populo LIVING

Airspace development: an introduction

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Foreword

LB Newham, in partnership with Populo Living, are keen to explore all available options to deliver much needed affordable housing.

Airspace development is one way in which the council creates much needed affordable new homes whilst modernising and improving existing properties. The initiative fits with the Council's key themes on more affordable rented homes, resident choice, innovation, asset investment, and sustainability. We hope that this guide provides others with ideas on how they may appraise and embrace airspace development as an effective initiative to address a range of housing challenges.

Cllr Shaban Mohammed, Cabinet Member for Housing Management and Modernisation

Proposal for Walton Road, Studio Partington

Introduction

LB Newham has a substantial stock of low and medium rise housing built in the post war period. Many of these buildings have potential for extension upwards to provide new 'roof-top homes'.

This design guide is an introduction to the benefits of roof-top homes, or as it is also known 'airspace' development. The guide illustrates how we consider new homes can be delivered within existing policy and social objectives for the Council. The guide also refers to the recent changes in the National Planning Policy Framework; the London Plan; the Building Regulations, and established principles of good practice in design and low-impact environmental construction.

Roof-top/airspace development is well aligned with the social and economic ambitions of the Mayor's 'Towards a Better Newham' Action Plan, helping to build community wealth, tackle inequality and promote local enterprise. The Mayor's objectives were succinctly set out at the plan's launch:

"From building new homes and upgrading our existing Council homes to the best standard we can afford, to challenging inequality and tackling poverty – together with our people we will create a better Newham with opportunities for all our residents. Skills for the future, creating new jobs and establishing a green economy locally, we will give our residents the support and tools they need to pursue the healthy and happy lives they deserve."

The benefits and suitability of airspace development are clear:

Economic:

- Creation of new affordable homes and upgrade of existing properties
- Investment into local economy, contributing towards Community Wealth Building
- Generation of new employment and training opportunities
- Involvement of modern construction industries such as offsite manufacturing can result in good value for money and stimulation of the green economy
- Economies of scale may increase value for money on projects across a number of sites

Social:

- Reduction of fuel poverty
- Enhancement of life chances for local residents
- Improvement of the look and feel of existing developments within neighbourhoods
- Enhanced safety of buildings and neighbourhoods
- Involvement of local communities
- Choice for local residents

Environmental:

- Improved kerb appeal of existing developments and neighbourhoods
- New homes designed to be highly energy efficient
- Energy efficiency improved for existing homes
- Reduction of overall carbon footprints of existing developments

Section 1: Background information

1.1 Innovation in airspace use

The value of the area above buildings (the airspace) is increasingly being recognised as an asset.

In new urban development, roof-tops can have a range of uses; additional habitable space; amenity space; gardens for productive planting; areas for bio-diversity (green roofs); and to support renewable technologies such as photovoltaic panels. In North America, airspace is a commodity that has a value and can be traded with neighbouring building owners through Transferable Development Rights (TDRs), to allow increasingly taller developments without breaching daylight and overshadowing requirements.

The potential of existing roof-space is yet to be fully recognised or exploited in the UK. Many post war buildings have flat roofs - a legacy of architectural fashions rather than technical considerations. At nearly 60 years old, many of these roof coverings are at the end of their life and will soon require replacement. An imaginative 'appropriation' of this space can create more accommodation and increase the value of the property in all senses. Rather than being a liability the roof space can be thought of as an asset.

Green roof - City Hall, Chicago

1.2 Airspace development in London

The potential for development on roof-tops has been increasingly entering the public discussion about land supply and innovation in housing.

In 2015 the NLA (New London Architecture) launched a competition called 'New Ideas for Housing' to gather ideas illustrating new approaches to the delivery of homes. A number of the winning proposals featured roof-top development. Since then momentum for roof-top development has been growing. The new London Plan recognises upward residential extension in its small sites policy. The NPPF specifically recognises the delivery of new homes resulting from airspace development, and the government introduced plans in 2020 to take forward a Permitted Development Right to extend certain buildings upwards in commercial and residential uses.

A number of well funded commercial organisations have developed a business model to take advantage of airspace opportunities. However, while having technical and development expertise, they do not have immediate access to the latent freehold potential of Local Authorities.

In Newham there are 17,000 homes dating from the 50s, 60s and 70s, around half of them council-owned. Although many council homes have been purchased by the occupiers through 'right to buy', the freehold is retained by the Borough, so even in mixed tenure buildings the value of the asset, including the roof-top, is there for the council to realise. For this reason an increasing number of London boroughs are looking to progress roof-top development schemes, including Camden, Hounslow, Islington and Enfield.

Roof extension to ex-industrial building in a conservation area - De Beauvoir Block, London by Henley Halebrown.
Image credit: Nick Kan

Residential roof-top extension with and garden use - Shepherdess Walk, London by Henley Halebrown.
Image credit: Henley Halebrown

1.3 LB Newham housing stock

Extensive rebuilding in East and West Ham after the Second World War has left the Borough with a legacy of medium rise buildings, whose design life has generally been exceeded, that are now in need of substantial capital investment.

Many of these buildings do, however, have solid foundations and a superstructure of concrete and load bearing masonry. They are robust and substantial and can be brought up to modern standards of energy performance and safety.

Whilst retrofit and upgrade are technically feasible, they are expensive and although there is an environmental imperative, energy saving costs themselves are unlikely to pay-back the initial cost of the upgrade over the life of the improvements.

This viability problem is recognised as a significant impediment to upgrading our national housing stock and it is the reason why government schemes like the Green Deal have faltered.

A more imaginative response is needed and coupling an upgrade with another substantial intervention, such as a vertical extension in the loft space of a traditional building or on the airspace of a modern building can unlock this viability dilemma. In this way, roof-top development offers a cost-effective way of addressing environmental issues while addressing housing demand and building community wealth.

The images below show examples of 50s-70s built housing that are suitable for roof-top development, while the map overleaf identifies a range of areas in Newham containing these types of buildings. As shown, flat roofs replaced with pitched tiled roofs in the 1980s will usually have a suitable concrete slab to support roof-top development.

left: Buildings with large,uncluttered flat roofs are highly suitable

right: Blocks with external cores are common in the Borough

1.4 Newham airspace potential

The untapped potential of roof space.
A desktop study reveals many areas within Newham with buildings suitable for roof-top development.

1.5 Opportunities for the borough

The challenge of building the necessary number of homes to meet Newham's housing needs is considerable and, as for all metropolitan boroughs, the availability of affordable land in suitable locations is probably the most significant factor limiting the rate of new housing supply.

Traditional procurement and delivery will need to be supplemented by innovative thinking and alternative means if the housing demand is to be met. Roof-top homes have the significant benefit of being capable of realisation on land that is already owned by the Borough, in neighbourhoods that are already served by shops, services and facilities.

Where roof-top development is being trialled, the existing residents' needs and ambitions are being recognised, with existing residents who have the need for a larger home being given better, new accommodation.

However, Newham could go further with a properly co-ordinated consultation and engagement process to assess how local needs, for instance overcrowding, could be eased. Existing residents will meaningfully participate in the re-shaping of their buildings and neighbourhoods.

A summary of the opportunities afforded by roof-top development for LB Newham as a whole are:

- To improve the overall look and feel of the existing property, whilst optimising the number of new roof-top and infill homes where potential exists
- To facilitate sensitive and efficient design that respects and enhances the existing property and creates a welcoming experience for residents
- To make efficient use of space, light, and height to create attractive vistas and exemplar living experiences
- To create extensions that comply with all Building Safety requirements, and where appropriate Tall Buildings safety criteria
- To create the right balance of mass and density, without adversely impacting daylight to the existing and surrounding buildings
- To involve residents in the design of the new homes and amenity space
- To reduce the carbon footprint of the existing assets while providing new low-energy homes
- To make use of high quality sustainable materials with low life cycle maintenance costs.

1.6 Benefits for residents

Properties that will be considered for airspace development will likely be home to both tenants and leaseholders.

To assist support for the new proposals, the Council's Housing Team and Populo Living have been exploring key principles for a Resident Offer for affected residents.

The Offer may vary from scheme to scheme, based on respective Options Appraisals, but key considerations are:

- Choice - Existing tenants in affected blocks will have first option for the new homes created (subject to a housing needs assessment). Vacated homes will then be offered to people on the housing register.
- Involvement - Residents will be involved in all projects from initial design through to works programme, ensuring views are taken into account throughout the project.
- Improvement of overall property - Alongside the creation of the new homes, LB Newham will look to improve the overall appearance of the existing building to blend with the new homes.
- Decoration and improvement to hallways and communal area; Upgrade of lift or new lift installed for the benefit of all residents; Improvements to the interior of existing flats; Energy upgrade works to existing flats
- Safety - As part of the overall proposed scheme, fire prevention works to the block will be reviewed and upgraded as required.
- Reduction of energy bills - The roof-top extension will improve the energy performance of the building, and retrofitting the existing facade will reduce energy bills for the existing flats.

Section 2: Design principles

2.0 Overview

Both the GLA and the government has recognised the potential of roof-top development and introduced changes to the planning regulations in August 2020, allowing residential extensions on certain building types.

'Permitted development' rights are limited to a particular age of building and safeguards are in place to ensure that basic standards of spatial amenity and quality are in place. The permitted development rights do not apply in Conservation Areas and local authorities have control of typically difficult planning issues such as appearance, accessibility, parking and impact on neighbours.

Although described as requiring 'prior approval', this applies to the principle of development and not all of the detail and proposals must have a planning application approved before development can commence. Recent controversies regarding prior approval schemes, for instance opportunist conversions of offices to substandard residential accommodation, will have raised concerns within planning departments and local communities.

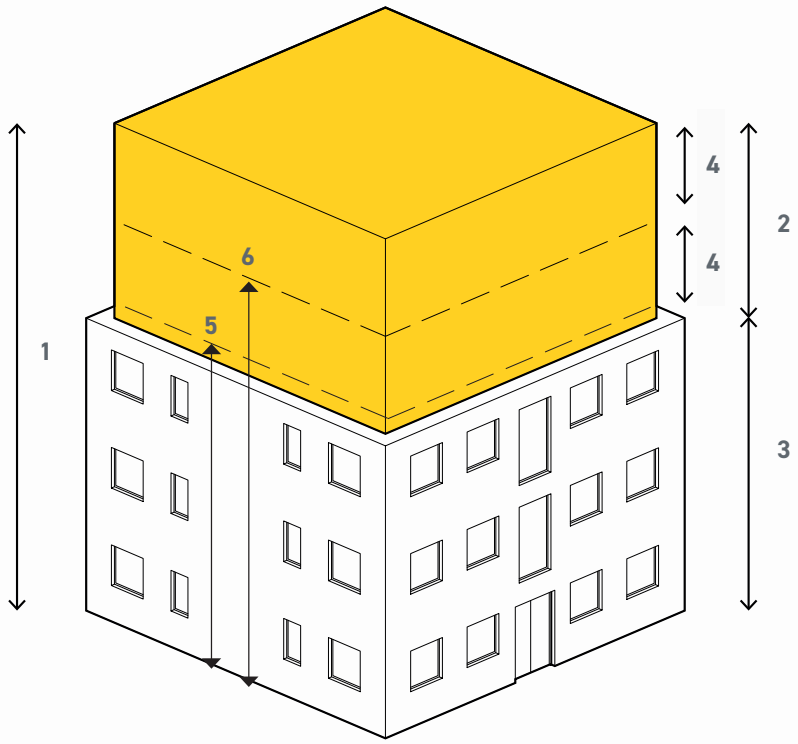
However, if the necessary design quality is achieved, roof-top development can make a positive contribution to the built environment, especially when coupled with improvements to tired looking housing blocks. Although there are design safeguards in the permitted development approach, a much better outcome will follow from proper consultation and design consideration with an experienced development team working in partnership with stakeholders. Populo, in partnership with the LB Newham, will consider all aspects of the local environment: the surrounding landscape and public-realm; the potential for improvements, especially energy upgrades to existing buildings; improved accessibility to homes; and will promote good design through design guidance and best practice examples, drawing on the experience of leading practitioners.

CRITICAL DIMENSIONS -
PERMITTED DEVELOPMENTS

1. Maximum 30m total height after extension
2. Maximum 2 storeys & 7m extension
3. Existing building to be minimum 3 storeys
4. Floor to ceiling height of additional storeys must not be more than 3m or the floor to ceiling height of any of the existing storeys, whichever is less (measured internally)

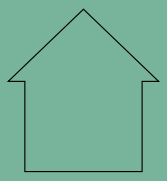
CRITICAL DIMENSIONS -
FIRE SAFETY

5. If a new floor is 11m or more above the external ground additional fire protection measures (sprinklers) will be needed in existing
6. If a new floor is above 18m the fire protection and use of combustible materials in the existing will need to be assessed and upgraded and airspace extension is unlikely to be viable.

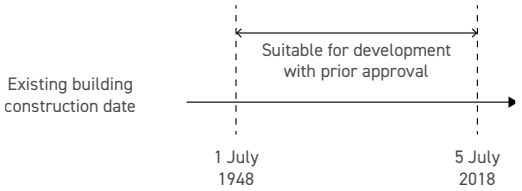


2.1 Permitted development principles

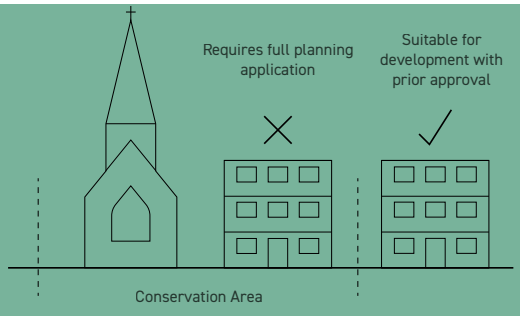
The new dwellinghouses that are constructed must be flats, compliant with Nationally described space standards. Every dwellinghouse in the building must remain in use as a dwellinghouse and for no other purpose, although uses which are ancillary to the primary use as a dwellinghouse will be permitted;



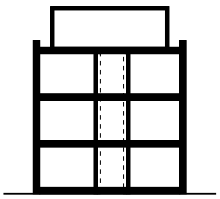
The new rights only apply to buildings constructed between 1 July 1948 and 5 March 2018;



The rights will not apply to buildings in conservation areas or listed buildings;



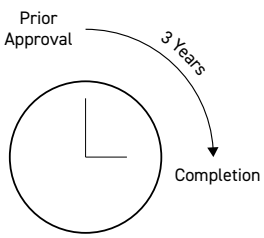
Engineering operations within the existing curtilage of the building to strengthen existing walls and foundations and to install services are permitted, along with replacement or installation of additional plant, construction of safe access and egress and construction of ancillary facilities if needed;



Before development begins the developer must provide the local planning authority with a report for the management of the construction which sets out proposed construction hours and how adverse impacts of noise, dust, vibration and traffic on occupiers and adjoining owners will be mitigated;

The development must be completed within a period of three years starting with the date 'prior approval' is granted.

In keeping with LB Newham's objective to involve residents, all targeted schemes will involve a formal planning application.



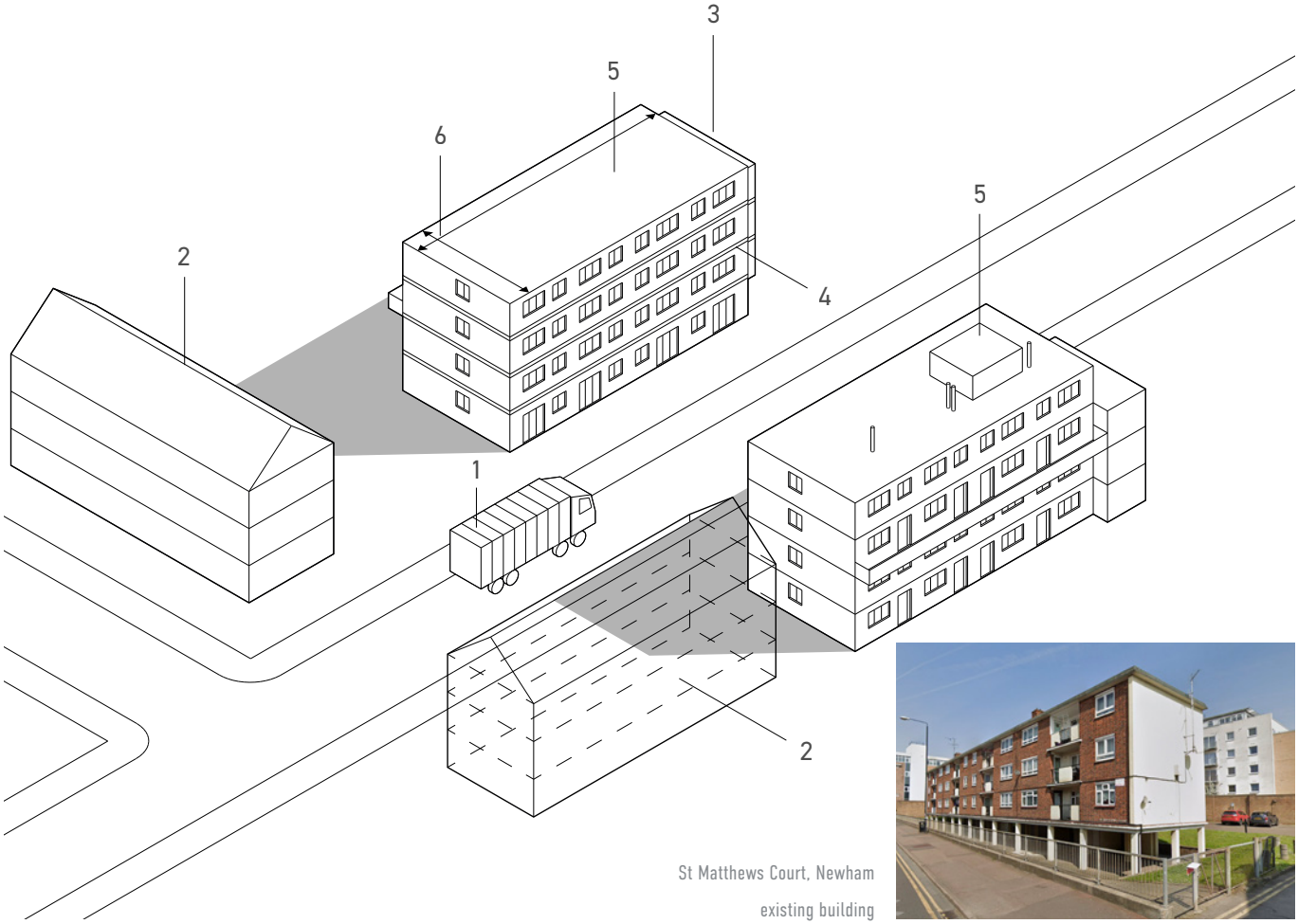
2.2 Appropriate existing building

In the following sections we show how Populo will adopt sound design principles to deliver exemplary development in suitable locations.

A high level analysis of the kind of housing stock that may be suitable for roof-top development needs to be followed by a more detailed examination of the building and its surroundings. The following considerations must be assessed, and the outcome of this assessment will inform the design and detail, considerations as the project's feasibility is thought through.

NOTE: The building on the north side of the road represents a more suitable building for extension than the similar building on the south side of the road due to the considerations set out above.

1. Good access for construction vehicles.
2. Not immediately adjacent to or overshadowing adjacent homes, ideally to the north of existing development or on the northern side of narrow streets and spaces.
3. Served by a free-standing lift/stair core or multiple vertical cores (to allow uninterrupted resident access during construction).
4. Substantial construction and foundations, typically concrete frame or large format pre-cast concrete
5. Uncluttered roof with minimal service penetrations, lift overrun, plant enclosure etc.
6. Dimension and shape assessed for quality and efficiency of layouts, positions of cores and ability to accommodate amenity space



St Matthews Court, Newham

existing building

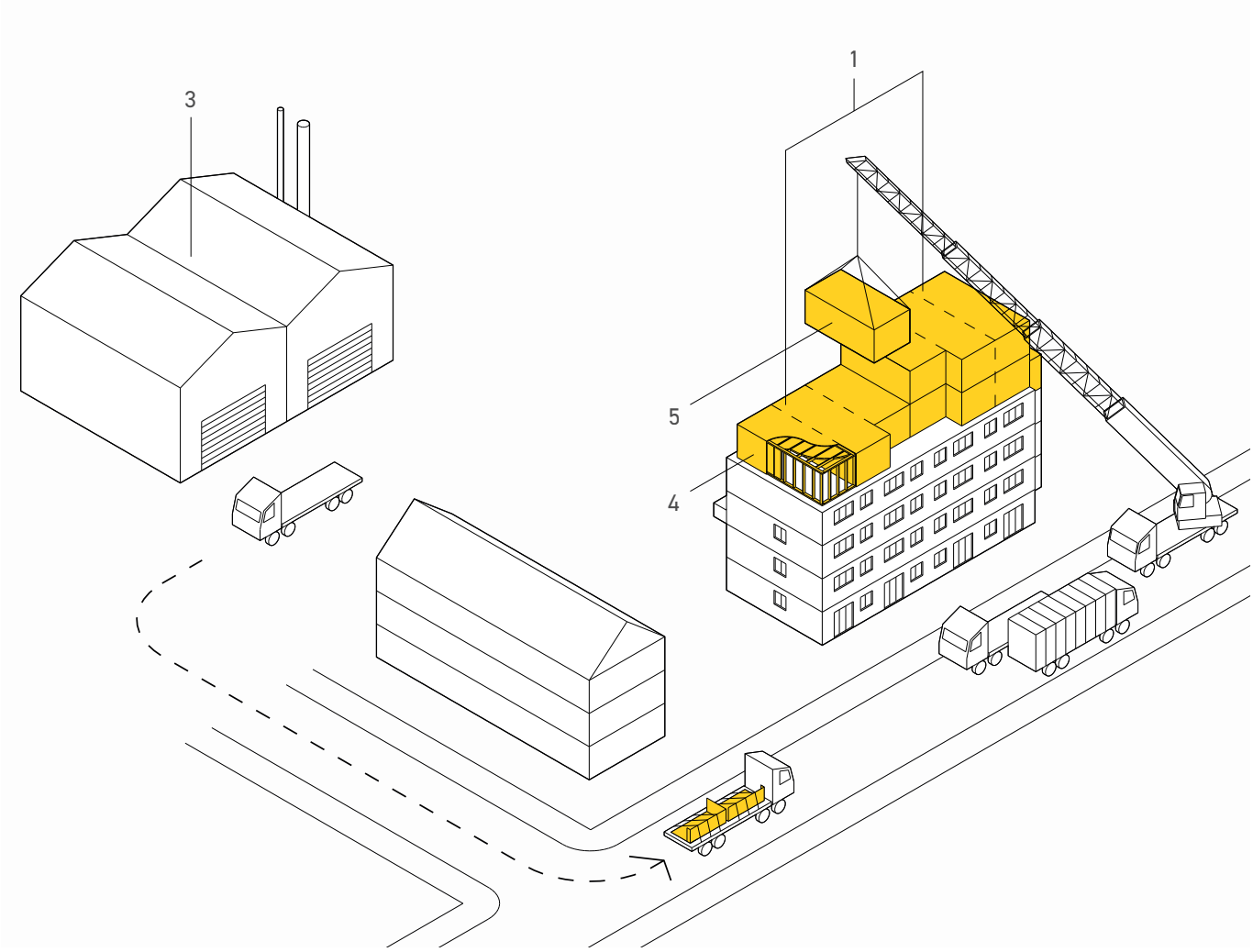
2.3 Modular or offsite construction

The chosen method of construction will have a strong bearing on the quality of the completed development, the speed of construction and the amount of disruption and inconvenience for existing residents.

Generally, off-site and modular approaches will help speed up construction and secure a high quality of finish. The degree of modularisation (whole finished rooms) or prefabrication (finished panels, supplied 'flat-packed") will depend on a number of considerations, which will be different for each project. Populo will seek to optimise the benefits of off-site construction.

1. Standardisation and repetition of unit types and specific internal design such as bathrooms and kitchens.
2. Dimensional consistency, corresponding with structural logic of host building (wherever possible loads aligning with structural/party walls or existing columns/structure).
3. Packaged services with integrated heating (heat pump or hybrid system).
4. Lightweight external finishes (for transport and handling) but exemplary in fire performance, weather resistance and insulation performance.
5. Fully or near fully fitted and finished to reduce site operations, construction time and disruption.

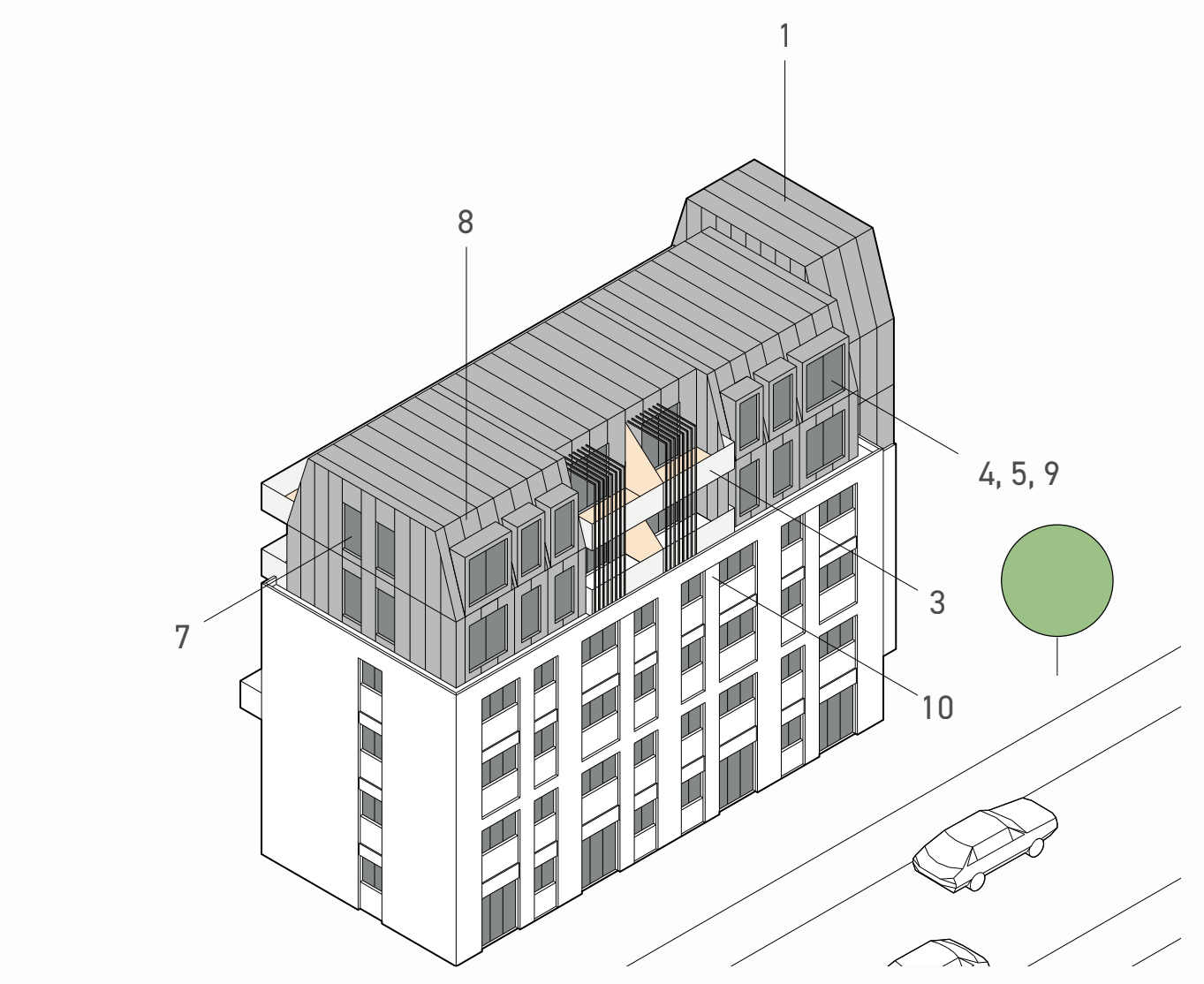
Additional fire protection and insulation measures may be needed in the void space between the modular units and the existing roof.



2.4 Appearance

The following general principles of good design will be applied to Populo projects wherever possible:

1. Light coloured high quality cladding materials (to weather well and complement existing).
2. Controlled service outlets and downpipes (preferably concealed).
3. Elegant balcony and amenity enclosure (glass and steel balustrades with custom design, not cheap off-the-shelf generic solutions).
4. High performance glazing and glazed door systems, with exemplary acoustic performance
5. Optimal glazing for passive solar gains and exploiting views and aspect.
6. Concealed plant and equipment (heat pump exchangers, boiler flues etc).
7. Dual aspect dwellings.
8. Facades composed as a single design entity (ie a suitable cornice or top to a flat roofed building; a mansard or inhabited roof to a traditional or historic building).
9. Alignment of vertical components of existing or adjacent horizontal datum on nearby landmark/ reference building.
10. Existing building to be retrofitted to improve appearance and energy performance.
11. Review proportions and fenestration pattern of existing building and roof-top extension together to create a satisfactory overall appearance.



2.5 Improving existing buildings

The existing building below an airspace development can often be cost-effectively upgraded to improve its energy performance, making use of the site facilities, scaffolding and airspace contractor's expertise.

The likely improvements will be to the external walls, fire and safety systems and the access and security arrangements including:

1. Window replacement: new windows should also be installed with no air gaps or leakage to improve the airtightness of the home.
2. External wall insulation: substantially reduces the heat loss through the walls but requires new cladding finishes externally. The most cost effective finish is render, but this substantially alters the appearance of the building.
3. Balcony and parapet waterproofing: areas that are prone to fail if waterproof coverings are old and deteriorating (often asphalt).
4. Fire and heat detection: may be installed as part of a linked alarm system depending on the fire strategy for the building but this is not always necessary or appropriate for external balcony access buildings. Improvements can also be made in common areas such as hallways and lobbies.
5. External (entrance) doors: can be improved for better security and fire protection, though entrance doors to most Newham buildings have been upgraded fairly recently.

Nottingham City Homes 2050 Pilot project, Nottingham
Studio Partington

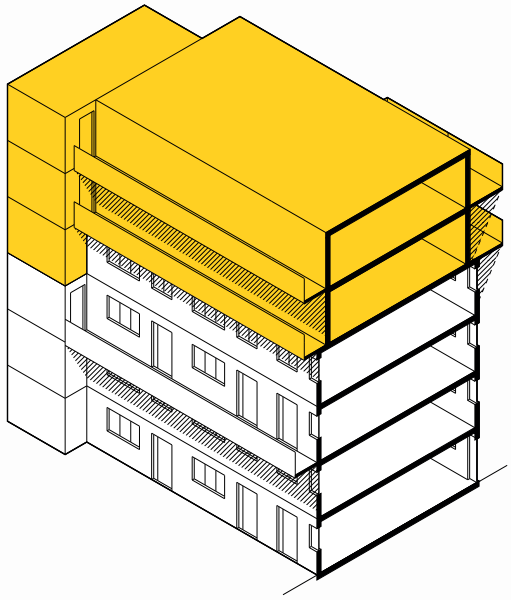
2.6 Rights of light

Two important issues for roof-top developments, including those brought forward under permitted development rights, are the impact on the amenity of the existing building and neighbouring premises including overlooking, privacy and the loss of light; and any potential infringements Rights to Light which are Common Law rights outside of the planning legislation.

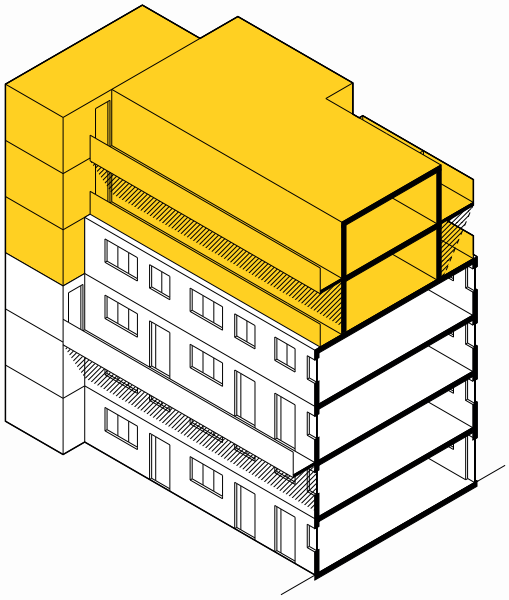
Potential issues can occur when new roof-top dwellings have access walkways or balconies extending beyond the frontage of the existing building. Many of the four storey maisonette types in Newham, often known as walk-up blocks or gallery access flats, have an external access gallery at the first floor.

If the new roof-top homes replicate this access route a couple of storeys above there will be an impact on the top floor windows of the upper floor maisonettes or flats. The design solution should be to assess and amend the design or mitigate any impacts through recognised daylight and sunlight assessment software or it could be to devise an access and amenity strategy that does not project beyond the building at all. Such an approach would work with the potential construction benefits setting back the roof-top dwellings to avoid the extensive use of scaffolding. However, the landings of an extended staircase would need to co-ordinate with the new access route, and the existing roof junction with the new dwelling and with the newly created parapets or railing will require special consideration in the detailed design stage.

Different solutions will form different structural conditions but designers should be aware of the impact on the adjacent buildings as well as thinking about solutions for the new build.



Balconies and access deck set back from existing building edge, to eliminate any overshadowing or loss of light for existing flats below.

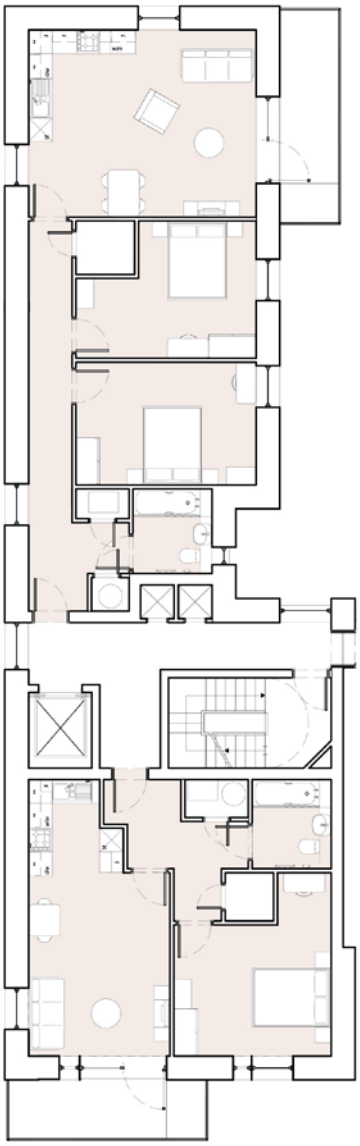


Overhanging balconies and access deck (replicating existing) may reduce sunlight / daylight for existing flats below.

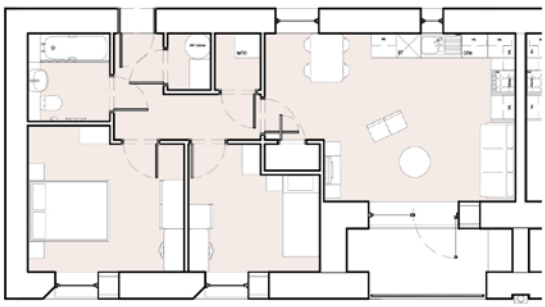
2.7 Layout of new homes

New homes will be designed to be of high quality, and compliant with nationally described space standards and building regulations.

1. Homes will be designed to meet nationally described space standards.
2. Homes to be designed to be wheelchair adaptable and accessible in line with M4 category 2 or 3 as set out in Approved Document M1.
3. Homes are to be dual aspect wherever possible to ensure good internal conditions and reduce chance of overheating.
4. Private amenity space will be provided in line with local space standard
5. Where not already provided lifts will be installed to allow good accessibility to the new homes
6. Homes will be compliant with updated building regulations on fire safety, with the implementation of sprinklers where necessary and appropriate use of materials



New build



Airspace extension

2.8 Case Study 1

St Matthews Court, Newham

Extension above and infill adjacent to an existing block of flats in Newham.

The scheme also proposes upgrades to the fabric of the existing building to improve its energy efficiency. The extension would over double the capacity of the existing block while improving the overall site by making better use of amenity and undercroft space, and increasing security with more capacity for soft surveillance from local residents. Other benefits to existing residents include enhancements to internal communal areas and reductions in energy bills due to improved energy efficiency.

Planning authority: **Newham**
Tenure: **Affordable rent**
Developer: **N/A**
No. of Units: **19 additional units**
Construction type: **Modern Methods of Construction**
Additional structure/support required: **Transfer slab at roof level**

Sectional representation of proposal

Existing building

2.9 Case Study 2

Antony and Roderick House, Southwark

Extension above and infill in-between two existing LCC type gallery access blocks.

The development will include 'bookends' at each end of the existing buildings, a new central core connecting the buildings, and a double-storey rooftop extension. A bespoke steel structure was developed to carry the weight of the new homes. Unit mix and space standards deviated from LA standards but scheme secured planning in October 2020.

Planning authority: **Southwark**
Tenure: **Local Authority affordable rent provided by housing association**
Developer: **Apex developments, Adston contractor**
No. of Units: **30 (24 affordable rent, 6 social rent)**
Construction type: **Modular steel delivered as pre-finished units**
Additional structure/support required: **Extensive external support, exposed columns etc**

Proposed extension

2.10 Non modular roof extensions

Jameson Lodge, Shepherds Hill, Crouch End

Alford House, Stanhope Road, Crouch End

Hoxton Square, Hackney

Sheperdess Walk, Hoxton

Ward House, Islington

Tooley Street, Southwark

Conclusion

This guide sets out the considerations and approaches to airspace development along with some examples of good design.

It highlights a number of benefits, both for existing residents and more widely such as the reduction of the environmental impact of new homes and more cost effective means of meeting Newham's housing targets.

While there are examples of the updated permitted development policy giving rise to opportunistic developers providing low quality housing to maximise profits, there is no reason why the changes cannot be used to provide high quality housing that will contribute positively to the delivery of new homes.

The design principles outline some approaches that can be employed to ensure airspace development is of high quality and efficient cost, while also contributing to the important discussion of carbon reduction in the built environment.

There are a number of suitable sites across Newham that could be utilised for airspace development. Together the sites pose a strong opportunity for the delivery of high quality, affordable housing while also improving the existing urban environment.

Proposal for Folkestone Road,
Studio Partington