value would accrue to the State, to pay for the scheme and for future infrastructure investments. To show the effect and the possible reward to participating owners, we describe the sharing of profits between homeowner and State in each of the scenarios presented above:

- Scenario 1—development of a single-family house into a five-storey apartment building: A single-family house is converted into a 5-storey apartment building that is eventually sold for €2,500,000. The original house was appraised at €1m. After redevelopment, the apartments are sold for a total profit of €500,000. The owner receives €1,100,000 (€1m + 20% of the increase in the house’s value of €500,000). The state recoups €400,000.
- Scenario 2—development of four single-family houses into a mid-sized apartment building: Four single-family houses are redeveloped into a 40-unit five-storey apartment block that is eventually sold for €20,000,000. The original houses were appraised at €1m each. Each owner receives €1,250,000 (€1m + 20% of the increase of value of €1,250,000 per house). The state recoups €1,000,000 per house.
- Scenario 3—development of ten single-family houses into a block-sized courtyard-style apartment complex: Ten houses are demolished and the entire block is redeveloped as a Berlin-style apartment building with an internal courtyard, commercial units on the ground floor, and 200 apartments of 150m² size (more units would be possible if the average size were reduced, or if additional storeys were permitted; this would be appropriate for the side of the complex facing the new boulevard alongside the old N11). The original houses were appraised at €1m each. Each owner receives €1,800,000 (€1m + 20% of the increase of value of €4m per house). The state recoups €4,750,000 per house.

Financial model for developing new land

Much of the land that currently borders the N11 is publicly owned, either used for semi-commercial enterprises like RTE or UCD or taken up by the road itself. The *high-quality mobility corridor* would release this as new development land (for this exercise we are not drawing a distinction between different kinds of publicly owned land—university, RTE, Dublin bus, underused space alongside the road, etc.).

The urban boulevard that would be created along the corridor would be narrower than is currently the case. It would be defined on either side by appropriately sized (five storeys or more) buildings that face each other across a 40m-wide street as described above. The “filling in” of the land on either side would occur in many cases on publicly owned land.

The financial model is as follows. The State would borrow against the future development value of the land to pay for the infrastructure upgrades (burying the road, utilities, etc.). The State would then create a masterplan of the new neighbourhood, including buildings of up to ten storeys as appropriate for this area. The State would retain ownership of the land and put out to

tender for various kinds of development—high-end apartment buildings, social housing, student accommodation, schools, etc. The State would also create space for designated concessions for shops or any other commercial activity, and lay out public parks and any other desired community amenities. A share of the sites for apartment building would be reserved for innovative housing delivery models such as *Baugruppen* (see below) and for individual small-scale developers. Lots designated for large-scale commercial development would be circumscribed by the masterplan, which could, for instance, require apartments to be of a minimum size with a specific mix of housing units.

In this model, the State has the option of selling the land and thus acquiring its current value, or of retaining ownership and realising the prospect of an indefinite future income. A mixture of both approaches would allow the state to recoup some of its up-front investment costs, if necessary. Crucially, in both cases the State gets to decide what is built on the land. Because it already owns the land, it is under no obligation to sell the property to the highest bidder without regard to the kind of future development that would be built on the land—if it did, developers would bid up the value of the land to the point where they build the maximum amount of units that the land will bear. This would result in a one-off windfall for the state but likely poor quality housing units; the legacy of such a scheme would be a poor-quality neighbourhood reflecting all the mistakes in Irish property development of the last 30 years.

The State would thus be able to insist on access to new entrants, such as housing cooperatives and international construction firms. This would allow better price discovery including by allowing delivery of the large-scale developments by international tender. In this scenario, the State would require full transparency in all building costs as a condition of entry: this would provide objective data about the real costs of construction and could reveal significant opportunities for price reduction across the Irish building sector.

Room for new neighbourhoods

A vast amount of development land could be liberated by reimagining the current road layout. For example, the flyover complex of the N11 around the former Montrose hotel and the UCD campus is a hidden treasure. Here, we propose that the motor traffic lanes of the N11 be placed underground and the surface road narrowed to just the Luas line and a single-lane road in either direction for local traffic, plus cyclist and pedestrian space. This would generate a large amount of effectively new development land—up to 6 hectares according to our preliminary calculation. This “new” land, entirely owned by the public sector, could be turned into a desirable new high-density neighbourhood, including a large amount of student accommodation.

Innovative housing delivery models

Collective redevelopment of sites opens up interesting new options. The State would be free to designate different parts of the corridor for different building models. New approaches to delivery of housing would be tested and if successful these could be rolled out across the country. Portions of the redevelopment could be reserved for the *Baugruppe* model of community-driven development, where prospective residents collaborate to design their future home: this provides an alternative to the current model where apartment buyers are limited to what private developers decide to offer (see Annex for a possible approach under the *Baugruppe* model). Other innovate approaches include housing cooperatives, housing trusts, and rental apartments under long-term (20-50 year) leases.

Governance

A dedicated State agency should be created to take overall responsibility of the project. This should not duplicate existing institutions, particularly local authorities, but it should have minimal powers to ensure coordination across all relevant decision-making bodies. The agency would ensure that the original promise of the scheme is realised: that new developments deliver wider benefits such as social housing, a mix of housing types, and public services like schools, public transport, parks, and all the other vital ingredients of strong neighbourhoods.

Conclusion

In Ireland high land values are a function of public policy and resulting market failures. At the same time, there is a chicken-and-egg problem that causes chronic underinvestment in public transport. This project proposes to unlock the latent value that is currently hidden in legacy low-density car-dependent housing and to leverage that value to the public good, by creating a new kind of urban living in Ireland based around healthy and vital communities along high-quality public-transport corridors. Such a model would be a fitting riposte to the challenge of climate change by creating neighbourhoods that are better in almost every respect to the ones that they replace.

Annex I: the *Baugruppe* model of housing delivery

The *Baugruppe* model is common in Germany and allows a group of future owners to design and build their own apartment building. By cutting out the middle-man, the developer, *Baugruppe* developments deliver housing at about 20% less than commercial developments and often with higher quality, because the participants get to decide on the individual and common features of their future apartment building.

Here we provide an example of a possible *Baugruppe* development on land that was previously occupied by four single-family houses.

1. Existing residents (say four neighbouring house owners) decide to redevelop their houses under the scheme. They get professional advice that their collective site could accommodate 40 units.
2. The four residents form a company or cooperative.
3. The company hires a project manager, who facilitates agreement on a set of rules to govern the project.
4. The company recruits up to 36 additional members, people who wish to purchase a home in the new development (a proportion of slots could be reserved for people on the affordable housing list). The company now has up to 36 members.
5. The project manager hires an architect and organises regular meetings at which the future residents decide on every aspect of the project within the parameters defined by the State. This could take around a year.
6. The company, facilitated by the State, presents a business plan to a bank and applies for planning permission. The State provides guarantees for the bank to reduce the cost of capital to the equivalent of a normal mortgage.
7. Once permission is granted, the bank releases a construction loan to the project.
8. Construction takes approx. 12-18 months.
9. Once construction is completed, the company is now the owner of a mixed housing development of 36 units. The construction loan is now converted into 36 mortgages.
10. The apartments are sold to the 36 participants at the pre-agreed rate. This price includes the 20% premium that is redistributed to the original four shareholders to incentivise them to participate.