

The Circular Economy of Everyday Life

How the transition to the circular economy can function as a mechanism for estate regeneration that addresses the everyday lived experiences of residents

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7923 Words

Being a Major Project in Urban Design and City Planning submitted to the faculty of The Built Environment as part of the requirements for the award of the MSc Urban Design and City Planning at University College London, I declare that this project is entirely my own work and that ideas, data and images, as well as direct quotations, drawn from elsewhere are identified and referenced.

Abstract

Inner city modernist housing estates, and the regeneration processes that demolish and rebuild them, are the product of the linear economy. Here resources are manufactured, consumed and disposed of, contributing to climate change and widening inequality.

The circular economy functions as an alternative, holistic, model for thinking about resource flows that mimics natural systems with the overall goal of decoupling environmental pressure from economic growth. This project develops a framework for the regeneration of modernist estates that addresses their challenges whilst facilitating the transition to the circular economy. In particular, it involves reconsidering the way residents engage with the spaces they occupy through active participation and multi scalar collaboration.

The framework involves refurbishment, repair and densification, over demolition, and productive redesign of open space. In addition, the implementation of local energy, food, waste and water management strategies that mimic natural resource flows through use of renewables, circulation and sharing. This is tested in Northumberland Park, Haringey, a deprived ward in north London set to undergo regeneration as part of the Haringey Development Vehicle.

Regeneration from the perspective of the circular economy leads to good urbanism through redesign and reuse of space. It creates walkable, green and lively spaces to work, meet and play that is home to diverse groups of people. Furthermore, a collaborative approach to rethinking resource use in an urban residential area also serves as a tool for strengthening community ties.

Acknowledgements

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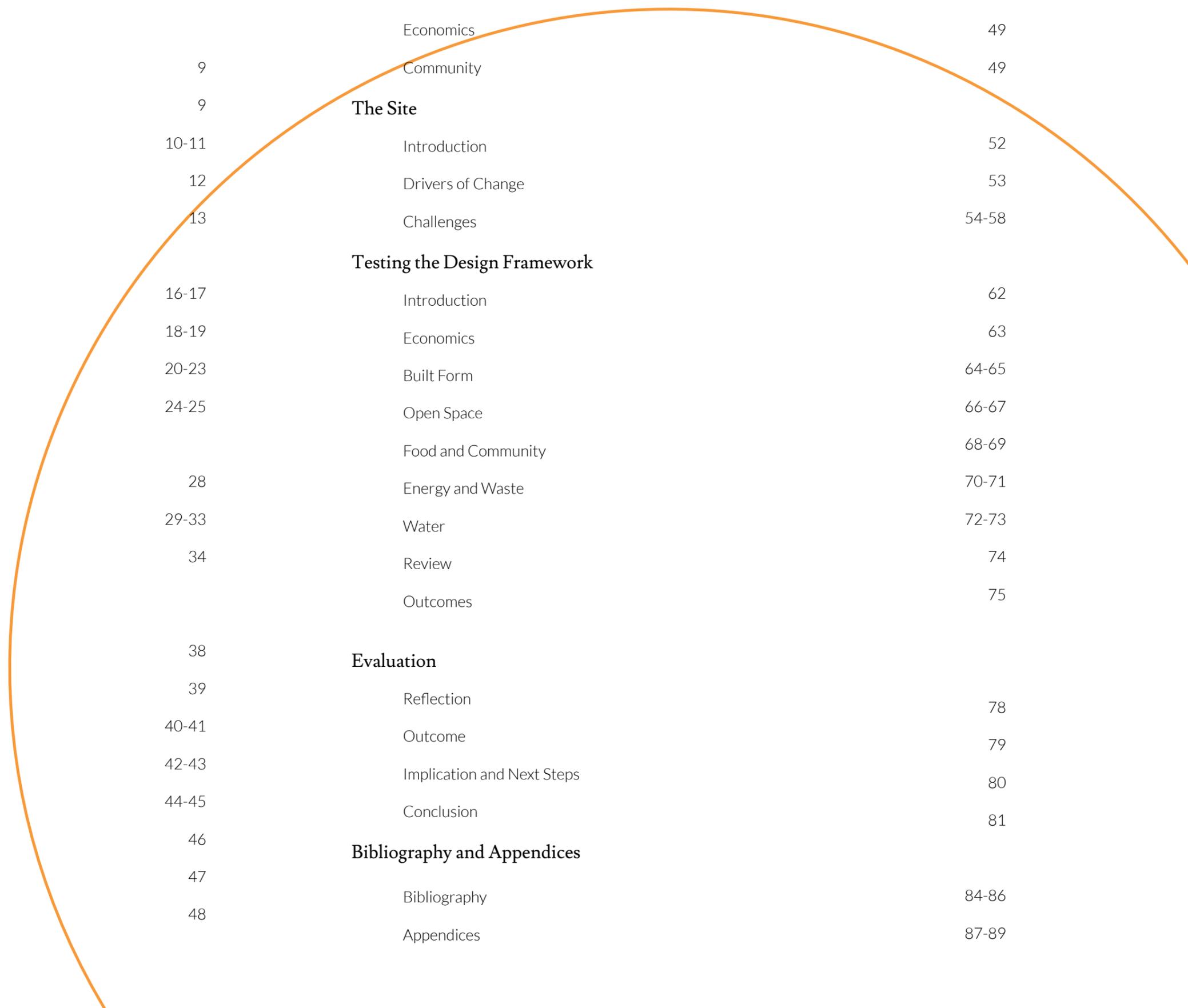


Northumberland Park

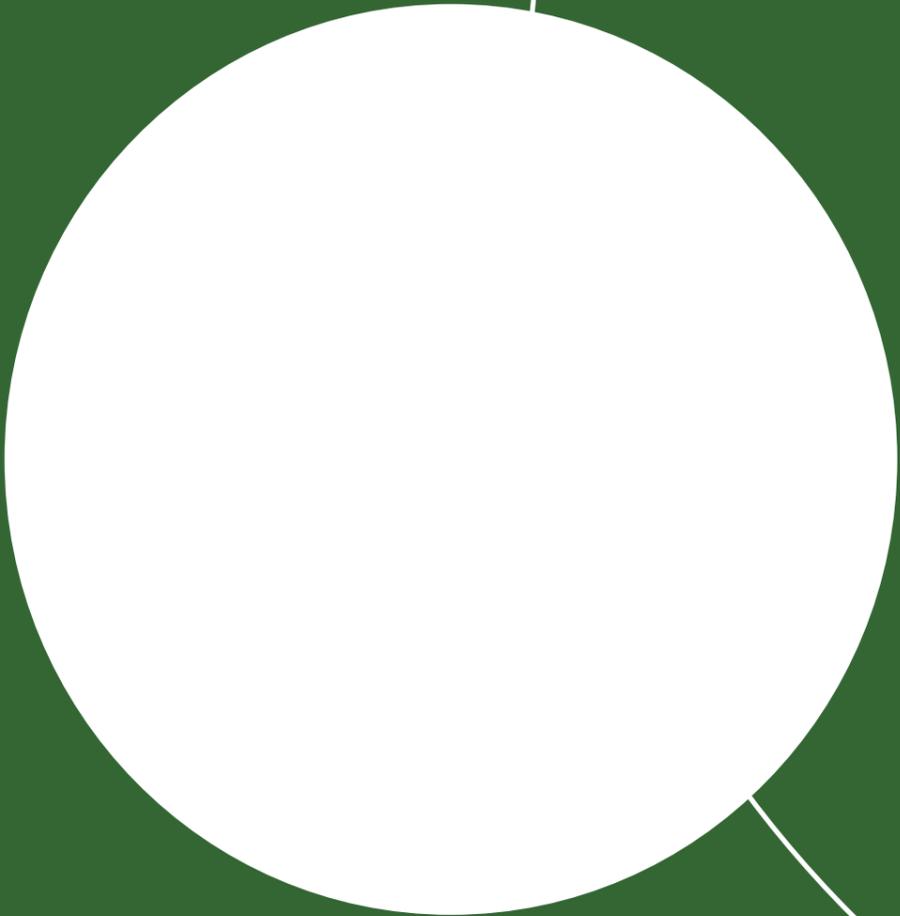
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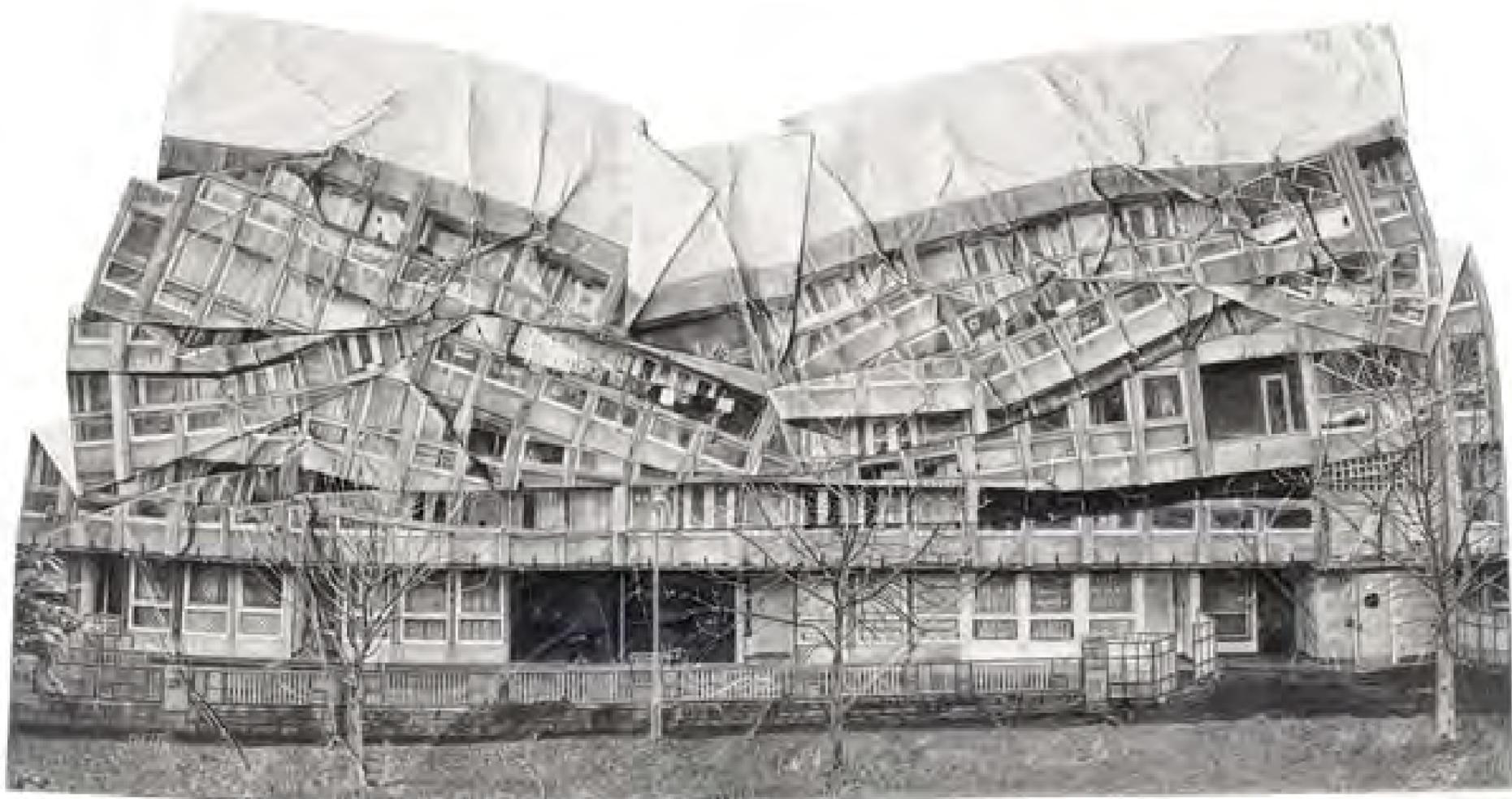
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1. Introduction



A Fall of Ordinarity and Light- Robin Hood Gardens (Brennan, 2014)

Introduction

Introduction

This project emerged from observations on the wastefulness of contemporary approaches to estate regeneration across London. Wasteful with regards to resource use, the destruction of unique urban areas and finally wasting an opportunity to re-imagine a more sustainable way of living.

It begins by outlining the linear nature of modernist housing estates and regeneration processes that have contributed to climate change, waste and rising inequality. The circular economy offers an alternative approach, decoupling economic growth from environmental issues and functioning in a way that mimics natural systems. This project outlines a process for housing regeneration from this perspective, addressing not just the existing challenges faced by modernist housing estates but using these challenges as a starting point to imagine future ways of living in the city.

This framework is tested in Northumberland Park, Haringey, a deprived ward of North London facing regeneration as part of the Haringey Development Vehicle. The application of this framework highlights the extent to which collaborating with existing residents to rethink design of the built form and open space, resource use and waste in the city has the additional purpose of creating lively urban places and strengthening community ties.

Contribution

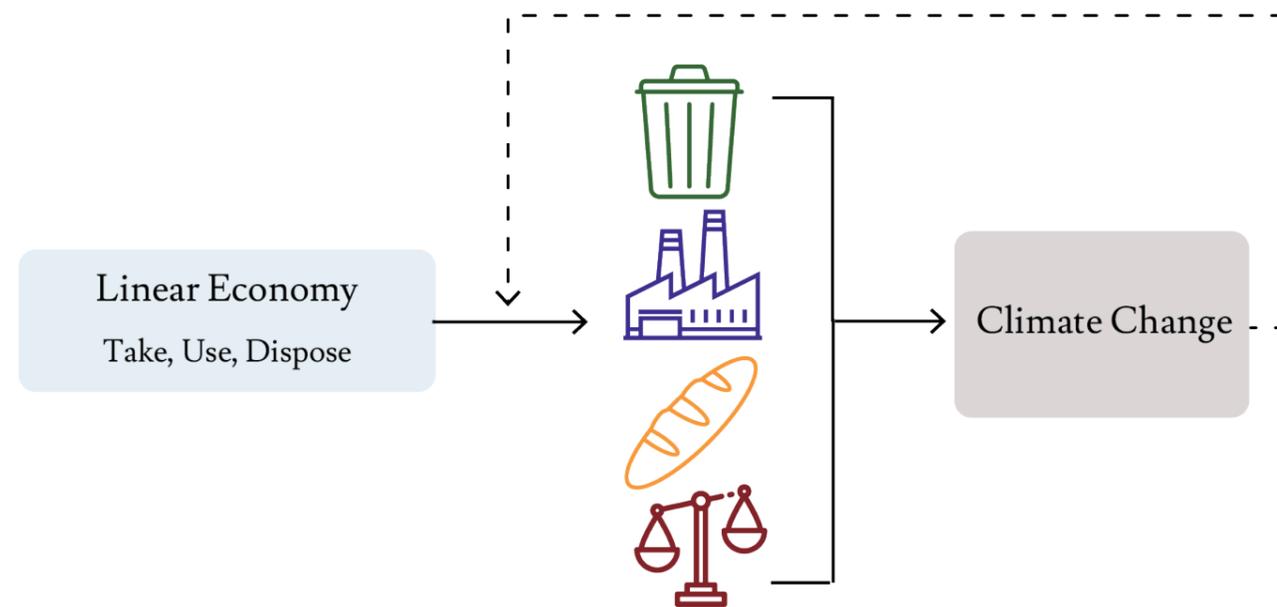
Circular economy thinking is a growing field since its emergence in the mid 1970s, however its application and significance in the built environment is relatively new (Geissdoerfer et al, 2017). At present, thinking is centred on how new neighbourhoods can be designed and managed according to circular economy principles, typified by Arup's viability study for Old Oak Common and Park Royal. Few studies have explored its application in existing neighbourhoods or as a way of thinking about regeneration. Furthermore, the term is generally associated with technical processes, particularly manufacturing and waste processing. An approach that explores the societal and spatial consequences at the local scale through engagement with literature on the civic economy and everyday urbanism will broaden its scope.

Central Problem

The Linear Economy

Housing estates run on linear systems, produce is grown, mined or manufactured elsewhere, transported and consumed in the home in increasing quantities before being removed again as waste. This system is inherently damaging, with the global capacity to produce resource and process waste, limited (Ellen MacArthur Foundation, 2015)(Arup, 2016). This results in climate change, pollution and socio economic challenges stemming from resource insecurity as outlined in the following diagram.

Furthermore, the position from which one engages with the linear economy is power dependent with the system exacerbating inequality. The residents of housing estates are typically those with less power and therefore access to resources, as producer or consumer. As a result they are also most likely to be negatively impacted by the consequences of the liner economy with limited capacity to respond (Kelly and Adger, 2000).



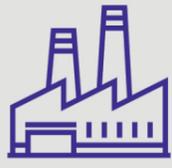
The Circular Economy

The circular economy functions as an alternative, more holistic approach that mimics natural systems with the transition aiming to decouple economic growth from environmental issues (Ellen MacArthur Foundation, 2015).



Waste

10 million tonnes food thrown away each year (WRAP, 2017).
Economic costs - could be used
Threatens natural habitats, soils and groundwater
Air Pollution



Damage

Extraction, production and rapid industrialisation damages and degrades the natural ecosystems upon which we rely, limiting capacity to adapt and evolve.



Food and Energy

8.4 million people report insufficient food
Volatile energy prices
Exacerbate with threat of climate change (DECC, 2012).



Inequality

Unequal access space, resources, education and work
Results - ill health and less capacity to respond
Interconnected - decline, low resilience, vulnerability

Fig 1. The Linear Economy Impacts

Modernist Estates

Post the second world war, public authorities were tasked with the mass construction of housing to accommodate the rapidly growing population and address the disrepair and slum conditions of dwellings across the country. Planners and Architects with abstract utopian visions of housing, space and light for all swept away existing terraces and tenement blocks replacing them with towers and slab block apartment buildings and streets in the sky in a movement now known as Modernism (Grinrod, 2013)(Hopkins, 2017).

However, no sooner than schemes were finalised critique emerged for their design including alienating under-designed communal open space and the loss of traditional street and space networks that create lively urban spaces (Young and Willmott, 1957)(Jacobs, 1961a).

Modernist housing estates across the UK are increasingly subject to estate regeneration schemes that also function in linear ways. Escalating land values and the limited capacity of councils tends to result in demolition and rebuilding over more sensitive improvements (Hopkins, 2017). This can exacerbate waste, resource use and environmental damage as well as widening inequality by displacing tenants, their lives and communities, across the city.



Jane Jacobs 1960s



Margaret Thatcher Initiating the Right to Buy Scheme 1980



When 'modern architecture died' - Pruitt Igoe, St Louis 1976



The redeveloped Heygate Estate, Elephant and Castle 2016

Project Approach

This project explores how the circular economy model would alter the regeneration of modernist estates. However, addressing the challenges of both modernist estates and the linear economy through the application of the circular economy requires a re-imagining of lifestyles, not only technical solutions. Accordingly, this project seeks to explore both the shift in lifestyle and the redesign of urban space to facilitate this shift.

The project will address the central question opposite and the two sub questions within it. These questions will be addressed via the objectives below. The conclusion will seek to evaluate the extent to which the project resolves these.

Questions

Can circular economy principles be applied as a tool for estate regeneration that addresses the everyday lived experiences of residents?

What are the challenges to existing modernist housing estates that are requiring or undergoing regeneration?

How would spaces, programs and governance models be redesigned and reused to function in circular ways?

Objectives

Literature Review
 Review the challenges of modernist housing estates
 Introduce the circular and civic economy

Case Studies
 Consider examples of circular and civic practices in urban residential districts

Design Framework
 Develop a toolkit for regenerating modernist housing estates from the perspective of the circular economy of everyday life

Testing
 Test elements of the toolkit to explore it's impact on the design, programming and governance of an estate

Fig 2. Research Questions and Objectives

Methodology

The city, and attempts to plan and design it are ‘wicked’ problems, where social, economic, physical and environmental themes emerge, interact and evolve (Rittel and Webber, 1973). As a result, this project requires a holistic and interdisciplinary understanding of housing estates, their challenges and alternative circular responses.

The digram below illustrates the research process designed to meet the objectives outlined previously. Literature, case studies and informal interviews with practitioners and residents were used to gather information

that would assist with the formation of the design framework and its application. Successful regeneration approaches are always site specific. Accordingly, the design framework was informed and reformulated by the understanding of one specific site.

Northumberland Park, Haringey, was selected to test this framework. The ward features many design qualities associated with modernist housing estates and it facing regeneration as part of the Haringey Development Vehicle.

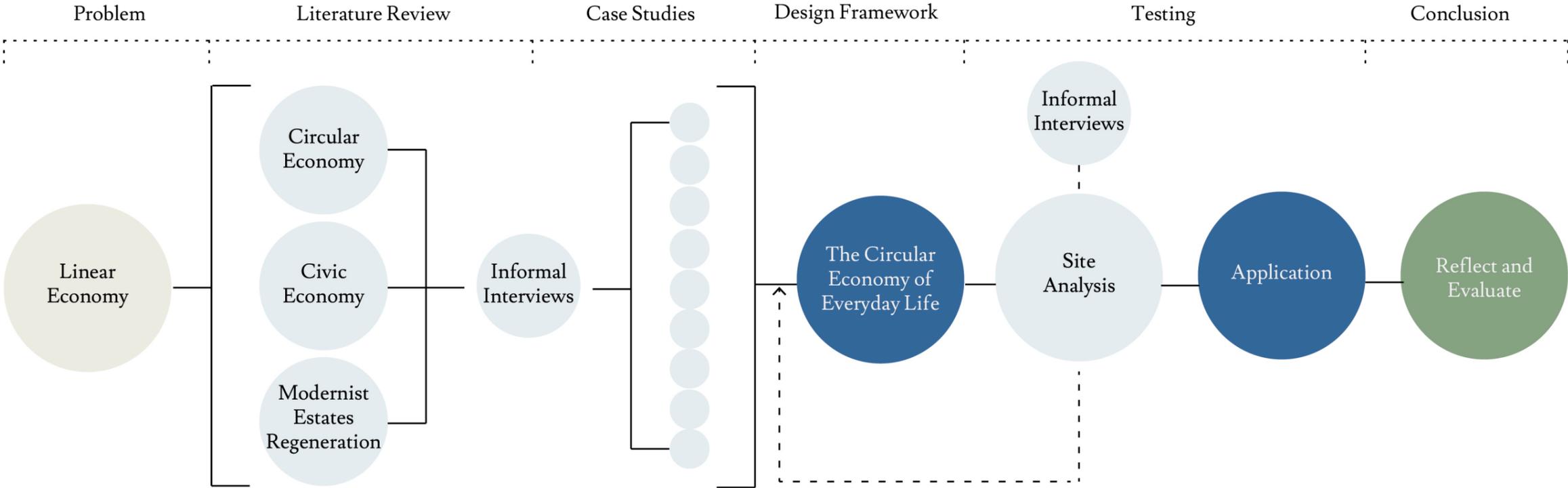
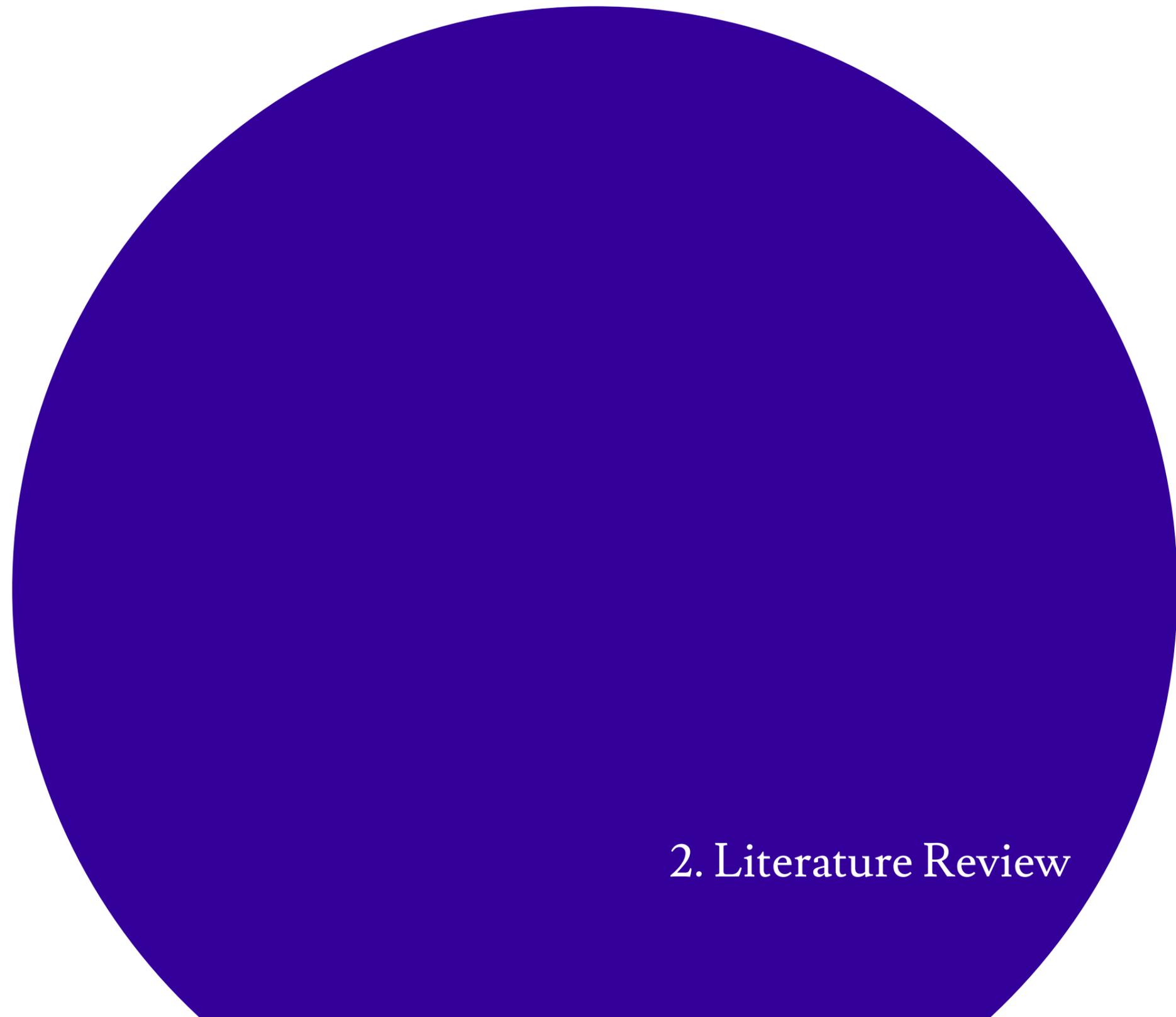
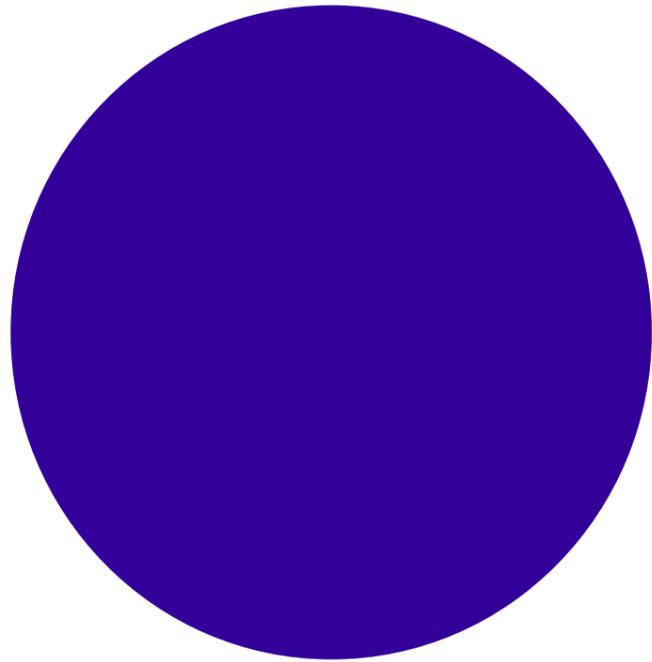


Fig 3. Methodology



2. Literature Review

The Circular Economy

Introduction

The circular economy functions as an alternative, holistic, model for thinking about resource flows that mimics natural systems with the overall goal of decoupling environmental pressure from economic growth (Ghisellini, Cialani and Ulgiati, 2016). It can be defined as 'a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling' (Geissdoerfer et al., 2017).

Origins of circular economy thinking in the 1970s include the Club of Rome's limits to growth and the architect and industrial analyst Walter Stahel. Since the early 2000s the term has significantly grown in use and popularity as an alternative model through for example 2002's Cradle to Cradle and the work of the Ellen MacArthur Foundation. The foundation is a research organisation that works with businesses, government and academia to build a framework for the circular economy. The term is also in the process of becoming mainstreamed in political discourse for example the EU's circular economy package and China's circular economy promotion law (Geissdoerfer, 2017).

Key Principles

The Ellen MacArthur Foundation (2015) identified three principles of the circular economy that will guide this project:

- 
Natural Preserve and enhance natural systems through use of renewables and minimising the use of finite resources
- 
Circulate Optimise yields through circulation, sharing or extending lifetimes.
- 
Impacts Reveal and design out negative impacts including pollution, climate change and negative health effects.

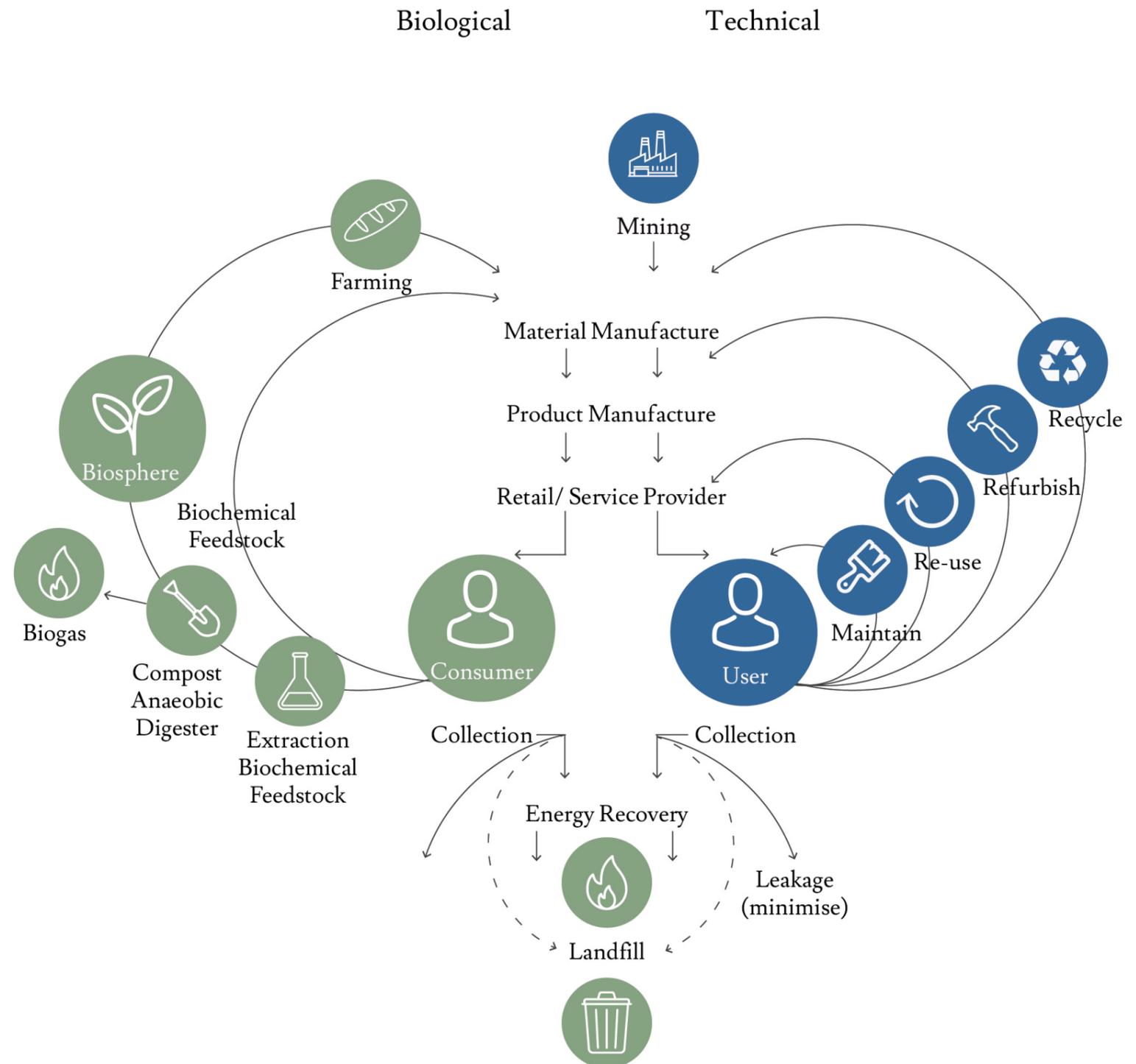


Fig 4. The Circular Economy (Ellen MacArthur Foundation, 2015)

ReSOLVE Framework

Circular economy methods are broad; dependent on discipline and scale. However the ReSOLVE framework, originally developed by the Ellen MacArthur Foundation, functions as a way of gathering and grouping individual methods into one model according to six themes.

This approach has been influential and has since been replicated as a macroscopic way of conceptualising the transition to the circular economy (Ellen MacArthur Foundation, 2015)(Arup, 2016). The actions outlined will inform the selection of themes and strategies in the later design framework.

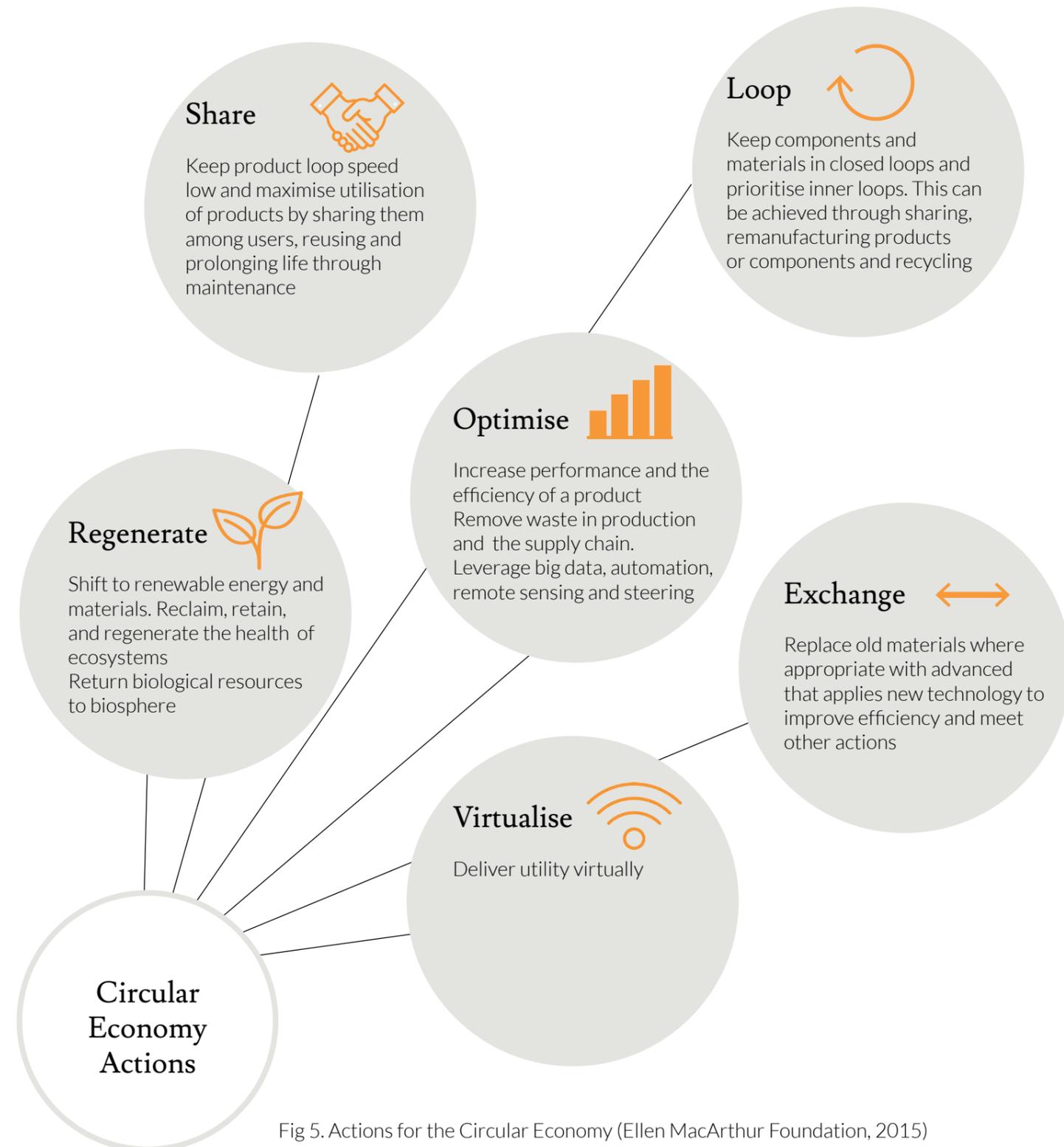


Fig 5. Actions for the Circular Economy (Ellen MacArthur Foundation, 2015)

The Civic Economy

The Role of the Citizen

As the circular economy diagram demonstrates, in circular economy literature and regeneration the citizen is treated as consumer or user. Their engagement in the spaces and processes within which they live is passive and projects are implemented and managed from the top down (Ellen MacArthur Foundation, 2015)(Geissdoerfer, 2017).



This project seeks to explore how the circular economy model could transform the way that residents engage with the spaces they occupy and therefore requires an understanding of the civic economy and everyday urbanism.

The Civic Economy

The civic economy can be defined as a participatory ecosystem that aims to create a new piece of connecting social infrastructure for individual and collective wellbeing (Open Works, 2015). The integration of civic economy approaches into the circular economy framework attempts to fill gaps left by the market and state whilst establishing a platform for emergence where residents are empowered to make their own changes and adapt their lifestyles to function in circular ways (NESTA, Design Council, and OO, 2016).

As with the circular economy, civic economy practices are broad, however, literature identifies the following themes. Again, these themes will provide a foundation for the development of the design framework.

Theme	Outline	
Lifts all Boats	Aims to benefit everyone to build social capital and resilience	
Built by protagonists	Co- creates value for long term social, economic and environmental sustainability	
Diverse Funding	Co- investment mechanisms such as crowd-funding Recognition of a range of other currencies including trust and time	
Inherently Local	Reuse existing assets or target Recognise latent opportunities Generate a holistic understanding of place	
Emergence	Purpose driven but open ended and evolving Delivers a plurality of values and outcomes	
Grow	Through network and adaptation over replication - maintains heterogeneity	

Fig 6. Themes of the Civic Economy (Open Works, 2015)(NESTA, Design Council, and OO, 2016)

Everyday Urbanism

Lefebvre argued that space is socially constructed (Lefebvre, 1974). His work has been hugely influential, informing urban theory that centres on the belief that lived experience is more significant than physical form, 'everyday urbanism' in particular.

Everyday urbanism is concerned with the spaces that exist between defined and identifiable realms such as the home and the work place and in contrast to the official and planned public spaces associated with modernism. These spaces are the ordinary, the repetitive and the banal but inherently heterogenous (Crawford, 2008). They include streets, such as Tottenham High Road, and public spaces where civic economy practices can emerge, such as community food growing in Tottenham.

Everyday urbanism and the civic economy is based on the appreciation that the way in which one interacts and understands spaces is dependent on individual experience. As a result, this requires a repositioning of the designer, with power transferred from expert to ordinary person. The designer must understand their embeddedness within contemporary society rather than superiority to it. (Crawford, 2008).



Tottenham High Road



Living Under One Sun Community Organisation, Tottenham 2017

Modernist Estates

Cracks in Utopia

The Grenfell Tower tragedy, on the 19th June 2017 where over 80 people lost their lives, brought attention to the state of hundreds of thousands of homes in housing estates across the UK and their poor upkeep (Booth and Evans, 2017). Post war housing aimed to provide good quality housing for all. However, the utopian vision of 1960s architects and planners is commonly held to have failed, with Modernist housing estates now vilified, associated with social problems such as high crime rates (Cameron, 2016). They are either ignored and left to fall into disrepair or their prime location results in urban regeneration strategies. These tend to favour demolition over retrofit displacing residents, replacing social with luxury housing and increasing waste and resource use (Hopkins, 2017) (Harris, 2016)(Pinoncely, 2016).

The following literature review introduces some of the, often contradictory, challenges of Modernist estates and their renewal. This is grouped into design, environment and socio economic challenges.

Design - Challenging Features

Lack of Defensible Space

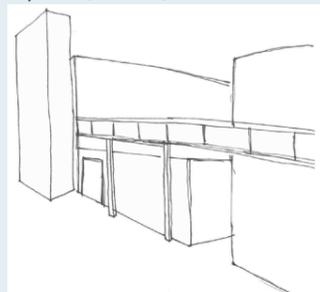
Residents feel no control or responsibility for spaces around them that are occupied by many people. Adaptation can create private and semi private spaces that results in a sense of 'territorialism', reducing the likelihood of crime (Newman, 1978).

Problematic features that support crime

Coleman (1985) developed a typology of problematic features and corrective interventions.

- Large populations reduce familiarity, there should be:
Fewer blocks per site (1 ideally), fewer access points per site, fewer dwellings per block, dwellings per entrance and dwellings per corridor. Maximise number of dwellings on ground floor and limit the number of stories.
- Secure entrances in observable positions.
- Design creates circulation and escape routes, there should be:
No overhead walkways, connecting entrances, lifts or stairs -to limit circulation and escape routes
- Design creates hidden gathering spaces:
Avoid stilts, garages and facilities on ground floors
- Play areas and empty open spaces are associated with degradation, crime, hassle and conflict:
Private gardens are preferable

These assume an environmentally deterministic approach to higher crime rates observed in modernist housing and ignore other significant factors. Their significant influence has resulted in fences, negative signage and CCTV surveillance (Hopkins, 2017).



Example of Coleman's features observed in the four squares estate, Bermondsey

Design - Lost Spaces

Various critiques emerge for the design of buildings as 'grand ensembles', freestanding in space without consideration for how the spaces are used, relate or integrate.

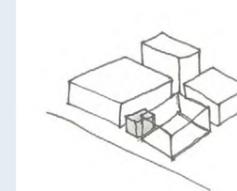
Alienating communal spaces (Young and Willmott, 1957)

Lost Space that fails to connect buildings (Trancik, 1986)

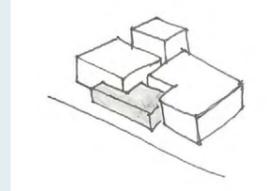
Residual Spaces - neglected residual spaces left by modernisation offer great benefit to cities as they often require minimal economic investment but have the potential to make cityscapes more liveable (Villagomez, 2010).

This space means estates are generally low to medium density despite sometimes significant height.

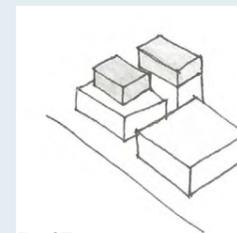
Villagomez Residual Spaces



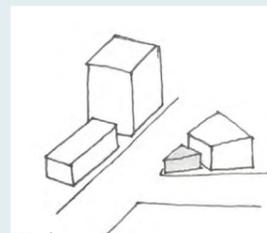
Between



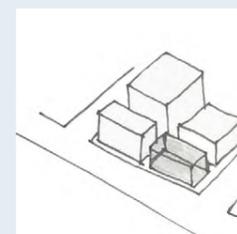
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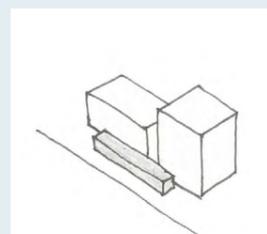
Roof Top



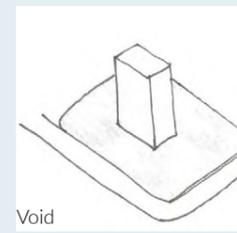
Wedge



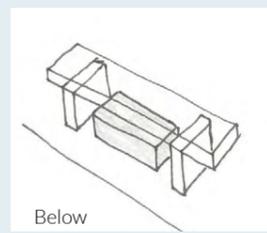
Redundant Infrastructure



Oversized Infrastructure



Void



Below

Design - Lack of Life

Alternative Layout

Estates lack the traditional network of streets and public spaces. These features foster co presence, a precondition for social interaction, the acceptance of difference and the negotiation of public culture (Legeby, 2013)(Sendra, 2016).

Disorder or Organised Complexity

Their design avoids disorder, a necessary quality of city life. Disorder creates the opportunity for spontaneity and improvisation, it's unfinished nature encourages residents to engage with and adapt the spaces they occupy. Furthermore, with disorder people become tolerant to difference so are better capable of adapting to change (Sennet, 1970)(Sendra, 2016). Modernist design ignores how the city and its occupants actually function and designs out the 'organised complexity' that makes up vital urban areas (Jacobs, 1961a).

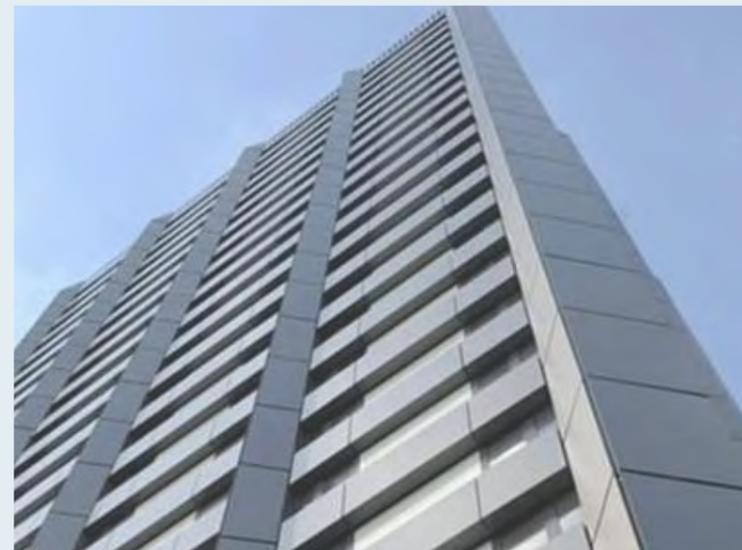


Lack of disorder in Northumberland Park, Haringey

Environment - Ageing and Maintenance

The 1960s and 70s saw a construction boom of 3 million dwellings by local authorities across the UK. Consequently these properties all age and require repair at the same time (HTA, Pollard Thomas Edwards and PRP, 2016).

Councils experiencing budget cuts and a rise in maintenance costs due to higher wages struggle to cope (Fisherman, 2004). Grenfell also highlighted alleged cost cutting and corruption within local councils where Kensington and Chelsea encouraged the use of cheaper cladding despite a budget surplus (Forster, 2017).



Grenfell Tower Cladding

Environment - Pollution and Waste

Location in inner city areas near large roads or industrial sites results in higher noise and air pollution with resulting health consequences (Power and Elster, 2017)(Hanley, 2007).

Height and limited shared space makes the introduction, uptake and management of waste and recycling schemes a challenge, particularly when policy across boroughs vary significantly (Kyrke Smith, 2012)

Environment - Public and Green Space

Through poor design and maintenance, access to good quality green spaces is limited resulting in low biodiversity and impacts on individuals. Exposure to nature and space to play is essential for healthy childhood development and the physical and emotional health of both children and adults (Louv, 2005).

Frequent exposure to nature fosters greater environmental awareness and is tied to the uptake of more sustainable behaviours (Turtle, C., Convery, I. and Convery, K. , 2015)(Moss, n.d.).



Poor green and play space in Northumberland Park, Haringey

Modernist Estates

Socio-economic - Crime

Housing estates, in popular opinion, are synonymous with higher crime rates although reasons why this is the case differs.

Presence of crime can be seen as a product of institutionalised economic and racial oppression and a response to limited opportunities and injustices (Bristol, 1991).

The broken windows hypothesis states that communal barriers such as sense of mutual regard are lowered by actions that signal no one cares, such as a broken window. Residents assume crime is on the rise and modify behaviour, using streets and public space less often. This results in less neighbourhood attachment which does result in higher crime (Kelling and Wilson, 1982).

Coleman (1985) and Newman (1978) blamed design features including hidden corners and alleys for encouraging crime.



Northumberland Park, Haringey

Socio-economic - Segregation

Developments are typically cut off from surrounding areas. Layout rarely follows traditional street pattern and size, scale and features do not respond to surrounding neighbourhoods (Jacobs, 1961b). As a result of design and large scale of estates there is clustering of economic deprivation and clear demarcation between housing for low income residents and the rest of the city with poor accessibility to or through them (Hanley, 2007).

Socio-economic - Unequal Opportunities

Unemployment is typically higher than average. Residents may lack the opportunity for good quality education, training and employment due to location, availability or quality. This reinforces inequality in the long term, impacting self esteem and limiting both awareness of and capacity to participate in certain aspects of society (Pinoncelly, 2016a) (Pinoncelly, 2016b) (Hanley, 2007).



Heygate Estate Aerial View - distinct from surrounding urban grain

Socio-economic - Unequal Access

Due to location and scale of projects, access to public transport and services including food and healthcare tend to be low. Residents must travel far to meet basic needs and these services are often of poorer quality negatively impacting health and wellbeing (Pinoncelly, 2016a) (Pinoncelly, 2016b) (Hanley, 2007).

Socio-economic - Social Capital

Psychological segregation, a phenomena Hanley describes as the 'Wall in the Head' can be as restricting as unequal access to opportunity. Residents with lower social capital may be unaware of the options, including basic rights, available to them or put off from participating due to the perception that certain services or opportunities are not for people like them (Hanley, 2007).



Focus E15 Mothers Protest 2014

Estate Regeneration

Public

Estate regeneration guides tend to be general and policy led. The Mayor of London's good practice guide to estate regeneration defines it as: 'The process of physical renewal of social housing estates through various combinations of refurbishment, investment, intensification, demolition and rebuilding' (Mayor of London, 2017). Policy documents including the London Plan, the Housing Supplementary Planning Guidance and various local plans outline general policies and aims that regeneration should achieve. These fail to address the challenges outlined previously beyond the physical removal of challenging design features.

Theme	Outline
	Maintain good quality homes and support the supply of new.
	Resist the loss of affordable homes, defined as 80% of the market rate
	The creation of mixed and balanced communities through a mix of tenures and household incomes particularly in neighbourhoods where social renting predominates to avoid pockets of deprivation.
	Greater densities where public transport accessibility is high to meet housing needs and create lively places.
	Encourage the use of cycling and walking to reduce car use, improve health and air quality.
	Integrate mixed uses including retail, leisure and work (office) to meet residents needs locally and create lively places.

	Increase legibility and integration of areas into the surrounding urban grain by adapting or creating new places around a network of streets and public spaces.
	Increase safety and access through natural surveillance by improving active frontages onto the streets.
	Create a recognisable place with public spaces as centres of activity.

(Mayor of London, 2017)(HTA, Pollard Thomas Edwards and PRP, 2016)
(Mayor of London, 2016a)(Mayor of London, 2016b)

Fig 7. Aims of estate regeneration

Private

Private practices are also formulating best practice guides to estate regeneration typically through the use of case studies. This includes Karakusuevic Carson's Social Housing- definitions and design exemplars (2017), Altered Estates from HTA, Levitt Bernstein, PRP and Pollard Thomas Edwards (2016) and the August 2017 edition of the Architects Journal.

These explore challenges and aims on a case by case basis but define success through the number of additional homes and increased density over other measures such as the subjective experience or residents, employment rate or energy use. As a result, regeneration generally synonymous with schemes that demolish and then rebuild.

Challenges

When compared to circular and civic economy principles it is clear that the regeneration approach is inherently linear:

- Ignores or Exacerbates Negative Externalities

- Increases waste and resource use

(6-54% demolition materials landfilled and 10-15% building material is wasted during construction (Arup, 2016))

- Limited address of barriers to sustainable urban design and living (Carmona, 2009)



Redeveloped Heygate - Social and Civic life centred on consumption

- Does not consider disruption to lives and local businesses

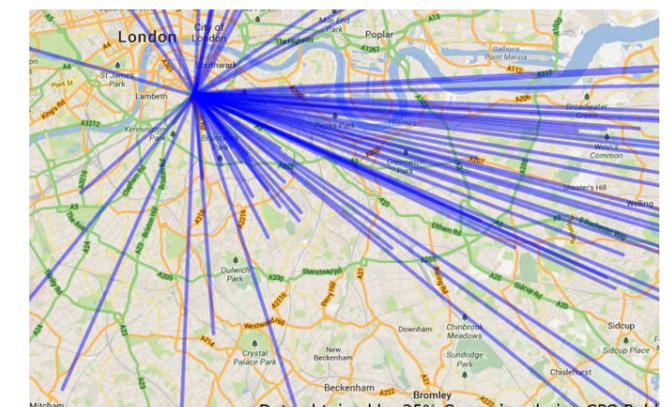
- Erodes trust between residents and local authorities

(LSE Housing and Communities, 2016).

- Guides appear to be written for practitioners and landlords, not residents

- Refurbishment options are rarely explored

- Provision for affordable not social housing contributing to net loss across London (Jones, 2016)(Lees, nd)



Relocation of Heygate Estate Leaseholders

Summary

The Circular Economy

The literature review can be condensed into the following summary under the four headings which become the aims evaluated in the case studies.



Preserve and enhance natural systems through use of renewables and minimising the use of finite resources



Optimise yields through circulation, sharing or extending lifetimes.



Encourage effectiveness by revealing and designing out negative externalities including pollution, climate change and negative health effects



Regenerate



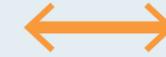
Share



Optimise



Loop



Exchange



Virtualise

Challenges of Modernist Estates

Modernist housing estates, built across the UK in the 1950s- early 70s are associated with a wide range of interconnected and sometimes contradictory challenges.

They are increasingly the focus of demolition led regeneration strategies that exacerbate the consequences of the linear economy including greater waste, inequality, resource insecurity and climate change.



Design

Challenging Features

Lost Space

Lack of Life

Ageing and Maintenance

The Civic Economy



Appreciate the heterogeneous everyday uses of space and individual experience and empower all residents to participate in the shaping of it.



Lifts all boats



Built by Protagonists



Diverse Funding



Local



Emerge



Grow



Environment

Socio- Economic

Pollution and Waste

Public and Green Space

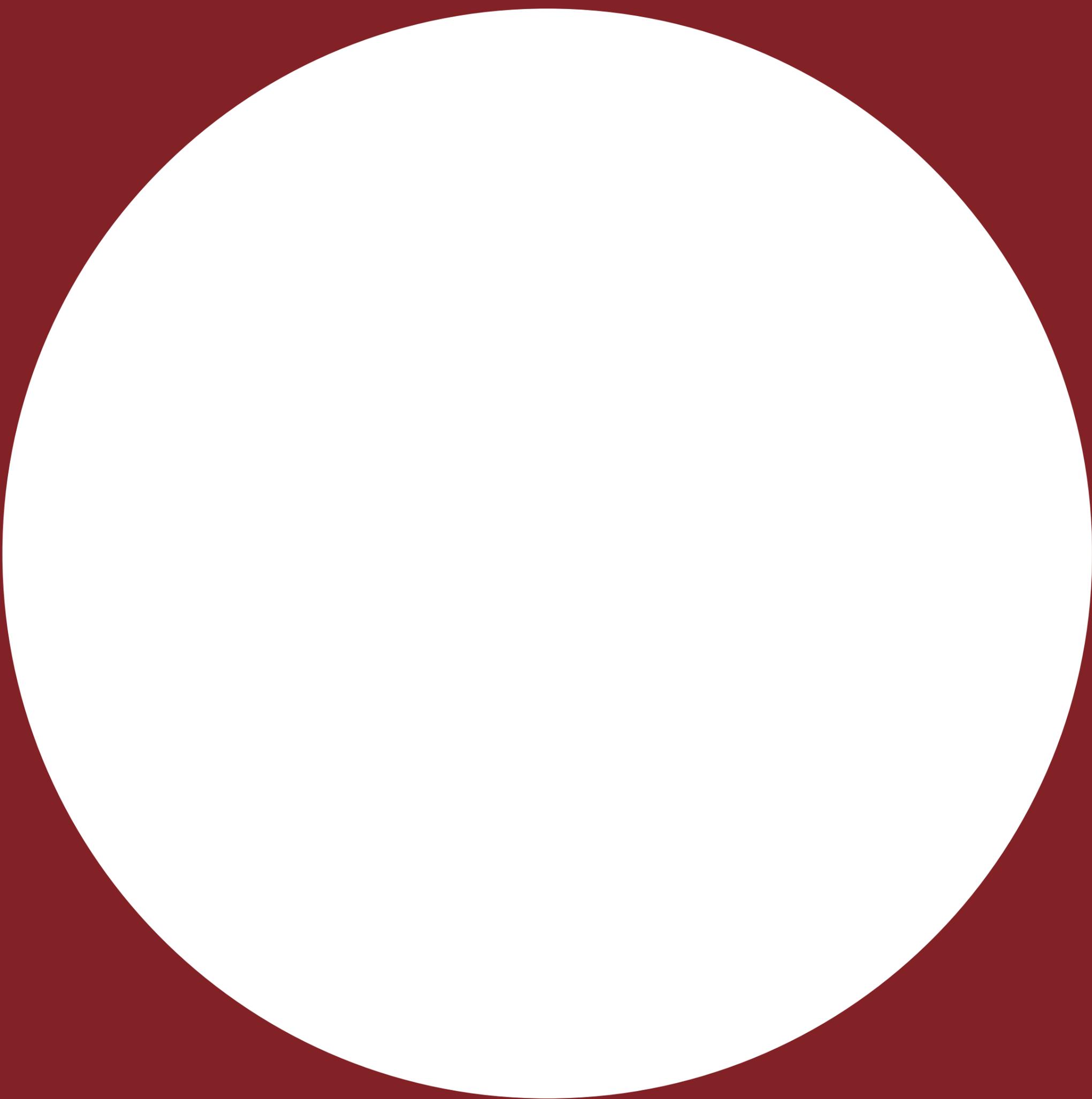
Crime

Segregation

Unequal Opportunities (Education and Employment)

Unequal Access (Food, Health, Services)

Social Capital



3. Case Studies

Introduction

Selection Criteria

The case studies in this project emerged during the literature review process and from conversations with practitioners and researchers working within the circular economy. This included Rokiah Yaman at Community by Design and Leap AD and UCL researchers Dr Charlotte Johnson and Dr Aiduan Borrion in the Bartlett school of environment, energy and resources and the department of civil, environment and geomatic engineering respectively.

Case studies are grouped as to whether they deal primarily with design, environment or socio-economic challenges outlined in the literature review.

Each case study is broken down into a brief outline, key lessons and then evaluated according to the aims outlined in figure eight.

The chapter finishes with a breakdown of key lessons grouped according to design (spatial elements), programming (non spatial) and governance (actors and mechanism for implementation) that will inform the final framework.



Fig 8. Aims to evaluate the case studies against

Case Studies

Design

Climate Proofing Housing Landscapes

Hammersmith, London | Groundworks | 2015 - Present



Queen Caroline's estate - Low and high rise inner city council estate of 262 homes. Transformed large areas of under utilised green space and hard standing to adapt and mitigate the impacts of climate change, particularly flooding.

Theme

Water

Lessons

Design landscape to collect and channel water at a slower rate, minimise surface water pooling and heat, increase biodiversity and create attractive spaces for residents to meet and enjoy.

Strategies for adapting inner city housing estates:

Sustainable Urban Drainage Systems

Green roofs,

Rain garden,

Basins and ponds,

Permeable paving,

Food growing opportunities

'Green Team' of local people to maintain.

(Groundworks, 2015)

Evaluation

Natural

- Mimics natural water cycle
- Returns hard landscaping to natural forms
- Increases biodiversity

Circulate

- Outdoor space shared and managed collectively

Impact

- Directly adapts and mitigates climate change
- Visualises water management - raise awareness
- Indirectly addresses air pollution

Everyday

- Housing landscapes
- Employs local people and provides growing space
- Not initiated or developed directly with residents

Fig 9. Climate Proofing Housing Landscapes

Design

Gillet Square

Dalston, London | Hawkins Brown, Hackney Coop Developments, muf | 1993- present



New public space in an old car park designed to promote use and integration of diverse groups of people .

Theme

Design of open space, community

Lessons

Design for flexible uses:

- Medium size (25mx50m) and enclosed on all size but multiple entrance and exits

- Hardcover for maximum accessibility and low maintenance

- Large permanent benches and smaller temporary seating

- Storage for different uses including play and music events

- Small to medium retail units around that encourage night uses

Promoting integration:

- Managed by cooperative - more accountability and also helps facilitate local people in establishing their own events

- Regular free cultural events

- Path through from housing to high street

- Various uses at one time

Evaluation

Natural

- Still high prevalence of hard cover

Circulate

- Designed for flexibility so space is shared by multiple people and multiple uses for efficient use of resources

Impact

- Environmental considerations limited
- Promotes healthy living through active play, skating and socialising

Everyday

- Explicitly designed to support local people and interaction
- Accessible to all
- Local users define the space
- Emerged from demand (poor access to open space)

(Gillettsquare.org.uk, 2017)

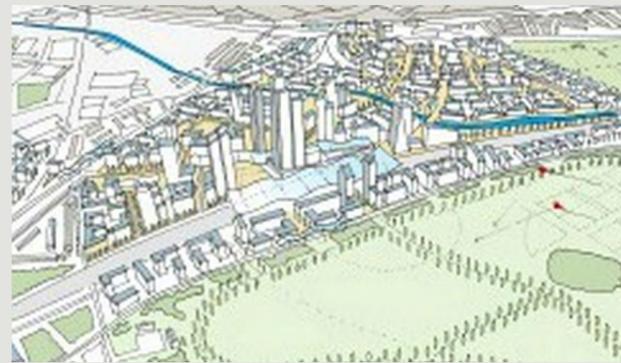
Fig 10. Gillet Square

Case Studies

Design

Old Oak Common Park Royal Sharing and Circular Economy Study

Old Oak Common, UK | Arup | 2017 - Present



Scoping study for the application of a circular economy approach to development.

Carries out a resource flow analysis in the area covering raw materials, waste, energy and water.

Explores four circular economy scenarios in the development site:

1. The Royal Garden: a zero waste urban garden fuelled by biological nutrients, green infrastructure and local energy.
2. Clean Tech Estate: a post industrial developed supports new circular focused businesses and technological innovation.
3. Adaptable Development: High rise tower development designed with circular built in, from construction to smart space usage.
4. Sharing Community: Digital platforms and technologies enable communities to build, operate and share spaces and resources.

Theme

Waste, Energy, Design of built form

Lessons

Material Flows in mixed use neighbourhoods:



Royal Garden: Anaerobic digestion, composting, urban agriculture and food markets has the potential to meet at least 21% fresh vegetable requirements

Clean Tech Estate: Cluster work spaces, tie to nearby research institutions, proving factory for testing prototypes in an urban setting

Adaptable development: Meanwhile uses, mixed use high rise developments designed to high environmental standards and flexibility. Space as service platforms to support varied uses.

Sharing Community: digital platforms to support local planning and decision making. Increases accessibility, speed, engagement and transparency.

Shared resource platform to exchange knowledge, skills and tools.

Community owned infrastructure, including energy and food production increases local resilience and reduces dependance on private and national mechanisms. (Arup, 2017)

Evaluation

Natural

- Studies material flows including biological, minerals and water
- Attempts to localise flows so mimicing natural systems
- Doesn't discuss implementation

Circulate

- Neighbourhoods designed to function circularly
- Waste as resource
- Localise waste management
- Local waste management could negatively impact residential environments

Impact

- Designed with climate change adaptation and mitigation from the offset
- Localisation reduces transportation and therefore air pollution
- Complete redevelopment still contributes significant waste

Everyday

- Attempts to plan and design for 'community' before the place exists
- Unlikely to be accessible to all aspects of society so would fail to address socio-economic challenges and could worsen inequality

Fig 11. Sharing and Circular Economy Study, Arup 2017

Hub and Pod - Anaerobic Digester Waste and Energy Network

Camden, London | Leap AD, Camden Council | 2012 - Present



A feasibility study of a waste to energy network. Small scale anaerobic digesters across the borough convert food waste into biogas and fertiliser. This would be accompanied by increased greening and urban agriculture projects.

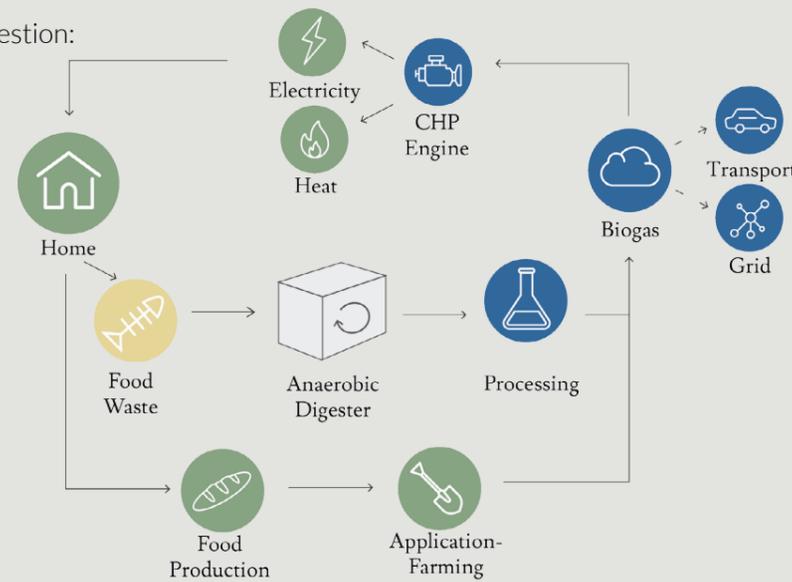
Feasibility study was established for the Future Cities Demonstrator but not implemented. However, Leap AD run and experimented with an AD system in the Calthorpe Project, Kings Cross.

Theme

Waste, Energy

Lessons

Anaerobic Digestion:



- Food waste collected from local businesses including markets, restaurants and supermarkets
- Network of micro AD across the borough to reduce transportation
- Sites include food manufacturers Alara wholefoods, community gardens and urban farms
- Fertiliser is distributed back to urban farms as well as Camden parks with the remaining processed for distribution through Camden Garden Centre. Project calculated to produce 8000 tonnes per annum with 900t/a used in camdens public farms and gardens.
- Biogas can be upgraded on site to biomethane to be used by an existing fleet of specialised vehicles owned by the council and businesses in the area.
- Project managed as an energy services company, a social enterprise, with the study estimating it could support 10 full time staff
- Green infrastructure programme includes 10 x 100m2 roof gardens and 10 x 30m2 edible walls for intensive urban agriculture as well as greening in the public realm

Leap AD in the Calthorpe project experiments with the technologies to test the range of applications.

- Comparison studies with tradition fertilisers indicate superiority of digestate in the growth of leafy green vegetables
- Digestate when filtered functions as fertiliser in hydroponics systems
- Digestate can be used as a precursor to bio-plastics

(LEAP, 2012)(Yaman, 2017)(Yaman et al, 2013)

Evaluation

Natural

- Mimics natural resource flows
- Minimises use of fossil fuels and additional inputs such as fertiliser

Circulate

- Circulates waste as a resource

Impact

- Reduced greenhouse gas emissions from food waste in landfill
- Reduced transportation to minimise air pollution
- Project not realised so hard to learn from conclusions

Everyday

- Management as energy services company employs local people
- Embedded into existing sites and organisations
- Reduce household energy costs
- Minimal impact on everyday lifestyle

Fig 12. Hub and Pod Anaerobic Digestion

Case Studies

Environment

Fintry Development Trust

Fintry, Scotland | Residents | 2003 - Present



Residents trust established with the aim of making the village carbon neutral.
Bought and constructed a wind turbine in nearby wind farm with revenue from energy surplus funding energy saving measures.

Theme

Energy, Community, Economics

Lessons

Energy saving and carbon reduction measures:

- Insulation and double glazing
- Education campaign for behavioural changes
- Saved £600 in average annual fuel bills
- Fuel bulk buy scheme
- Car share
- Draught proofing workshops

Renewable energy generation:

120 installations

- Solar PV
- Biomass
- Wind
- Heat Recovery (Secondary heat sources)

Governance through community trust: Charitable status but with a commercial arm

Evaluation

Natural

- Direct aim to be carbon neutral through use of renewable energy and reducing consumption energy

Circulate

- Use of anaerobic digesters, biomass boilers and secondary heat sources
- Share schemes

Impact

- Mitigates climate change
- Wind farm strong visual message for aims of the trust

Everyday

- Initiated and run by residents
- Address lifestyles as well as technical solutions
- Can demonstrate the economic benefit of sustainable practices

(Fintrydt.org.uk, 2017)(Nesta, 00, 2016)

Fig 13. Fintry Development Trust

Socio- Economic

Disco Soup

Across London | Feedback, Volunteers | 2012 - present



Community initiatives taking place across the world to tackle food waste and social isolation

Theme

Food, Waste, Community

Lessons

An interested group of volunteers contact and then collect free food from nearby supermarkets that would have been discarded.

They then invite local people to bring knives and other utensils to prepare food and eat together, dancing to music played.

This takes place in community centres in cities across the world

(Moore, 2016).

Evaluation

Natural

- Reduces food waste and therefore carbon emissions

Circulate

- Promotes sharing of food and tools
- One off event not regular change

Impact

- Reduces food waste and therefore carbon emissions
- Promotes healthy eating - fruit and vegetables make up a large majority of donated food

Everyday

- 'Common denominator' activity therefore encourages participation by wider audience
- Can take place in many community spaces
- Could attach to other civic projects to widen integration e.g. homeless charities

Fig 14. Disco Soup

Granby Four Streets

Granby, Liverpool | Assemble, Residents | 2012 - Present



Assemble assisted local residents with the formation of a community land trust in a series of four Victorian terraces that had over time been depopulated and left to fall into disrepair. This involved bring back empty homes into use as affordable housing, public realm improvements and work and enterprise opportunities

Theme

Community, Economics

Lessons

Governance Model - Community Land Trust



Refurbish dwellings for local families

Public Realm Improvements:

- Greening
- 'Four Corner' shops used in community story telling
- Street market
- 'Winter Garden' indoor community space with artist in residence

Work and Employment:

- 'Granby Workshop' produce and sell products for homes

Evaluation

Natural

- Repair areas falling into decline
- Work collectively on a project at a time for more efficient resource use
- Limited exploration environmental issues

Circulate

- Minimal exploration of circular economy beyond repair and refurbishing to extend lifetimes

Impact

- Greening urban landscapes

Everyday

- Initiated by local people
- Income generated fed back into project
- Responds to local challenges according to priority e.g. housing and work
- Address all aspects of community life

(Granby4Streets-Community Land Trust, 2017)(Assemble,2017)

Fig 15. Granby Four Streets

Final Lessons

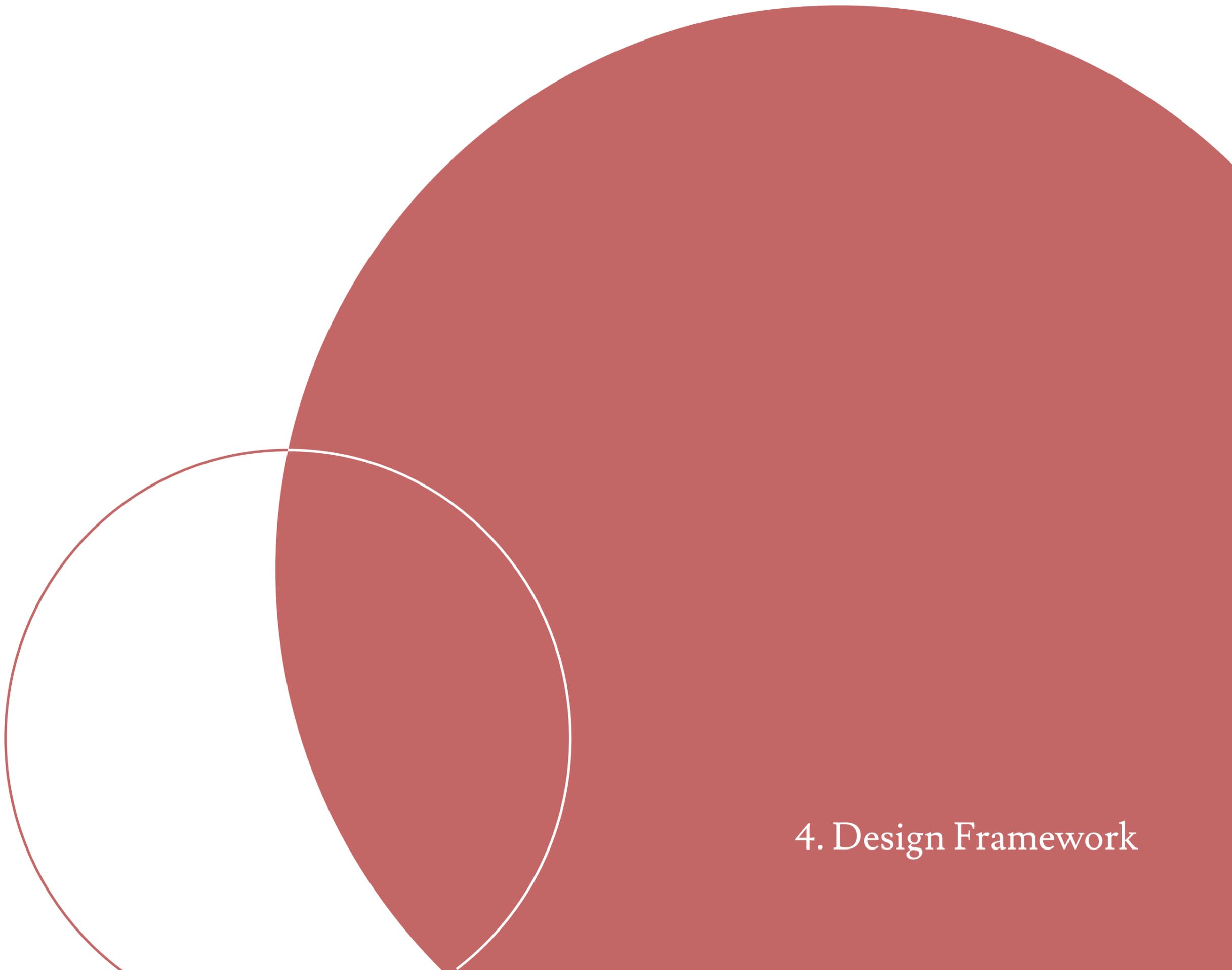
Figure 16 breaks down the case studies further, outlining what each inform about the design of space, the programming or use of space and the governance of space. This breakdown will assist the structuring of the proposed design framework and leads to the identification of eight practical themes set out in the next chapter.

Case Study	Theme	Spatial	Programme	Governance
Climate Proofing Urban Landscapes	Water, Design of Open Space	Redesign existing open space with a network of natural water management tools, particularly on hard cover	Space for interested residents to participate in food growing integrated into landscape	Local Management Team
Gillet Square	Design of Open Space, Community	Design for flexibility of uses- do not predetermine	Provide tools and resources for residents to establish their own programme of events	Cooperative
Old Oak Common	Waste, Energy, Design of Built Form	Designing a circular neighbourhood should be: mixed use, high density, walkable neighbourhoods with green and public spaces. Integrate energy, waste management and food into neighbourhoods.	Digital platforms to support local planning and decision making Space as service	Community owned infrastructure including food and energy
Leap AD - Hub and Pod	Waste, Energy	A network of micro anaerobic digesters to convert food waste to energy	Mechanism for collection and distribution of waste and fertiliser produced	Energy Services Company - social enterprise model
Fintry Development Trust	Energy, Community, Economics	Varied local energy production integrated into village built form Insulation for energy efficiency	Survey properties and residents to target strategies to individual needs Education on energy efficiency measures Sharing schemes including car sharing Demonstrate the benefits of interventions	Charitable status with corporate arm
Disco Soup	Waste, Community	Community spaces with basic kitchens	Specific event designed to minimise food waste and bring people together	Volunteers
Granby Four Streets	Community, Economics	Slow refurbishment to dwellings and the public realm Indoor and outdoor public spaces Workshops for local job provision	Regular events throughout the year including markets	Community Land Trust

Fig 16. Case Study Summary



Assemble 2012 'Winter Garden'



4. Design Framework

Concept

The Circular Economy of Everyday Life

The final design framework outlines strategies for estate regeneration from the perspective of the circular economy of everyday life, drawing from both the literature review and case studies. The circular economy of everyday life is a holistic approach to estate regeneration emerging from local conditions that addresses current and future challenges through mimicking natural resource flows.

This is based on two assumptions. First, circular economy thinking requires a break down of the dichotomy between nature and culture. Nature is integral to the functioning of the built environment and therefore cannot be treated as a separate entity. A city's metabolism should function in a similar way to natural systems whereby food and energy is extracted from the environment but elements are fed back. Second, residents are not passive users of space but active participants in the shaping and functioning of where they live.

This is inherently local; residents extract food and energy from their environment and feedback to their environment through reuse, maintenance, productive practices and waste management schemes as demonstrated by figure 18.

Challenges and Resulting Themes

The case studies identified eight practical themes set out in figures 18 and 19 that will be used to structure the design framework.

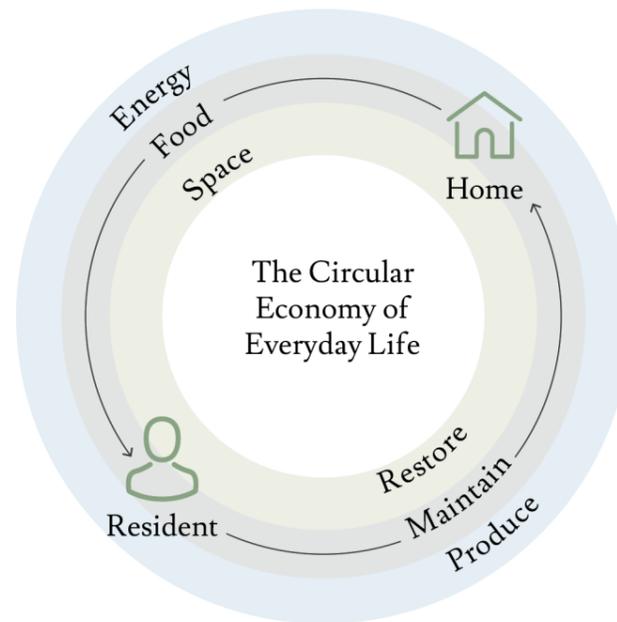


Fig 17. The Circular Economy of Everyday Life

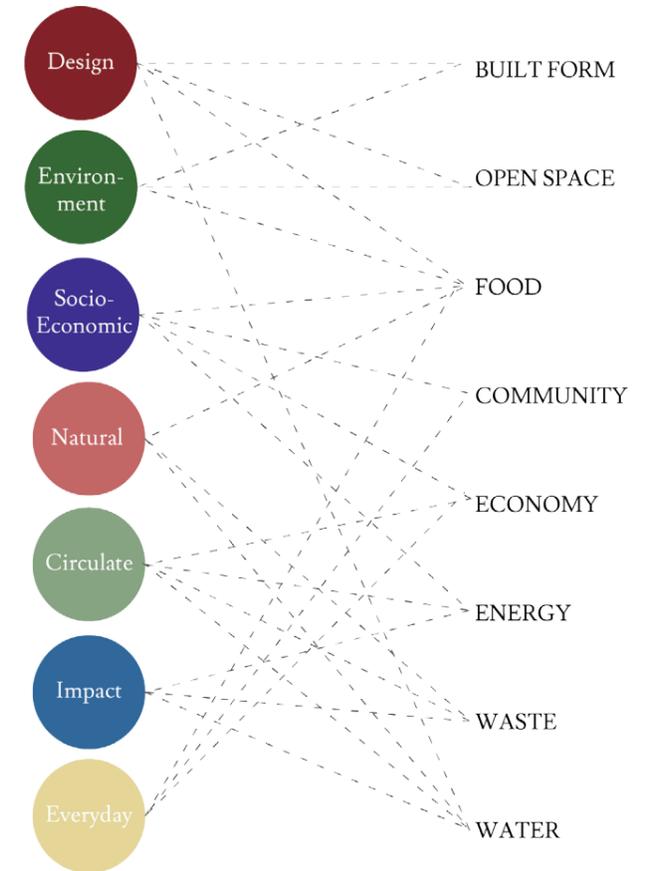


Fig 18. How themes relate to challenges outlined in the literature review

Strategies

Figure 19 breaks down each of the themes into various strategies required when regenerating modernist estates within a circular economy model. However, this approach mimics natural systems so strategies are interconnected and cannot be applied independently.

The design framework on the following pages will address each theme and related strategies in turn. These are structured according to spatial, programme and governance lessons as well as where it is applicable and its limitations. This provides a useful tool for others wishing to implement this approach to estate regeneration.

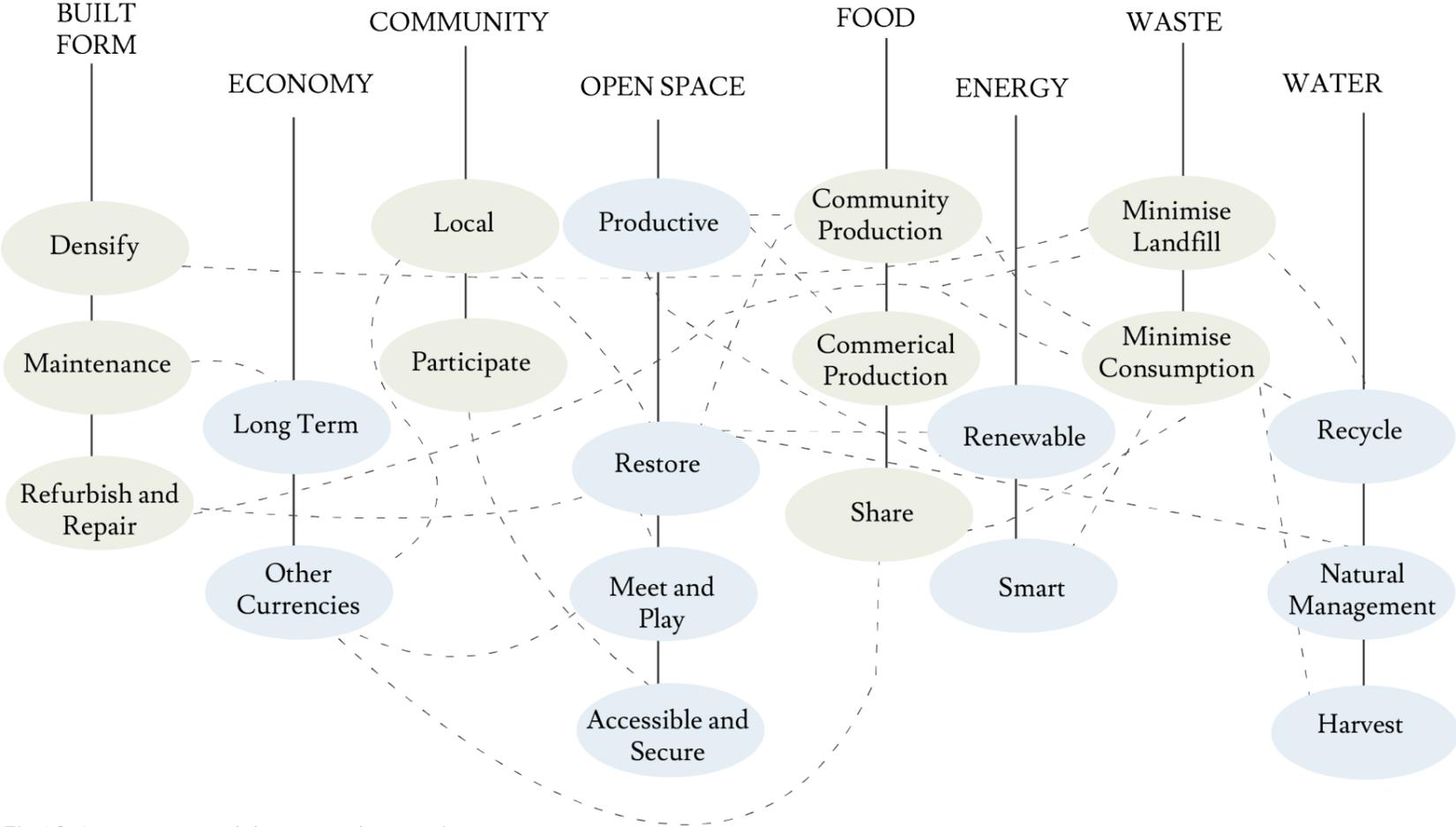


Fig 19. Interconnected themes and strategies

Built Form

Refurbish and Repair



Demolishing the Heygate Estate

Justification

Demolition wasteful with up to 54% landfilled and releases significant embedded CO2 (Ellen MacArthur Foundation)
Demolition and rebuild can be more expensive e.g. Heygate Estate (Elephant Amenity Network, 2016)
Disruptive to existing residents and businesses ((LSE Housing and Communities, 2016).

Programme

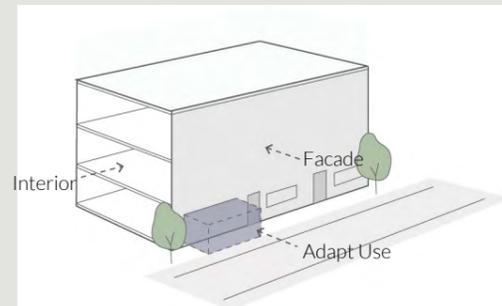
Survey built form and residents to target problem issues first.

Applicability

All spaces and structures deemed necessary

Limitations

Requires regular expenditure and broader cost benefit analysis
Limited impact on large scale design flaws



Design

Scale of refurbishment according to needs - from repainting, to re fitting windows, kitchens and bathrooms, to remodelling entire blocks.
Design for flexibility and ease of maintenance.
Opportunity to convert under- utilised spaces and refurbish entrances to streets
Address safety concerns and implement additional measures

Governance

Residents association - volunteers
Community Land Trust
Local Council

Long Term Provision for Maintenance



Roof Maintenance

Justification

Use and time results in degradation.
Protected provision for maintenance will slow degradation extending life expectancies and reducing frequency of large repair works.

Programme

Incorporate maintenance costs into initial budgeting.
Maintenance as a job creation mechanism.
Incorporate regular maintenance into daily routine- provide training and tools.

Applicability

All spaces and structures deemed necessary

Limitations

Limited impact on large scale design flaws
Requires collaboration and respect of spaces and facilities from all residents

Design

New designs should consider ease of maintenance

Governance

Local Council
Residents
Residents association
Community Land Trust

Densification



Denig, 2015 Densifying West Kensington

Design

Densify where and when services allow

Additional heights

Infill - can address layout challenges by defining streets and creating active frontages

Governance

Collaboration between residents, local councils and developers.

Council's developer arm e.g. Croydon's Brick by Brick scheme (London Borough of Croydon, 2017).

Justification

Density uses less energy and the need for travel (Glaeser, 2011).

Density of people and use of space creates lively places (Jacobs, 1961a).

Programme

Engage residents

Survey potential sites

Appraisal of various strategies including no change

Design

Consult

Implement

Applicability

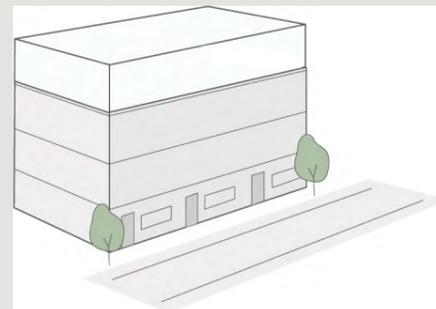
Where there are appropriate spaces and demand for housing.

Limitations

Likely to be contentious within residents groups

Additional heights can be costly

Achieve less density, and can therefore be less financially viable, than demolition and rebuild



Open Space

Productive Use of Space



WMB Studio Tooley Street Parklet

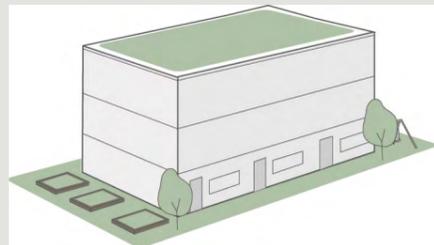
Design

Open land, either green or hard cover, that is currently under utilised should be converted into alternative uses.

Design of activities can resolve some modernist challenges e.g. dead spaces and natural surveillance.

Governance

Depends on strategy



Justification

Energy, waste, water and food strategies outlined in the framework all require significant space in close proximity to those that use and manage it.

Programme

Engage residents or survey use of land to identify existing use patterns and applicability of different programs.

Applicability

Type of use depends on conditions and interest

Limitations

There will be conflicting interests and different hierarchies of need to negotiate.

Needs to incorporate long term maintenance.

Restore Landscapes



Wild Flower Meadow Queen Elizabeth Olympic Park

Design

Planting schemes that reflect local species

Greening hardcover

Leaving some areas of grassland to grow naturally.

Governance

Organisers and volunteers in other programs e.g.

allotments

Local maintenance team

Justification

Promotes biodiversity and other ecosystem services including pollination, improved air quality and rainwater management.

Increases aesthetic quality of a neighbourhood.

Can be cheaper and easier to maintain.

Programme

Integrate natural planting into other programming e.g. refurbishing

Avoid the use of pesticides and herbicides .

Applicability

Existing planted areas, underutilised green spaces and hard cover.

Limitations

Subjective preferences for more managed planting and landscape strategies

Multi-Generational Play and Meeting Space



Gillet Square

Design

Public space that can be adapted for various uses in the centre of neighbourhoods.

Medium size and enclosed but multiple paths.

Hardcover for maximum accessibility and low maintenance.

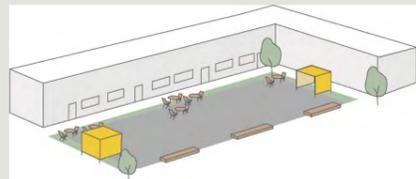
Permenant durable seating.

Spaces for various ages - play areas and spaces for young to gather e.g. skate parks

Indoor gathering spaces and places to store shared resources.

Other uses for day/ night activity

Overlooked and well lit



Justification

Fosters co presence, acceptance and the formation of community (Legeby, 2013).

Support childhood development and the physical and mental health of all ages (Louv, 2005).

Programme

Residents should have the capacity to use and shape the space in any way they wish e.g. event organisation.

Applicability

Open space in the middle of medium to high density dwellings.

Limitations

Cost

Regular programming requires time to organise

Needs adequate density and suitable location to be well used

Governance

Community Land Trust

Local Council

Accessible and Secure



Gillet Square at Night

Design

Additional dwellings to increase natural surveillance (Newman, 1973)

Target problem areas through redesign and encourage different uses throughout the day

Multiple well lit paths across the site (HTA, Pollard Thomas Edwards and PRP, 2016).

Governance

Local Council and Police

Design team

Residents and residents associations-

neighbourhood watch

Justification

Space that is accessible and secure encourages use which minimises perceived threat of and actual incidences of crime (Hackney Council, 2012)(HTA, Pollard Thomas Edwards and PRP, 2016).

Programme

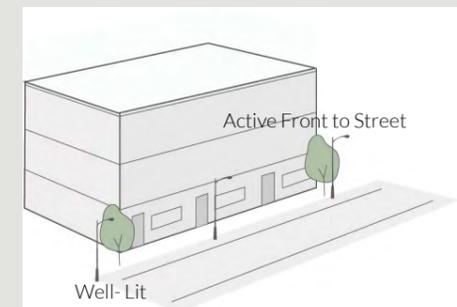
Public space and facilities open at various times to encourage activity throughout the day.

Applicability

Considerations should be made across the site.

Limitations

Subjective nature of security



Food

Allotments and Community Gardens



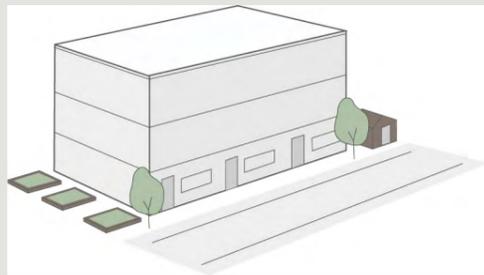
Trädgård på Spåret (Garden under the bridge) Stockholm

Design

Utilised existing open green space
Raised beds and moveable planters allow for adaptation
Greenhouses extend growing period

Governance

Local residents and community organisations



Justification

Residents grow their own food independently or in collaboration.
Builds social capacity improving personal well being as well as collective pride and cohesion. Projects contribute to green infrastructure networks and associated environmental benefits (Jerome, 2016).
Strengthen food security in poorer communities.

Programme

Projects should emerge where there is local interest and run as a charitable or voluntary operation.
Promote uptake through training and social activities (Openworks, 2015)

Applicability

Under-utilised open spaces

Limitations

Gardens need sustained and regular interest for success
Climate limits production

Commercial Urban Agriculture



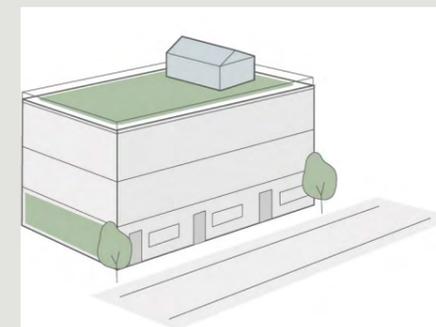
Hoerr Schaudt Landscape Architects, Chicago USA

Design

Convert roof tops, warehouses and other disused spaces into food growing businesses.
Use hydroponics, vertical growing and other technologies to grow more intensively and manage resource uses efficiently.

Governance

Local Businesses



Justification

Commercial farms e.g. Montreal's Lufa Farms can produce more intensively with technology (Lufa Farms, 2017).
Farms can grow and deliver fruit and vegetables across the city minimising transportation and using currently wasted space.

Programme

New business and employment opportunities - training, funding and advice could increase uptake

Applicability

Sites with appropriate growing conditions where there is interest.

Limitations

Financial viability - climate and demand for produce, among other factors

Sharing



Design

Community centres with kitchens.
Food cooperatives with suitable storage

Governance

Local Shops
Community organisations
Schools
Residents

Justification

Food sharing schemes 'Common denominator' activities that appeal to many and can therefore facilitate integration and inclusive participation by all members of a neighbourhood (Openworks, 2015).

Cheap mechanism with which to buy food
Minimise waste

Programme

Food cooperatives set up buying groups to bulk order widely used goods and distribute items among members at a lower cost than buying independently (Sustainweb.org, 2017).

Events such as disco soup (Moore, 2016).
Breakfast clubs for elderly and young people.

Applicability

Where there is interest and demand - build upon existing community and public organisations

Limitations

Typically run by volunteers - need enough willing people
Proximity to shops happy to share waste
Risk of ill health from old food
Space for storage and preparation

Water

Natural Water Management



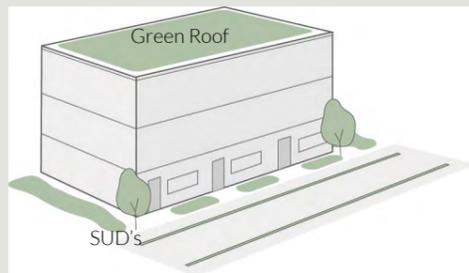
Queen Caroline's Estate

Design

SUDs
Green roofs
Natural swales, basins and ponds

Governance

Local Council
Residents Association/ Community Land Trust



Justification

Increases interception and infiltration slowing rate at which water moves through the city, reducing pressure on sewers and minimising flooding (Groundworks, 2015)
Creates attractive landscapes with increased biodiversity.

Programme

Survey space across the site
Establish a local management team

Applicability

At suitable points across the site, interventions should be connected

Limitations

Should be integrated across the site, single interventions are tokenistic with limited effect

Rainwater Harvesting and Recycling



Grey-water Recycling

Design

Water butts and rainwater harvesting systems at each building.
During refurbishment install grey-water recycling systems that collect and treat waste water to be used in toilets and washing machines.

Governance

Organisers and volunteers in other programs e.g. allotments
Local maintenance team

Justification

Collected rainwater can be used in various ways
Reduces demand on centralised water systems increasing resilience to drought.
Greywater recycling systems can reduce water usage by up to 50%. (Arup, 2017)(Ferguson, 2014b)

Programme

Users of allotments, urban agriculture and green space maintenance teams adapt to using harvested rainwater

Applicability

Buildings across the site

Limitations

May need to persuade residents on need for schemes
Some technology expensive

Energy

Local Renewable Energy Generation



BedZed

Design

Photovoltaic panels and batteries for storage on roofs.

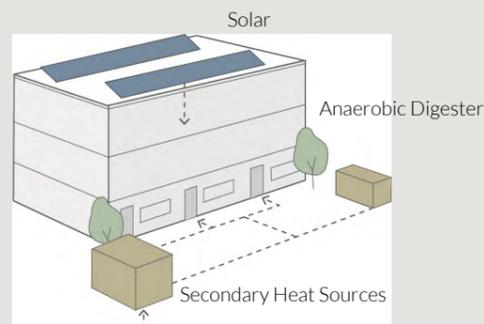
Micro anaerobic digester (AD) and associated technology installed in an area of green space.

Secondary heat sources and heat found naturally in the environment.

Wind is not considered viable in London (Greater London Authority, 2011).

Governance

Energy Services Company



Justification

Reduce reliance and demand for non renewables
Lower carbon emissions
Reduced dependence on fluctuating energy prices associated with large suppliers (BBC, 2017).
Stability and security - allows for future planning and adaptation
A form of revenue generation.

Programme

Educate residents on the schemes and demonstrate its benefits, economically and environmentally

Applicability

Solar on south facing accessible roof tops
AD dependent on availability of inputs and demand for digestate.
Secondary heat sources dependent on location

Limitations

Cost
Time frame to be cost neutral/ beneficial
Difficulties managing AD outputs

Smart Cities



Design

Meters installed in each home

Governance

Energy Services Company

Justification

Smart homes including smart meters and connected appliances can ease management of energy lowering use and cost
Improved prediction of power generation sources and scheduling use of household appliances allows improved management of energy generation increasing efficiency (Molderink et al., 2010) (Khodaei, 2014).

Programme

Consultant to model and predict use
Education and awareness campaigns to modify behaviours.

Applicability

Across public and private dwellings.

Limitations

Skills required to model
Difficulties adapting habit

Waste

Minimise Landfill



Leap AD Calthorpe Project

Design

Network of micro anaerobic digesters.
Compost bins
Process and package outputs for sale
Gas fed back into nearby buildings for heating, cooking and electricity generation or processed for use in vehicles
Replace bins with vacuum waste removal systems

Governance

Energy Services Company
Volunteers or employers in food production

Justification

Minimise resource use and gas emissions
Minimise environmental damage to both landscape, flora and fauna.

Programme

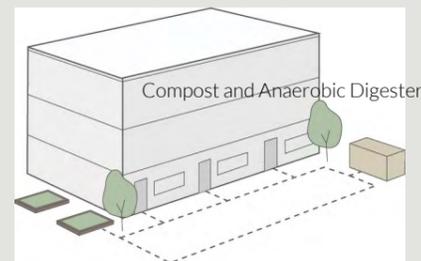
Commercial team established to run food collection processing and dispersal.

Applicability

Food waste collection in all dwellings.
AD convenient but not too close to dwellings- size and number dependent on inputs/ demand for output (Yaman, 2017)

Limitations

Can smell and difficulties managing large quantities of fertiliser output (Leap, 2012)(Yaman, 2017)



Minimise Consumption



Design

Central community centre with kitchen and storage facilities.
Convert under- utilised spaces such as garages for use as shared tool sheds.

Governance

Existing community centres, volunteer groups or residents organisations.
Social enterprise

Justification

Minimising consumption reduces resource use, waste generation and individual expenditure

Programme

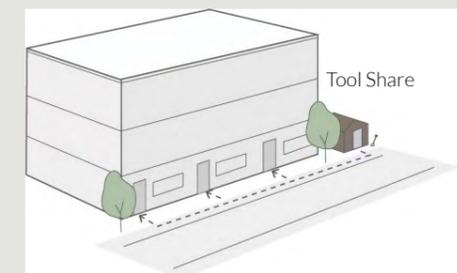
Sharing schemes as alternative to ownership:
Cars, bikes, tools
Food buying groups introduced above as an option for bulk buying to reduce excess packaging and waste.

Applicability

Where there is demand and community presence.

Limitations

Culture shift from ownership to sharing requires trust and respect- may take time.



Economics

Long Term, Circulate, Recognise Other Currencies



Design

Spaces and resources designed to be adaptable and shareable to minimise costs.

Governance

Community Land Trust
Social Enterprise
Charitable Organisation
Crowd-funding

Limitations

Significant paradigm shift - can easily be blocked or exploited.
Involves change at the city, national and international scale
Feasibility of schemes very fragile.
Requires broad participation - unrealistic

Justification

Circular economy an alternative economic model to decouple environmental pressure from economic growth with a focus on individual and community resilience over profit.

Strategies may require significant initial expenditure to implement so require long term visioning as it takes time to settle before projects break even or returns are made (Arup, 2017)(Ellen McArthur Foundation, 2015).

Circulate through reinvesting profits.

Significant value should be placed on non financial assets including trust, time, knowledge and social networks to increase participation and spread benefits (Openworks, 2015).

Programme

Engage all stakeholders
Outline project goals from the offset.
Manage projects with transparency and accountability.
Ensure efficient use of resources

Applicability

All areas and scales.

Community

Respond to Local Demands and Challenges, Participation and Integration



Living Under One Sun

Design

Build upon existing features.

Co- design

Accessibility and flexibility of use.

Governance

Community Land Trust
Residents Associations
Social Enterprise
Charitable Organisation
Social Networks

Limitations

Requires assistance and support from other stakeholders at large scales
Full participation unrealistic.
Conflict between different interests and requirements.
Ethical decisions over the prioritisation of needs and challenges.

Justification

Sustainable strategies require participation of many for biggest impact
Residents have tacit knowledge of their homes so are best placed to identify and prioritise issues and responses.

Increasing participation and integration limits isolation, strengthens communities and increases success rates of other strategies.

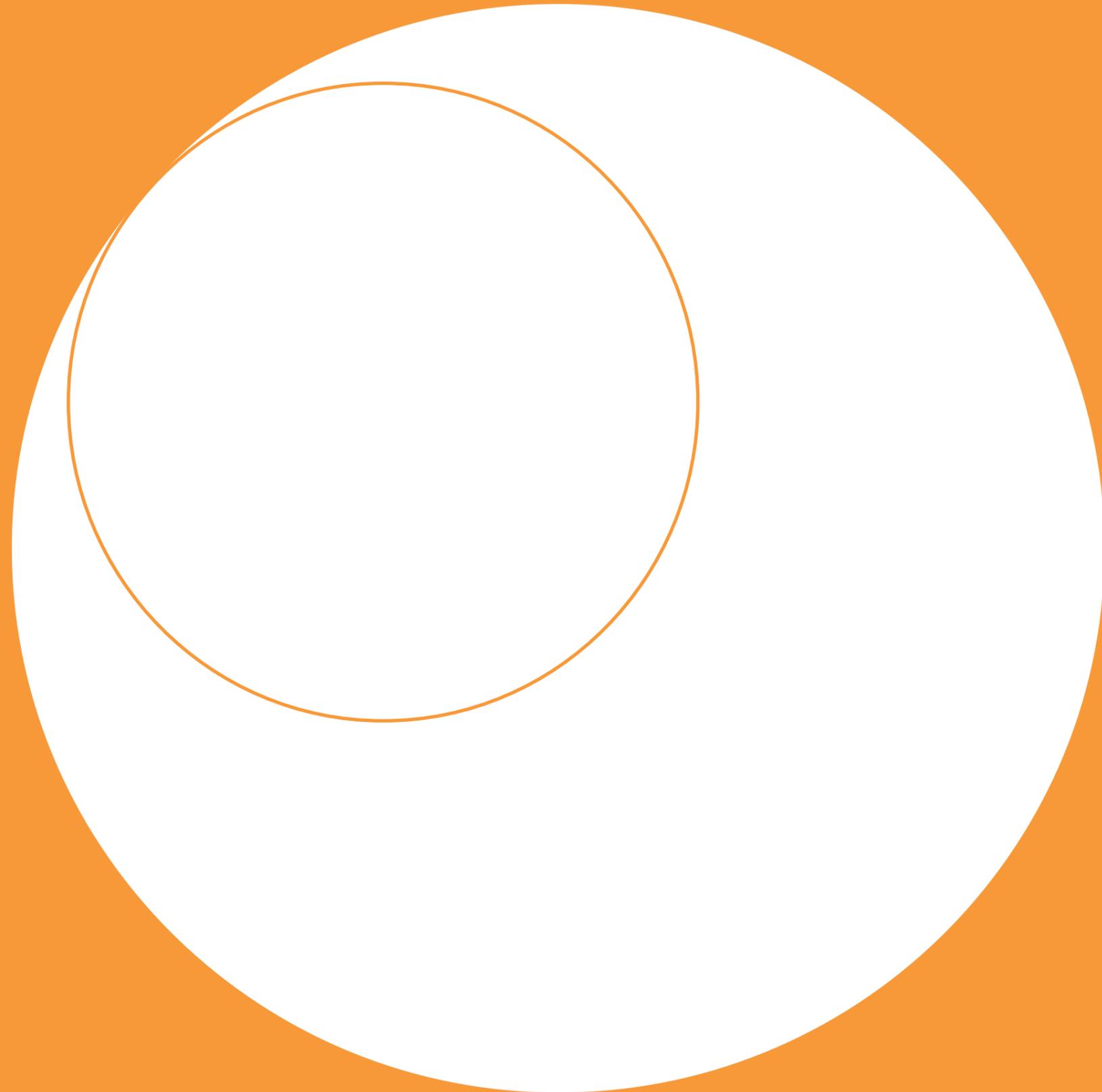
Programme

Focus on common denominator activities such as food to appeal to a broad range of people but also encourage and support niche projects if they emerge.

Projects at different scales and time for various ways for people to engage (Open Works, 2015) (NESTA, Design Council, and Oo, 2016)

Applicability

All areas and scales.



5. The Site

Application of the Design Framework: Northumberland Park, Haringey

Introduction

Northumberland Park is a ward of Tottenham, in the north London borough of Haringey. The site was selected as it demonstrates a number of the challenging features associated with modernist housing estates identified in the literature review. Furthermore, Northumberland Park is soon to undergo great change, it being earmarked for regeneration as the largest scheme within the Haringey Development Vehicle (HDV), a joint venture between Haringey Council and developers Lendlease. Accordingly, it is at a turning point and therefore an ideal study area for a project reconceptualising what estate regeneration could mean. (For an outline of the HDV and current plans for regeneration see appendix).

The central area was selected to be the particular focus of this study as displays the most design features associated with modernism and is most likely to be demolished as part of the HDV regeneration (see appendix).

History

The arrival of the Northern and Eastern Railway in 1842 replaced farm and market gardens with villas for the upper to middle classes. During World War Two factories and accompanying workers' housing replaced open land and it was during this time that the road layout that still exists to this day was formed. Much of this terraced workers' housing was demolished in the 1950s to be replaced over the following decade with fairly typical modernist social housing. In more recent history, the site and adjacent Tottenham High Road were a location of the 2011 London riots (Hidden London, 2017).

Demographics

Population: 14 429, approximately 900 within site focus
Young Age: 31.2% under 20 compared to London average of 23.8
Ethnically Diverse: 71.3% BME, the largest group black Caribbean and black African
Brexit: 85% remain, the highest in London and third highest in England
(Haringey Council, 2012a) (Haringey Council, 2012b) (Hidden London 2017)



London Context



Local Context



Site Focus

Drivers of Change

Change in the wider area adds significant pressure on the ward to redevelop.

Crossrail 2

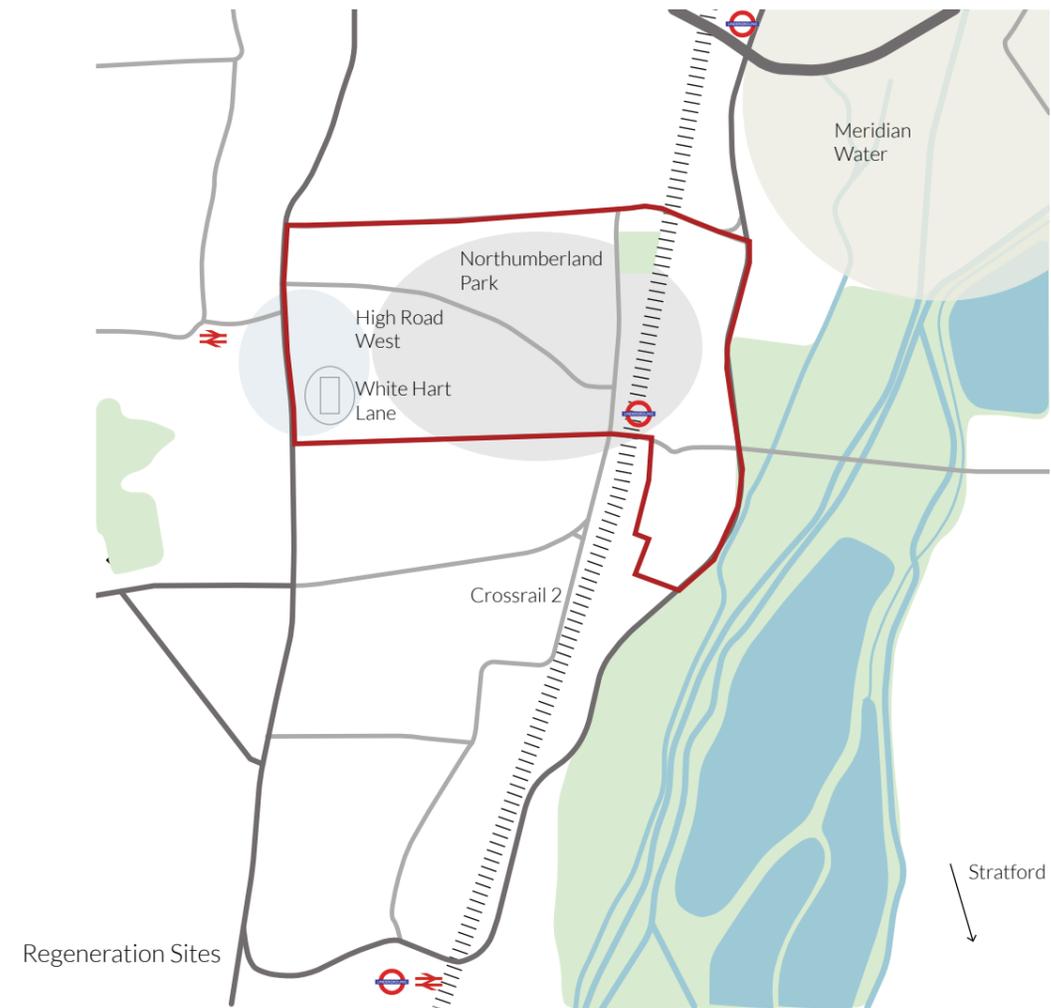
If Crossrail 2 were to come into fruition, it would decrease pressure on the existing train line and increase the number of services from the station. By 2030 the number of services could increase from 1-5 per hour currently to 12-15 (Crossrail 2, 2017).

High Road West and White Hart Lane Stadium

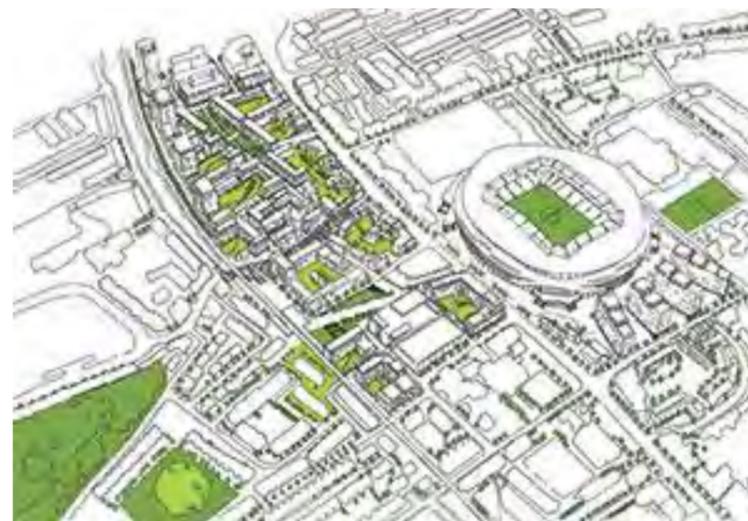
Tottenham Hotspur Football club moved to its current location at White Hart Lane in 1899. The stadium is in the process of being rebuilt and is expected to reopen in 2018/19. This increases pressure on Northumberland Park and White Hart Lane stations as well as significant footfall along Park Lane. The stadium redevelopment is accompanied by a mixed use Masterplan along Tottenham High Road.

Meridian Water

A major regeneration project providing 10 000 new homes and 6700 new jobs led by Enfield Council north east of the ward (Meridian Water, 2017).



White Hart Lane 2017



High Road West 2017



Meridian Water 2017

Challenges - Design

Dwellings - Typologies, Age and Heights

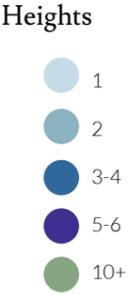
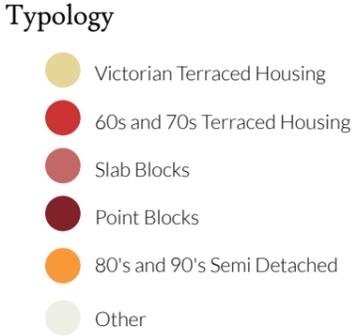
As a result of a history of various waves of development, in the 1800s, during the 1960-70s and some infill in the late 1980-90s the site is a mix of various typologies and therefore heights.

There are two towers of 10 and 17 storeys and several terraces of 2 storeys. The majority of the site is made up of 3-5 storey blocks of flats and maisonettes.

Lost Space - Density

The slab and point block typologies surrounded by large quantities of open space are very low density.

Plot Coverage: 25%
Floor to Area Ratio: 0.84



Challenges - Design

Layout- Connectivity/ Segregation

The site is characterised by east - west Northumberland Park Road and Park Lane linking Northumberland Park rail station with Tottenham High Road. However, connections within the site are poor with many dead ends and limited accessibility to some buildings.

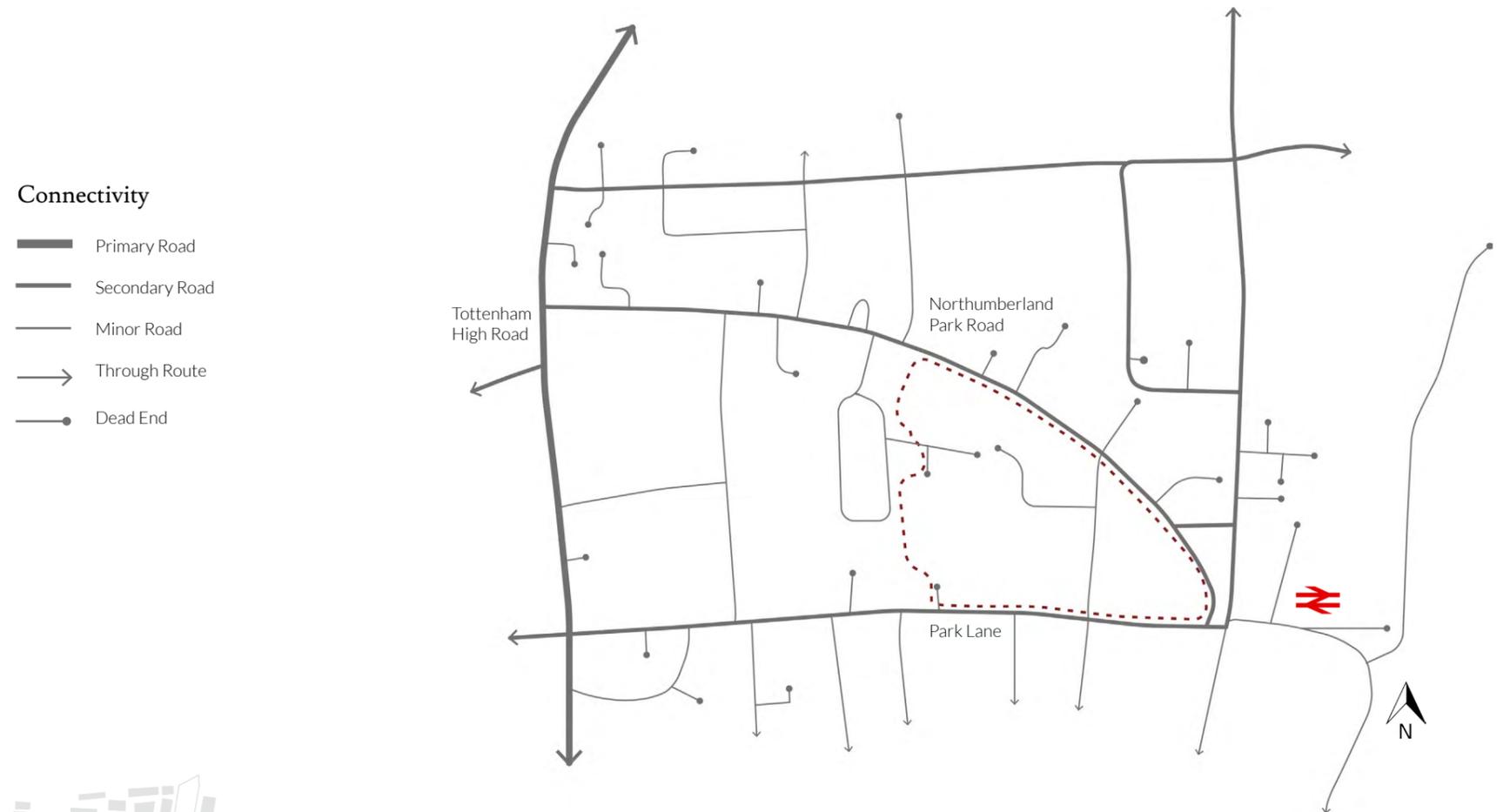
PTAL, which rates locations by distance from frequent public transport services and ranges from 0 (worst) to 6b (best), is low. This ranges from 1-3 despite the presence of the train station. However this is set to change with the arrival of Crossrail 2.

Due to the built form, road layout and poor public transport, there is little reason to travel through the site so it feels segregated from the surroundings.

Layout - Challenging Features

A number of features outlined in the literature review are present in the site:

- Poorly defined entrances to plots and buildings - not facing streets
- Fencing restricting movement across the site and creating dead spaces.
- Poor natural surveillance due to fencing and inactive frontages.



A.

Environment

Green and Public Space

Large grassy spaces cover the site. These are typical of 'Lost spaces' that fail to connect buildings and alienate users (Young and Willmott, 1957) (Trancik, 1986). There are play and sports places but these are poor quality.

Large street trees line Northumberland Park Road and Park Lane but other planting strategies are minimal.

Ownership, Age and Maintenance

Council ownership of land and dwellings is high, with rates of right to buy relatively low (Fletcher Priest, 2015).

Maintenance levels for green spaces, play area and streets are low due to limited council budgets (Department for Communities and Local Government, 2017).

Typology

- Play
- Public Open Space - Lost Space
- Semi Public Open Space
- Private Gardens
- Hard Cover- Parking
- Large Street Trees



Land Ownership

- Council
- School
- Council - used as allotments and community playground
- Private - retail
- Community organisation
- Private - residential and commercial



B.

Challenges Socio - Economic

Access and Opportunities - Land Use

There are a number of schools and nurseries for younger children within or near the site

There is a large supermarket and a few other food shops within close proximity but none within the site. Access to services is therefore higher than expected from the literature review.

Industrial lands and businesses cover a large land area to the north and east.

Access and Opportunities - Education and Employment

Education levels are lower than the west of the borough, particularly for adults.

Unemployment rates are high and 71% receive employment benefit

The ward is the most deprived in Haringey and within the 5% lowest deprivation levels for the UK

(Haringey Council, 2012a) (Haringey Council, 2012b) (Hidden London, 2017).

Crime

High rates compared to the Haringey Average with 251 recorded incidents in May 2017, most for anti social behaviour and violent crime.

(Ukcrimestats.com, 2017)

Land Use

- Industrial
- Community Facilities
- Residential
- Education
- Retail



A. Northumberland Park Community School



B. Redemption Brewery

Socio - Economic

Opportunities and Social Capital - Community

Residents state Northumberland Park has a strong community spirit with two resident's associations and various community initiatives including the Ilse Amlot Centre for women, Living Under One Sun and Haringey Play Association. Various groups also emerged in response to the HDV including Haringey Defend Council and Stop HDV (Northumberland Park Residents Association, 2017).

This suggests there is opportunity and demand for additional civic projects that build on these organisations.



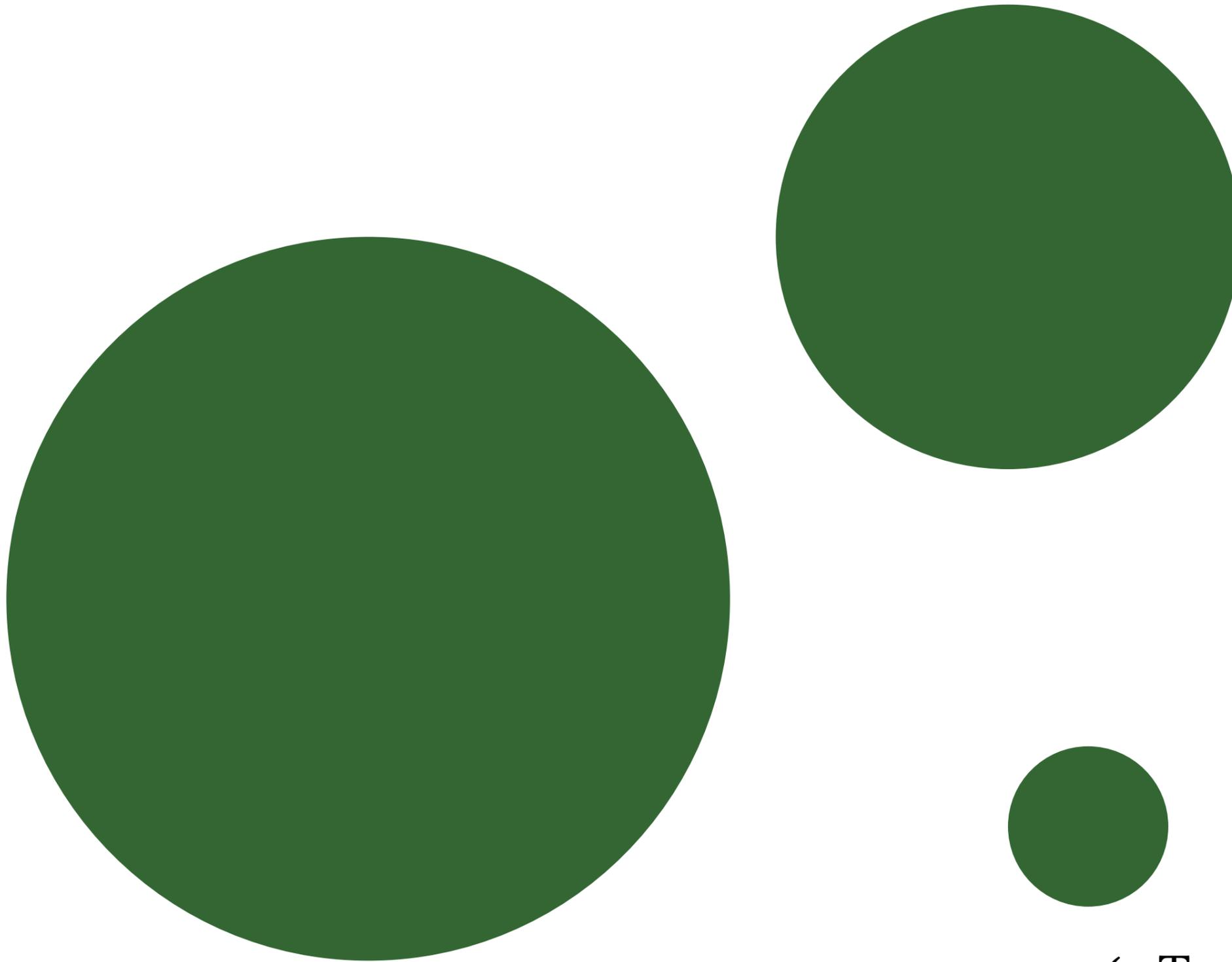
Ilse Amlot Centre



- Land Use**
- Education
 - Housing/ Residents Associations
 - Play
 - Nature/ Gardens
 - Food
 - Religious Organisations
 - Women's Centres
 - Health Care



Somerford Grove Adventure Playground- Haringey Play Association



6. Testing and Evaluation

Testing the Design Framework

Introduction

The following pages test themes and strategies outlined in the design framework, introduced on pages 38-39, in Northumberland Park. Each strategy will be identified and will include notes on relevant spatial redesign, additional programming and governance mechanisms as well as acknowledging strategies that were not applicable in this context. However, as the economics theme and strategies are a hypothetical governance model, this will be explored through a diagram and accompanying text.

The testing will conclude with a matrix that assesses the extent to which the strategies provide a viable methodology for addressing the challenges of modernist estates and facilitating the transition to the circular economy. This includes a breakdown of the key outcomes as a result implementing the design framework.

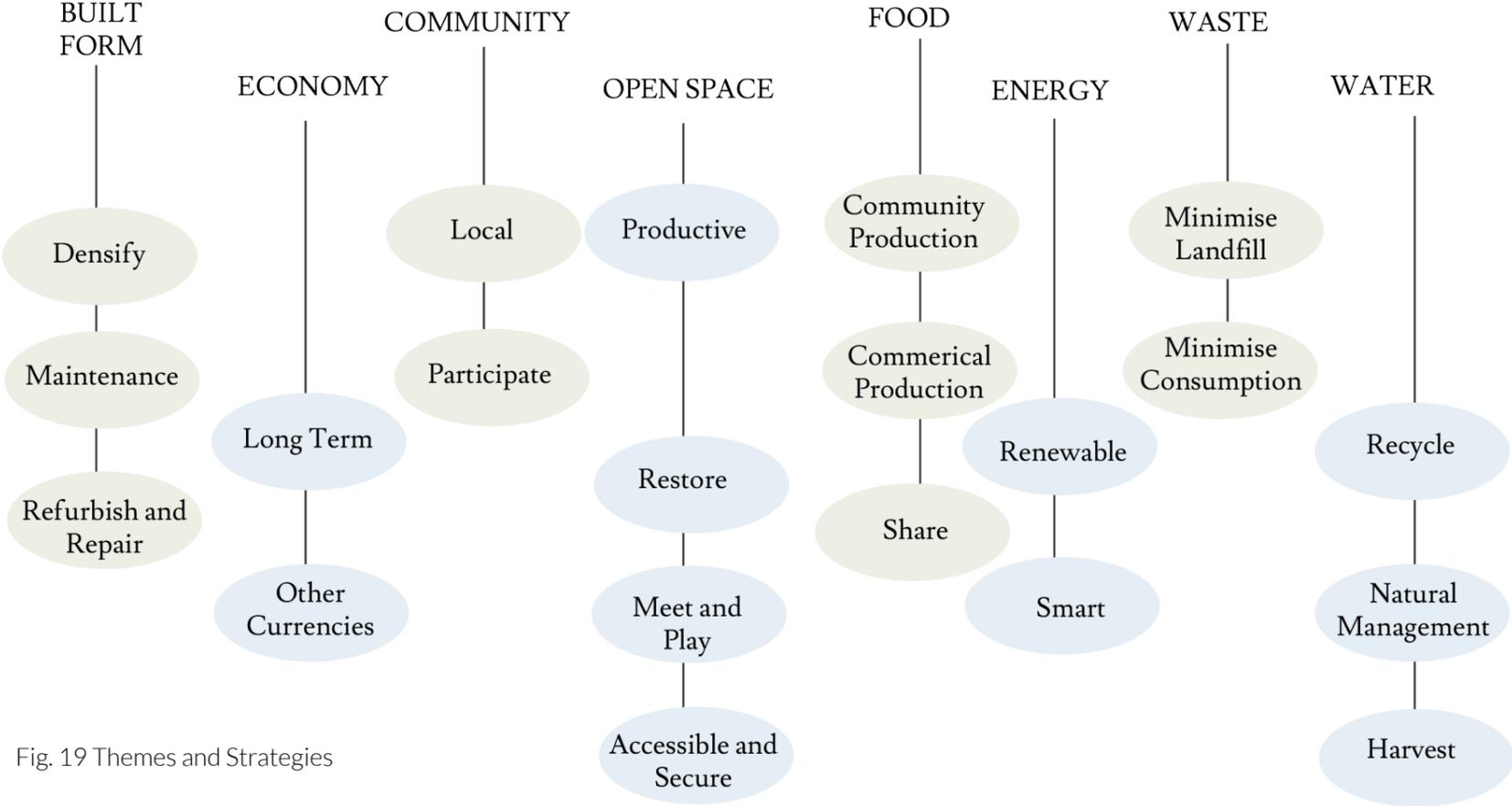


Fig. 19 Themes and Strategies

Economics

Long Term, Circulate, Recognise Other Currencies

As an alternative to the Haringey Development Vehicle, Haringey Council establish a housing developer arm that would build properties on disused space for a mix of social rent and private sale.

A proportion of the small profit generated could function as section 106 and community infrastructure levy. This would be ring-fenced for the ward due to an appreciation it is the most deprived in the borough, with the rest returning to council budgets.

Residents could establish a new organisational body with charitable status to assume management of money from the council from 106 and CIL and of the running of the estate as a whole. The charity would be tasked with estate maintenance and implementing other regeneration strategies.

Northumberland Park Energy Services Company would function as a commercial arm of the charity and employ residents to manage energy and waste schemes. Profits from this would pay back initial loans from both the council and other sources and then be reinvested into the charity to finance the other civic programs outlined. This process would take time. Accordingly, these civic projects could begin earlier by building on existing charities and schemes in the area as well as through crowd funding.

Residents are actively encouraged to participate in whatever capacity. This could vary from a management role in the charity to volunteering time in civic projects.

Information on the feasibility of this strategy was gathered through personal communication with Lloyd Hall, London Borough of Croydon, and Simon Mumford, Wilmot and Co Solicitors.

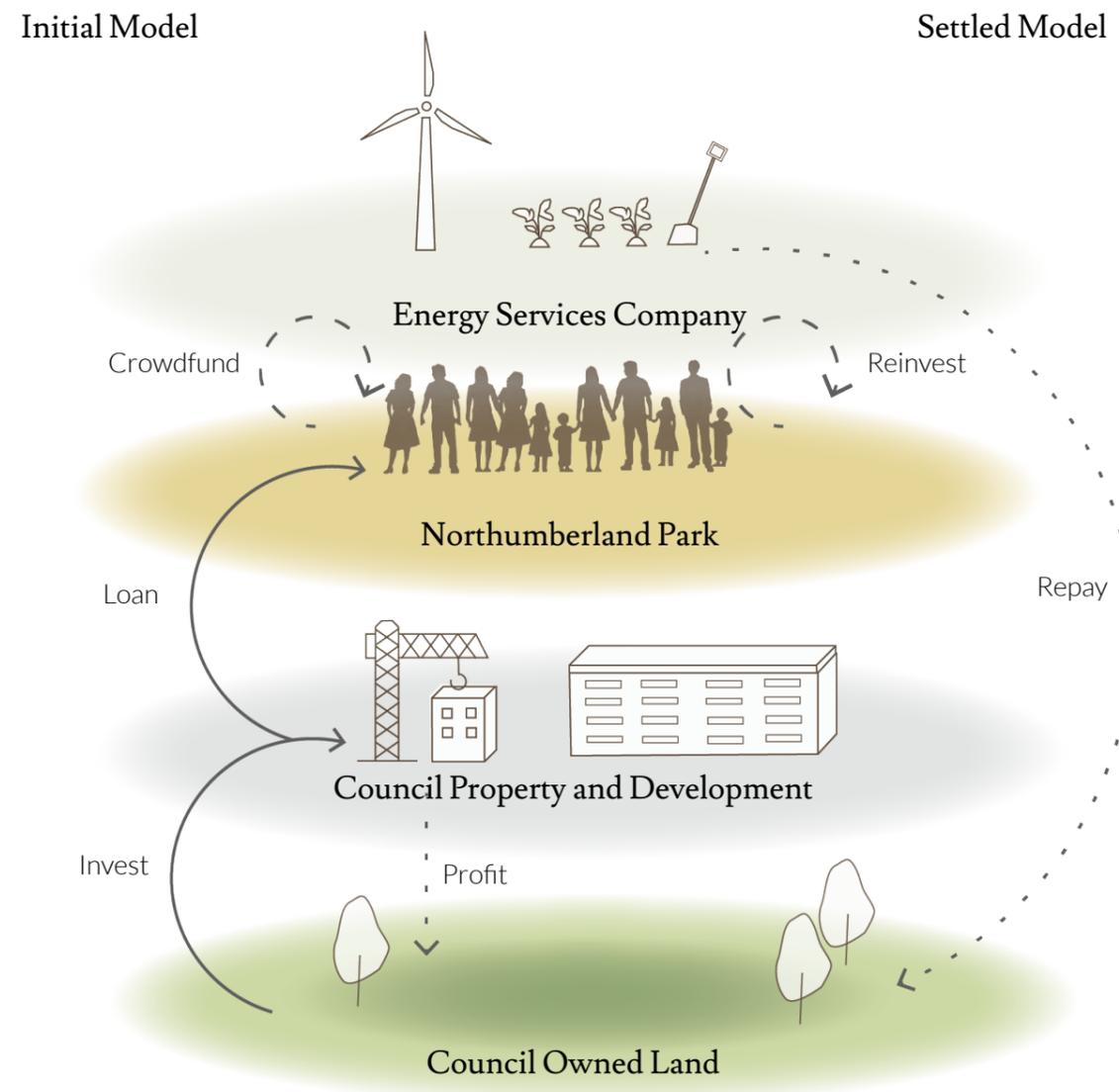


Fig 20. Economic Model For Northumberland Park

Built Form

Strategy	Application	
Refurbish and Repair	Spatial	<ul style="list-style-type: none"> - Bring homes up to high standards through refurbishing interiors and repainting interiors and exteriors - Increase energy efficiency with cavity wall and loft insulation - Install water, waste and energy measures as well as additional fire safety measures - Retrofit entrances to face onto streets - Reuse redundant spaces such as ground floor garages and empty units along Park Lane. - Refurbish and repair streets and pathways with lighting, landscaping and additional uses to increase connectivity and sense of safety
	Governance	<ul style="list-style-type: none"> - Haringey Council - Northumberland Park Charity and Energy Services Company
Maintenance	Programme	<ul style="list-style-type: none"> - Northumberland Park Charity and Energy Services Company to employ residents - Include budget for maintenance in initial costings
	Governance	<ul style="list-style-type: none"> - Haringey Council - Northumberland Park Charity and Energy Services Company
Density	Spatial	<ul style="list-style-type: none"> - Add additional heights - Infil Buildings - Use additions to form traditional street layouts defining streets and creating enclosed spaces.
	Governance	<ul style="list-style-type: none"> - Haringey Council

Fig 21. Application of built form strategies



Existing Slab Blocks with inactive ground floors and unwelcoming footpaths

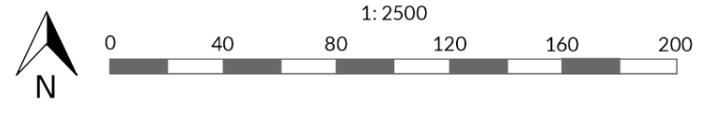


Reused garages as work space and retail units, refurbished streets and pathways



Adaptations to Built Form

- Densification
- Publicly accessible spaces
- Private Gardens
- Public Gardens
- ↔ Adapted Entrances



Open Space

Strategy	Application	
Productive Space	Spatial	- Redesign currently underutilised open space with productive uses including play, food growing or promoting biodiversity.
	Governance	Northumberland Park Charity and energy services company
Restore	Spatial	- Green current hard-cover - Natural planting schemes
	Governance	Northumberland Park Charity
Meeting and Play	Spatial	- Play spaces for young children regularly distributed around housing, secure and visible from dwellings - Enhance play and sport facilities for older children, particularly Somerford Grove Adventure Playground - Co-design space with young adults according to their interests, this could take the form of a skate park or similar (A). The space is located by schools and a central public space so visible and active. - Central public square outside the community centre and surrounded by housing. The square is loosely defined for flexible uses but shaped by large permanent benches that create some sense of enclosure (B).
	Programme	- Community centre contains storage for different uses of the central public square including staging, games and play equipment
	Governance	Northumberland Park Charity
Accessible and Secure	Spatial	- Refurbishment and layout of additional dwellings create better opportunities for natural surveillance and active frontages onto streets - Problem spaces including underutilised garage spaces and dead open green spaces at the backs of buildings redesigned - Multiple well lit pathways across the site, dead ends removed for greater connectivity.
	Governance	Haringey Council Northumberland Park Charity

Fig 22. Application of open space strategies



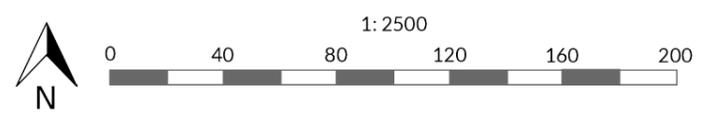
Current under-utilised green space



Simple reuse of green space with food growing and space for play, densification on tops of buildings



- Open Space**
- Productive Use of Space- Growing
 - Play
 - Public Spaces



Food and Community

Strategy	Application	
Allotments and Community Gardens	Spatial	- Small scale food growing across the site where there is demand from residents
	Programme	- Training events and support network to encourage participation
	Governance	- Residents - Northumberland Park Charity
Commercial Urban Agriculture	Programme	- Incentives food growing businesses and encourage the employment of local people
	Governance	- National, London wide or Local policy
	Not applicable	- Residential areas of the site lack large enough space for commercial practices
Seasonal Eating	Programme	- Once allotments, gardens and commercial farms are up and running, eating seasonally should emerge naturally - Education in Northumberland Park Community School and the Vale school as well as community centres about how to cook with local produce
	Governance	- Residents - Schools
Food Sharing	Spatial	- Extend and retrofit the existing Ilse Amlot Women's centre to create a community kitchen in the centre of the neighbourhood. This provides free or donation based breakfasts and dinners to local people on the basis that people regularly participate cooking, cleaning and organising. - Space in old garages could be used for tool sharing schemes.
	Programme	- Centre can be used for other food sharing schemes such as a food buying group
	Governance	- Existing charity and community organisations, residents associations and the new Northumberland Park charity
Respond to Local Challenges and Demands	Spatial	- Built form and open space proposals intended to address crime and design challenges
	Programme	- Proposed civic programmes are linked to existing organisations - Waste, energy and food schemes address resource insecurity and unemployment
	Governance	- Northumberland Park Charity - Existing organisations including Living Under One Sun and Ilse Amlot Centre
Participation and Integration	Programme	- Civic practices are predominantly food focused to appeal to as many people as possible
	Governance	- Residents manage and are employed by the charity and energy company



Current space outside the Ilse Amlot Centre



Community kitchen and new public space



Food and Community

- Private gardens
- Allotments and community gardens
- Community facilities
- Storage or office space for food and community practices or tool sharing schemes

Energy and Waste

Strategy	Application	
Local Renewable Energy Generation	Spatial	<ul style="list-style-type: none"> - Photovoltaic cells on south facing roofs - Network of small scale micro anaerobic digesters - Compost bin for every building - Redesign of old garages for use as office space for management of projects
	Programme	<ul style="list-style-type: none"> - Education and awareness including regular publications on the impact of schemes on energy bills and carbon emissions
	Governance	<ul style="list-style-type: none"> - Northumberland Park Energy Services Company
	Not Applicable	<ul style="list-style-type: none"> - Project has not explored the potential and implementation of secondary heat sources in the site, this is an engineering not urban design issue and would be managed on a larger scale.
Smart Cities	Programme	<ul style="list-style-type: none"> - During the refurbish and repair stage each dwelling is provided with a smart meter to monitor and reduce energy usage. - The energy services company employs or works along side data scientists to model and predict usage. - Education, advertising and incentives to adapt energy use habits.
	Governance	<ul style="list-style-type: none"> - Northumberland Park Energy Services Company
Minimise Landfill	Spatial	<ul style="list-style-type: none"> - Network of small scale micro anaerobic digesters - Compost bin for every building - Adapt buildings for use of gas produced
	Programme	<ul style="list-style-type: none"> - Processing and packaging of fertiliser produce on site for sale and distribution
	Governance	<ul style="list-style-type: none"> - Northumberland Park Energy Services Company
	Not Applicable	<ul style="list-style-type: none"> - Vacuum waste removal technology needs to be installed from the beginning, retrofitting a challenge.
Minimise Consumption	Spatial	<ul style="list-style-type: none"> - Community Kitchen space - Conversion of garages into tool sharing schemes
	Programme	<ul style="list-style-type: none"> - Food sharing schemes - both shared meals and buying groups - Tool sharing
	Governance	<ul style="list-style-type: none"> - Northumberland Park Charity - Additional businesses
	Not Applicable	<ul style="list-style-type: none"> - Other sharing schemes e.g. Santander Cycles and Zip Car exist on the city scale

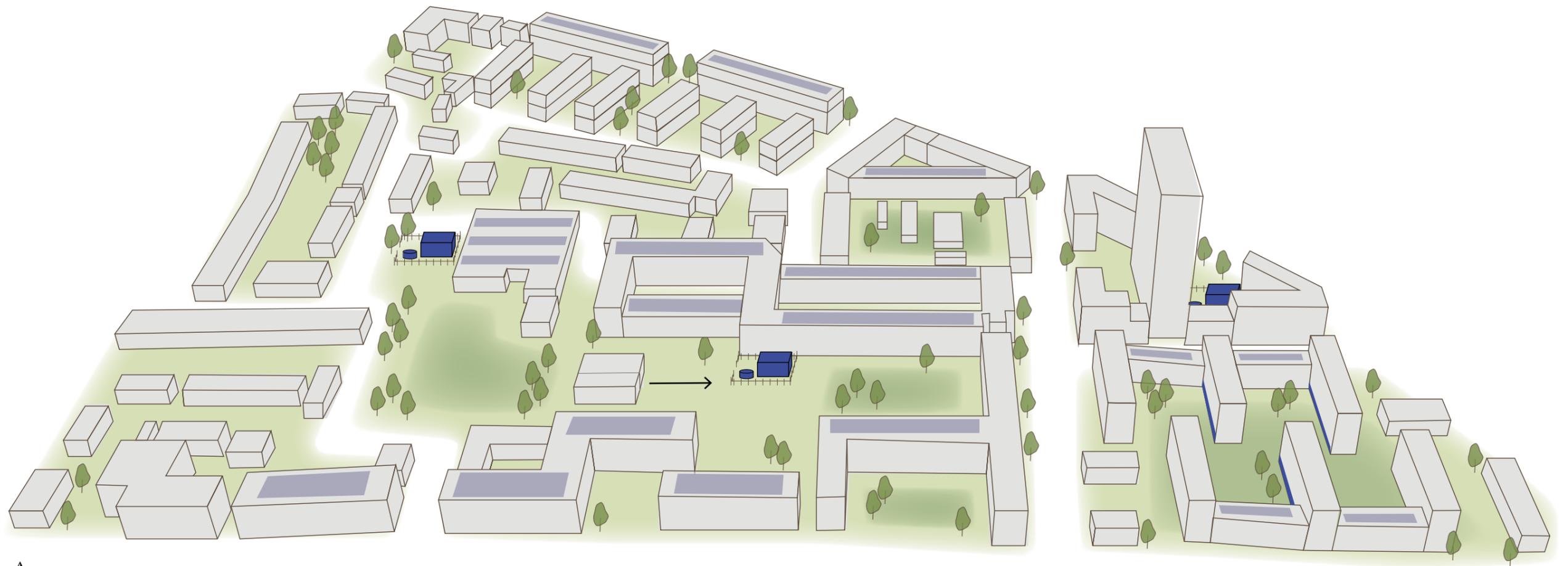


Existing under used open space



Micro anaerobic digester, gas storage and composting alongside community gardening below the central public space

Fig 24. Application of energy and waste strategies



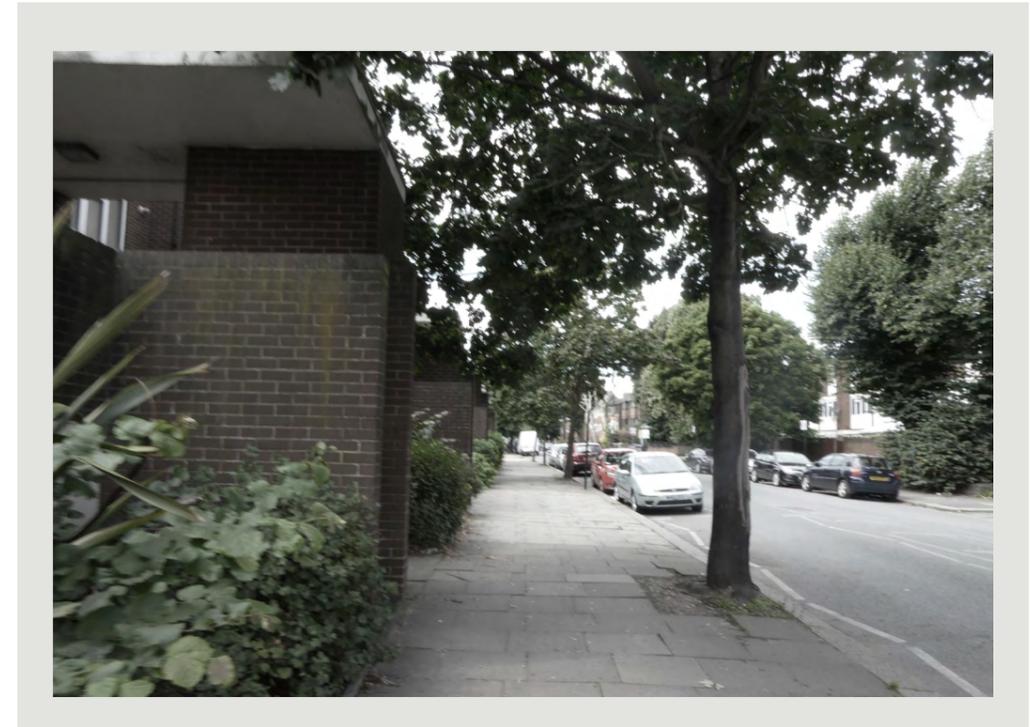
Energy

- Solar Panels
- Micro Anaerobic Digesters
- Gas Storage
- Offices for Energy Services Company

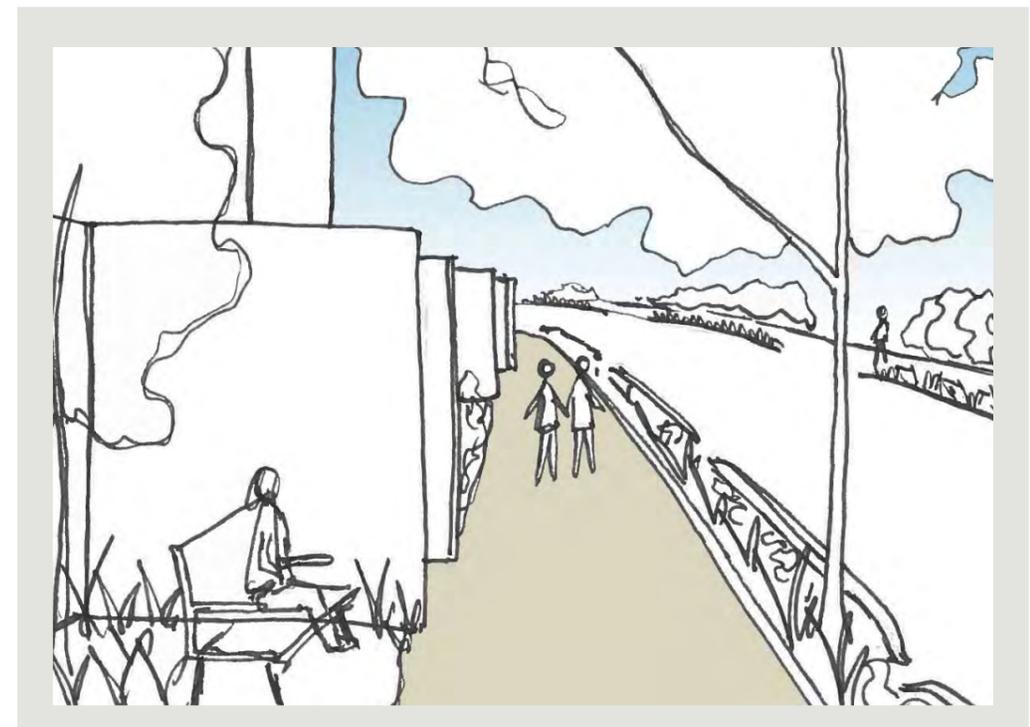
Water

Strategy	Application	
Natural Water Management	Spatial	<ul style="list-style-type: none"> - Green roofs on flat roofed buildings that are not south facing - Hard cover such as car parking adapted to permeable surfaces, either with permeable paving, allotment gardens or natural soft landscaping. - Sustainable Urban Drainage Systems along Northumberland Park road, Park Lane and other key routes
	Governance	<ul style="list-style-type: none"> - Haringey Council with specialist engineers and landscape architects - Managed by Northumberland Park Charity
Rainwater Harvesting	Spatial	<ul style="list-style-type: none"> - Water butts installed on all small dwellings - Larger scale rainwater harvesting installed in new buildings, both residential and public during refurbishment.
	Programme	<ul style="list-style-type: none"> - Food growers and maintenance teams encouraged to use collected rainwater
	Governance	<ul style="list-style-type: none"> - Haringey Council - Northumberland Park Charity and Energy Services Company
Water Recycling	Spatial	<ul style="list-style-type: none"> - Retrofit housing with greywater recycling technology
	Governance	<ul style="list-style-type: none"> - Haringey Council - Northumberland Park Charity

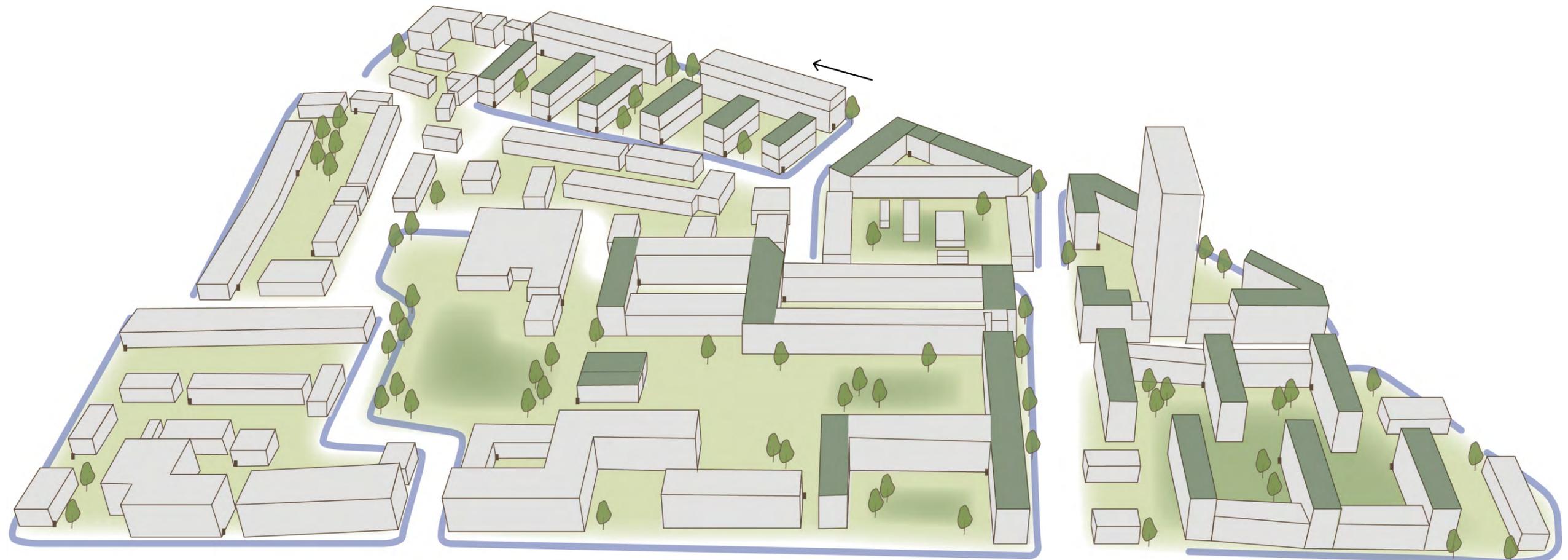
Fig 25. Application of water strategies



Existing poor quality planting and paving along Northumberland Park Road



Sustainable Urban Drainage Systems along Northumberland Park Road



Water

- Green Roofs
- Increased Greening
- Sustainable Urban Drainage Systems
- Rainwater Harvesting

Review

Meeting the Challenges and Aims

This review considers the extent to which the themes and strategies of the design framework facilitate the transition to the circular economy and address the challenges of modernist estates.

- Limited to no impact
- Begins to address
- Begins to resolve
- Strong impact

	Challenging Design	Green/ Public Space	Crime	Segregation	Opportunities	Access	Social Capital	Natural	Circulate	Impact	Everyday Life
Built Form	<input type="checkbox"/>										
Open Space	<input type="checkbox"/>										
Food	<input type="checkbox"/>										
Community	<input type="checkbox"/>										
Economics	<input type="checkbox"/>										
Energy	<input type="checkbox"/>										
Waste	<input type="checkbox"/>										
Water	<input type="checkbox"/>										

Fig 26. Review - Meeting the challenges and the aims

Discussion

Open space and community meet the challenges and aims to the greatest extent, partially as they encompass other strategies.

As expected, built form and open space strategies have the biggest impact on design challenges with energy, waste and water strategies having the biggest impact on circular economy strategies.

Due to food's status as a common denominator activity with very wide appeal, food and community correlate.

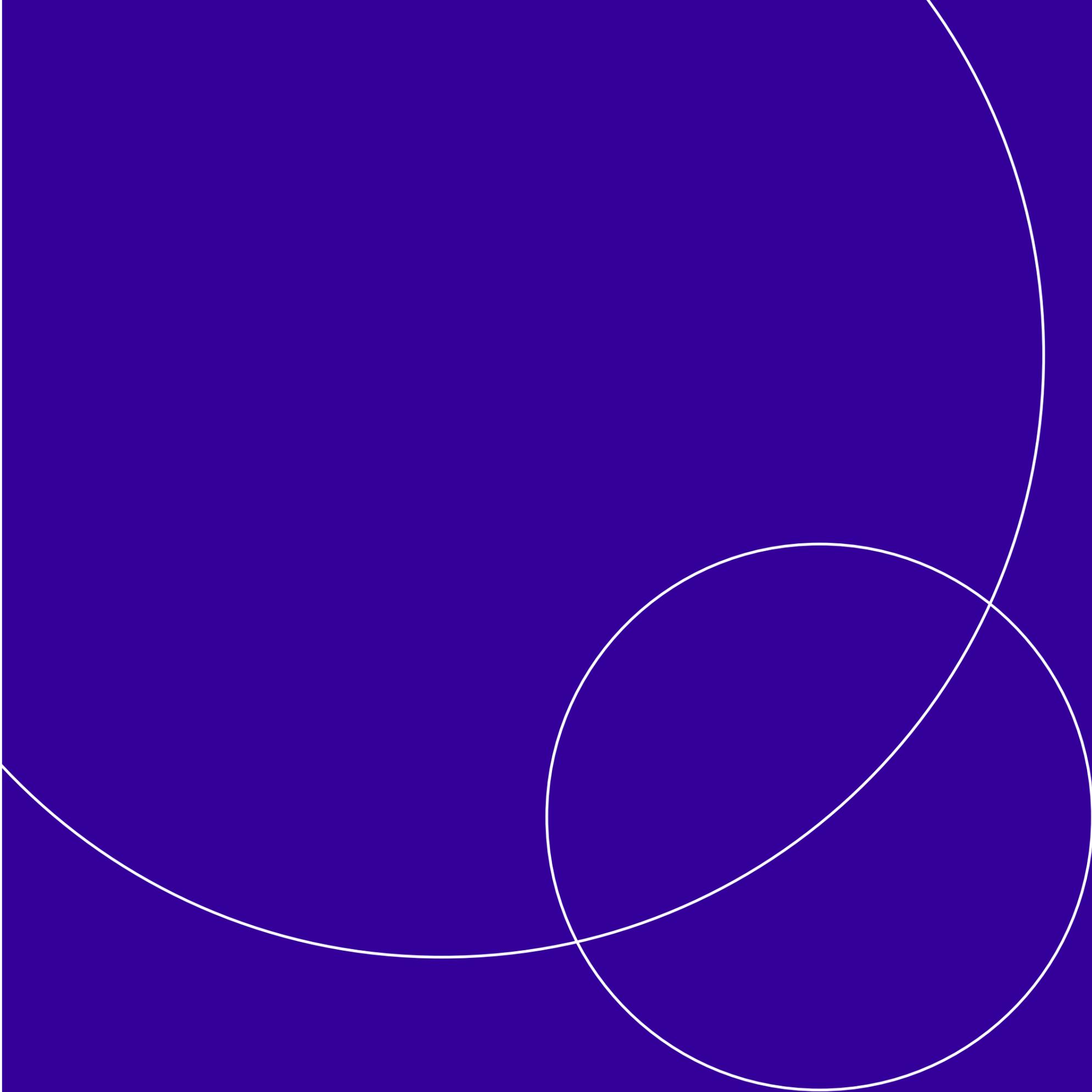
The design framework has minimal impact on crime and segregation. Crime is a complex and multi-faceted issue, the built environment and use of space is a contributing but not primary factor.

Street networks are one of the more permanent features of the built environment, they would require large scale adaptations to bring about significant change and this was not the aim of the project.

Due to the interdisciplinary nature of the topic, the project is broad and lacks depth. It therefore serves as an introduction and there is potential to explore the urban design implications of each strategy in much detail.



Northumberland Park



7. Conclusion

Reflection

The conclusion begins by considering the extent to which the project approach met the questions outlined at the start of this research process and key limitations that arose. Then it addresses the key outcomes that emerge as a result of testing the design framework in Northumberland Park followed

by its implication in the field of planning and design. Finally, it concludes with an outline of next steps to take the project forward, both further questions and areas requiring greater consideration.

Research Question

Project Approach - How the question is met

Limitations

Can circular economy principles be applied as a tool for estate regeneration that addresses the everyday lived experiences of residents?

- The design framework functions as a toolkit for the regeneration of modernist housing estates adapting their existing form but so they, and the lifestyles they support, function in circular ways. This therefore directly answers the first question.
- Circular economy literature and application tends to focus on technical solutions and large scale infrastructure, this project attempted to explore everyday practices
- The design framework is intended to promote redesign and programming that emerge according to site conditions and resident requirements

- Regeneration so that the estate functions circularly will be of no benefit unless it tackles underlying issues first, particularly employment opportunities. This would require borough and London wide changes.
- Due to the focus on everyday, the circular principles can seem somewhat tokenistic. The transition to the circular economy requires reform at all scales.
- Although the approach is aimed at improving the lives of existing resident whilst considering future needs, it could still result in gentrification
- Financing requires greater consideration.
- Northumberland Park was an unfeasible site choice as a result of the extent of change expected around it.

What are the challenges to existing modernist housing estates that are requiring or undergoing regeneration?

- Literature Review approached the question by collating a list of challenges both physical, sociological and economic.
- Considered contradictory perspectives.
- This includes design, age, crime, maintenance, segregation and opportunity and informs the later design framework

- Challenges are interconnected but these relationships were not explored
- There is a subjective hierarchy of issues. What is considered most problematic will vary between those with lived experience of the estate and those with the resources or power to make change.

How would spaces, programs and governance models be redesigned and reused to function in circular ways?

- Case studies list projects influencing design, program of space and it's governance that either work in circular ways or address challenges outlined in the literature review
- The application of the design framework in Northumberland Park tests how principles might change it's feel and function.

- The project involves changing ingrained habits and collective action so it is hard to predict how strategies would work
- The extent of cooperation required for implementation and success, between the residents but also other stakeholders including the local council, may be unfeasible.
- Site specificity means it is difficult to extrapolate from findings

Key Outcomes

Figure 28 outlines key outcomes and conclusions as a result of testing in Northumberland Park.

The primary aim of the circular economy identified in the literature review was to decouple economic growth from environmental impacts (Ghisellini, Cialani and Ulgiati, 2016). These outcomes demonstrate that, through this project, this aim has been met with the addition of creating better places and stronger communities.

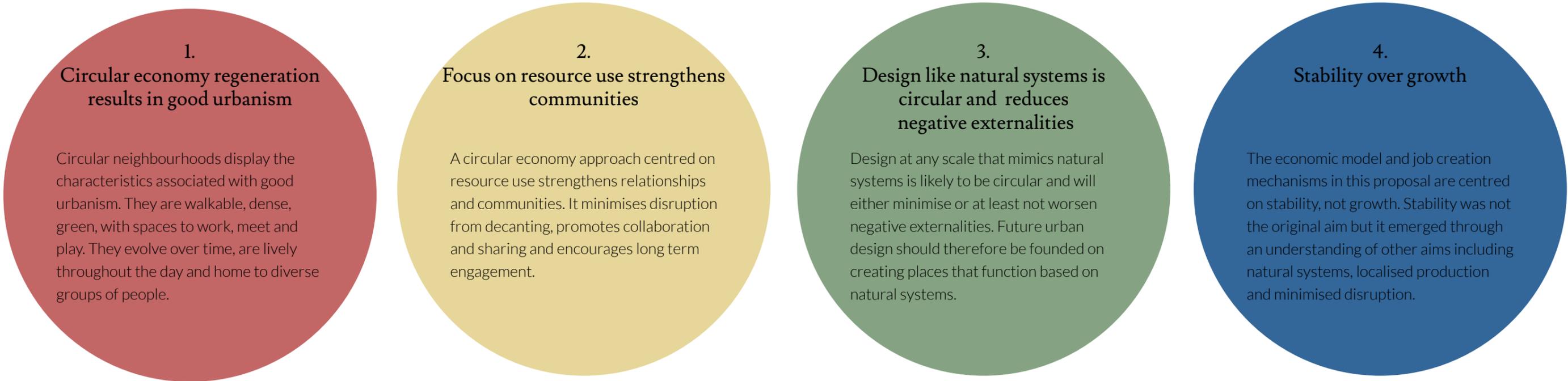


Fig 27. Key outcomes of project

Implications and Next Steps

Implications for Practice

Figure 28 outlines some of the urban design and planning implications of a circular economy approach to regeneration of modernist housing estates through outlining aspects that would need to change for this project to be implementable.

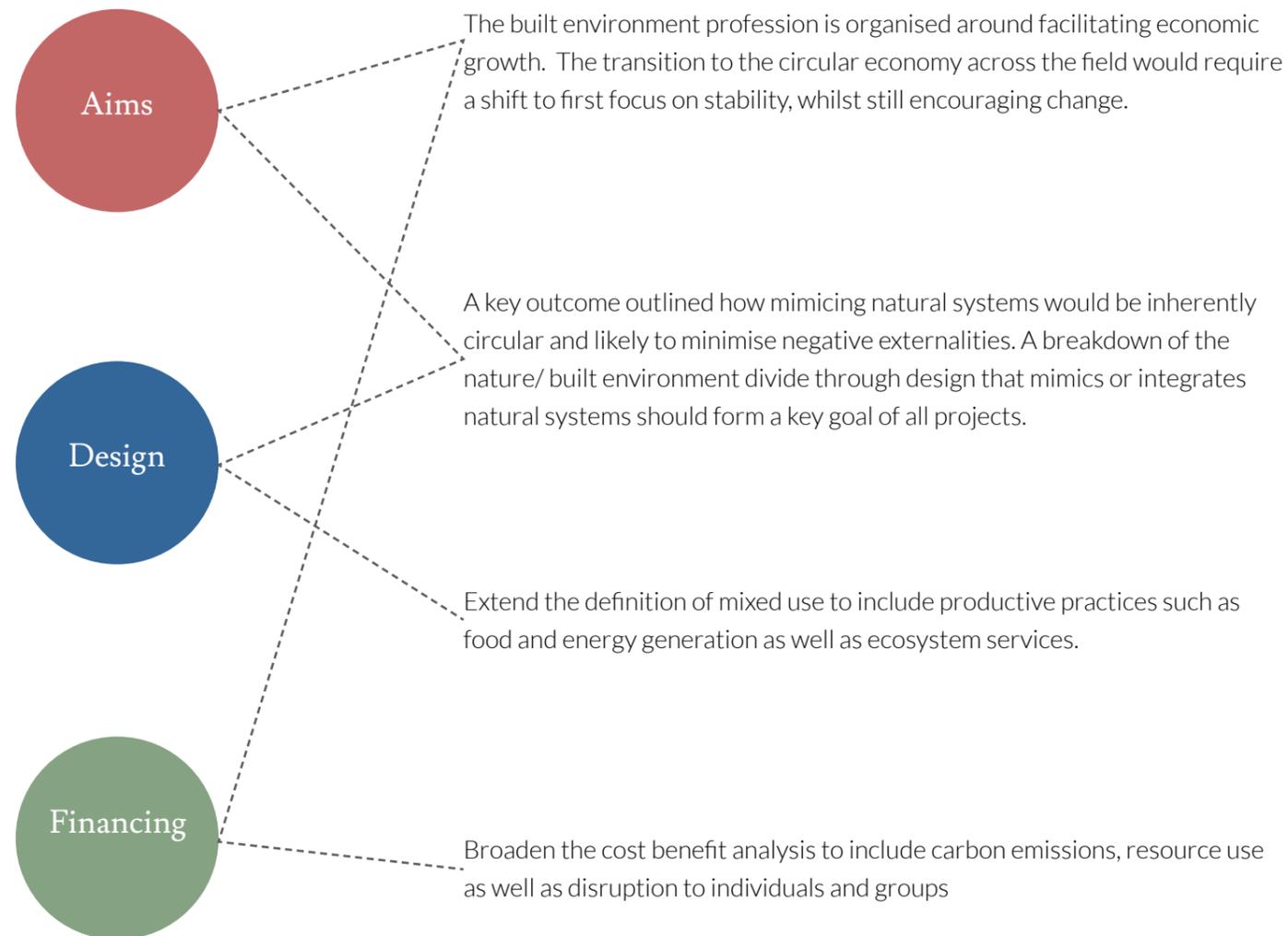


Fig 28. Implications for practice

Next Steps

Due to the holistic nature of the circular economy and the need to address everyday lives, the project required consideration of broad topics ranging from energy supply, water management to job provision. As a result, figure 30 outlines themes requiring greater depth of study as well as further avenues to explore including applicability in different site contexts and further exploration of project outcomes.

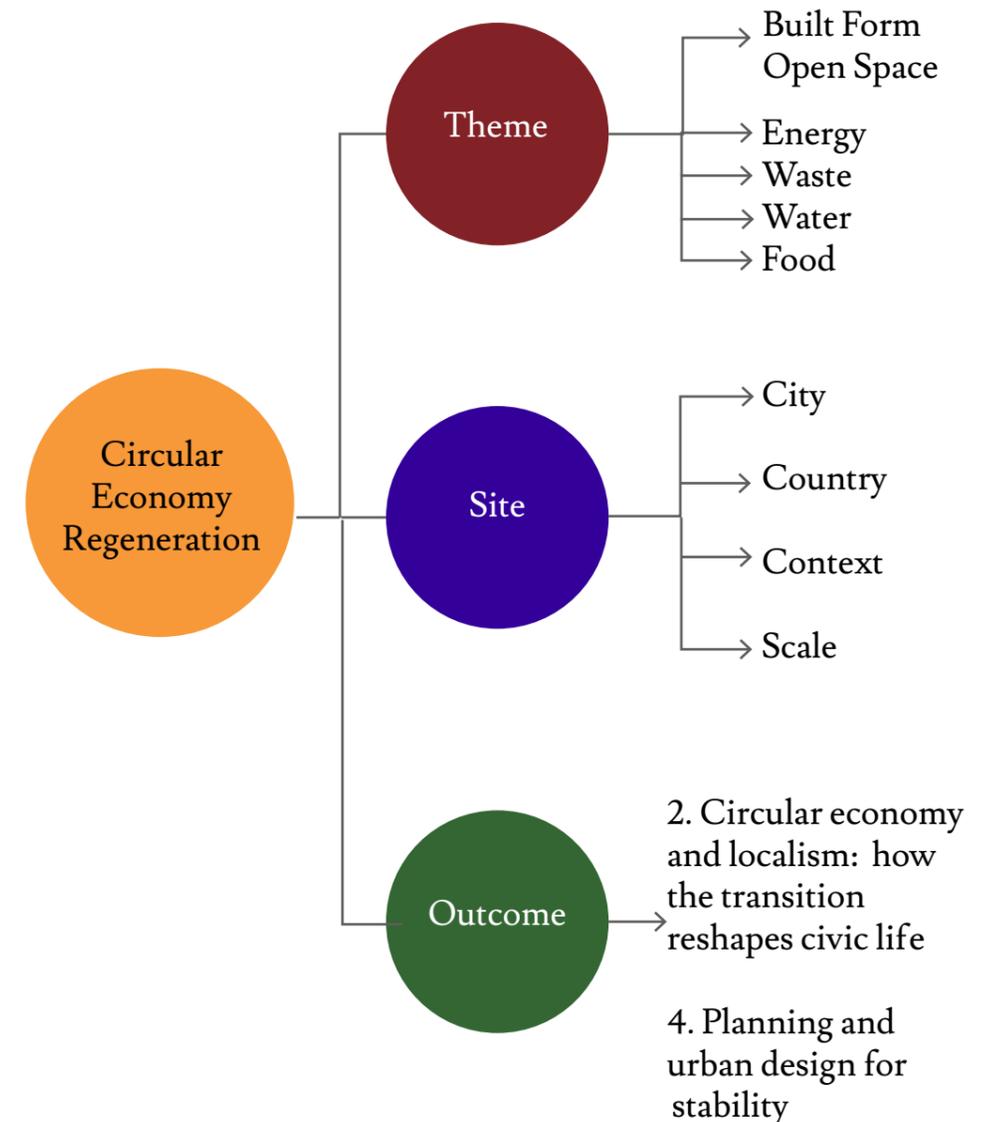


Fig 29. Future topics of exploration

Conclusion

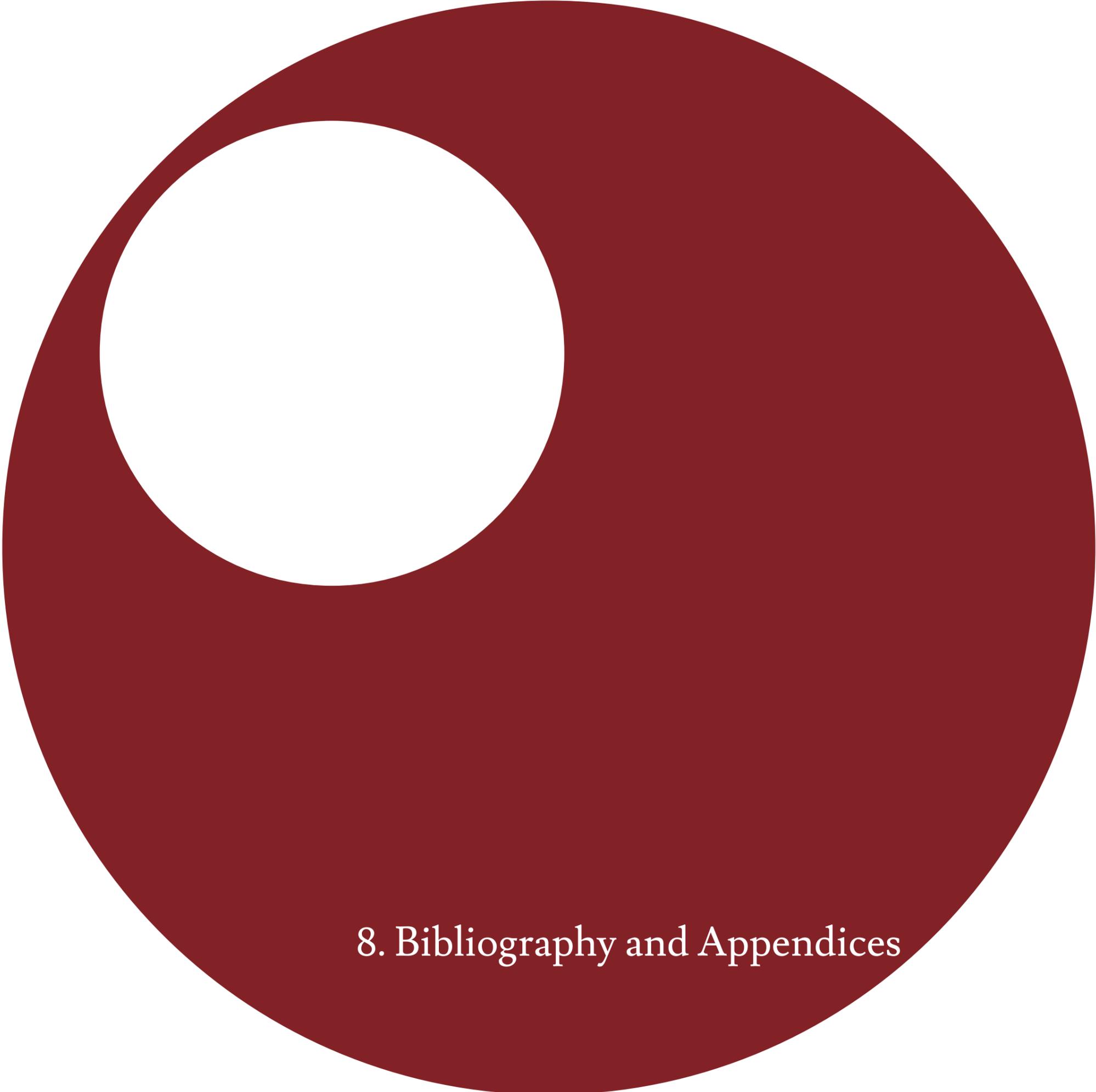
The regeneration of modernist housing estates from a circular economy perspective was an ambitious task for an urban design masters project. Addressing the challenges of modernist estates whilst facilitating the transition to the circular economy involved an understanding of built form and open space along with energy, food, water, waste, community and economic models. This is inherently interdisciplinary and required engagement with literature and case studies from engineering to sociology. As a result, this project serves as an introduction, highlighting further areas of study and its necessity.

Modernist housing estates were chosen as they, and the regeneration strategies that seek to change them, display many of the consequences of the linear economy with regeneration an opportunity to imagine an alternative approach. However, more can be learnt from modernism. The time saw a construction boom with the utopian dream of providing good quality housing for all despite a weak position post world war two. From significant challenges emerged cooperation and creativity. Climate change now offers another opportunity to rethink and redesign in a positive and proactive way, channelling elements of the spirit of modernism but in alternative ways. Moreover, we can learn from the mistakes of modernism, finding creativity within small scale adaptations over radical redesign and really engaging with lived experience.

Finally, the transition to a circular economy is a huge undertaking involving political, economic and cultural shifts. This project demonstrates the potential for small everyday design changes to start to facilitate local circular economies which can be scaled up generating permanent positive change.



Northumberland Park



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Appendix 1 - The Haringey Development Vehicle

Catalyst for Regeneration

Arrival of Crossrail 2 increasing connectivity to central London and increasing land values
 Nearby regeneration schemes including the large Meridian Water redevelopment to the north in Enfield and White Heart Lane to the immediate west
 Majority of the land under council ownership
 Successive years of austerity limiting council resources
 Typical challenging features associated with Modernist housing estates

The Haringey Development Vehicle (HDV)

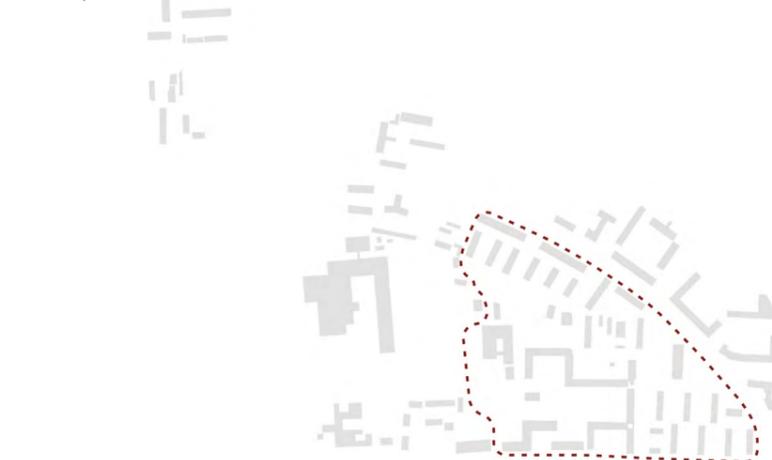
The HDV is a joint venture between Haringey Council and Australian developers Lendlease to deliver growth and regeneration in the borough. The £2billion deal for the next 15-20 years will see an apparent 50:50 match with the council contributing land and the developers financial resources whilst sharing profits evenly.
 Lendlease are behind the controversial Heygate estate regeneration that resulted in the demolition of 1212 residents to be replaced by just 82 social rent homes. Southwark Council, the borough in which the Heygate is located, is only expected to receive a share of profits once Lendlease generates 20% return (Elephant Amenity Network, 2016).
 Northumberland Park was identified as one of the initial large scale regeneration projects with the vehicle working alongside Architect's Fletcher Priest to deliver the masterplan. The project is still in its infancy but is highly likely to involve the demolition of the council owned properties to be replaced with approximately 5000 additional homes and services (Proctor, 2017)(Kober, 2017).

Proposals

Fletcher Priest were appointed by Haringey Council in 2014 to produce a strategic masterplan framework for Northumberland park. Rather than a masterplan to be fully realised, the document aims to explore the potentials of the site, develop 'Key Principles for Change' to inform local policy and establish the foundations of community engagement. According to the literature review on estate regeneration process, the document initiates phases one and two, appraisal and engage. (Fletcher Priest Architects, 2015)



Proposal for Northumberland Park (Fletcher Priest Architects, 2015)



Potential Demolition

Theme	Key Principles for Change
Place	<ul style="list-style-type: none"> More family housing, improved health facilities and open space Range of heights Better use of space and create high quality and safe routes connections and spaces by designing out crime Links to Tottenham High Road and the new stadium
Homes	<ul style="list-style-type: none"> High quality homes for a range of incomes Mix of type and tenure Modern, energy efficient and sustainable Modern kitchens and bathrooms Well designed, safe and secure Retain good housing stock where appropriate Access to gardens or private open space
Open Space	<ul style="list-style-type: none"> New green open spaces that are safe, well lit and overlooked New play spaces for children of all ages Improve links to existing open spaces Clear boundaries between private and public Secure courtyard spaces shared by residents surrounding them
Community	<ul style="list-style-type: none"> More high quality education facilities More community, leisure and cultural facilities More local shops, cafes and restaurants Engage with residents throughout the regeneration process Keep the communities together through any changes Recognise that Northumberland Park is several places, not one estate
Connectivity and Streets	<ul style="list-style-type: none"> North south streets and strengthen east west routes Improve access to public transport, particularly bus services Safe and pleasant streets with overlooked and well lit pavements Better links to the surrounding area including the Lee Valley Revitalise Park Lane with new shops and public spaces

(Fletcher Priest Architects, 2015)

Appendix 2 - Regeneration

Issues Acknowledged

Discussion with members of Northumberland Park Residents Association and Stop HDV do acknowledge that the area could do with change.

Issues acknowledged include:

Crime- residents feel unsafe in streets and open spaces

Lack of opportunities for young people - both recreation and work

Design - empty green space, dead ends and general disrepair

Housing - overcrowding and poor quality, few opportunities for people to stay and find housing in the area

The rising cost of living including food, energy and rent
(Northumberland Park Residents Association, 2017)



Somerford Grove Adventure Playground 2017

Regeneration Fears

Further discussion with residents as well as literature acknowledge the following fears:

Little communication

Engagement has been limited, residents of Northumberland Park were not directly told about the council's plans to partner with a private developer. They feel the council treats them with contempt, more attention and resources are spent on engaging with residents adjacent to smaller schemes in richer neighbourhoods including Crouch End and Wood Green where residents groups shout louder and have greater capacity

Lack of faith in political system

The HDV was established by a Labour council, residents feel there is lack of political accountability and alternative options.

Social Cleansing

The HDV does not support right to return resulting in the breaking up and dispersal of communities, they promote single move.

Affordable housing calculations and schemes such as shared ownership are not accessible to many Black and Minority ethnic residents, they are based on median incomes across the borough, not the ward and therefore do not reflect the level of economic deprivation and requirements of the current community.

Cynicism over the types of work opportunities created, the council intends to create a better range of jobs including highly skilled without consideration for local skills or provision for education and training to assist local people with gaining the skills to access these jobs.

The redevelopment will break up existing businesses and community organisations. There are promises that these will be replaced and additional services provided but residents do not believe that this would occur or that these would reflect their interests.

Lack of Trust

Feel that the council are using community programmes to secure acquiescence of demolition. For example, during the 2014 consultation for the Strategic

Framework Report, an outdoor gym was built in the centre of the ward and later regeneration 'Place Champions'.

Unclear how risk or viability were calculated and mitigated against with the council's own Overview and Scrutiny committee ignored.

No intention to provide actually affordable permanent housing for the 5600 households on the council waiting list or 1800 in temporary accommodation (Northumberland Park Residents Association, 2017) (Ball, 2015)(StopHDV, 2017)(Chakraborty, 2017)

Appendix 3 - Resource Use

Existing Resource Use

Calculation of resources used by one person living alone

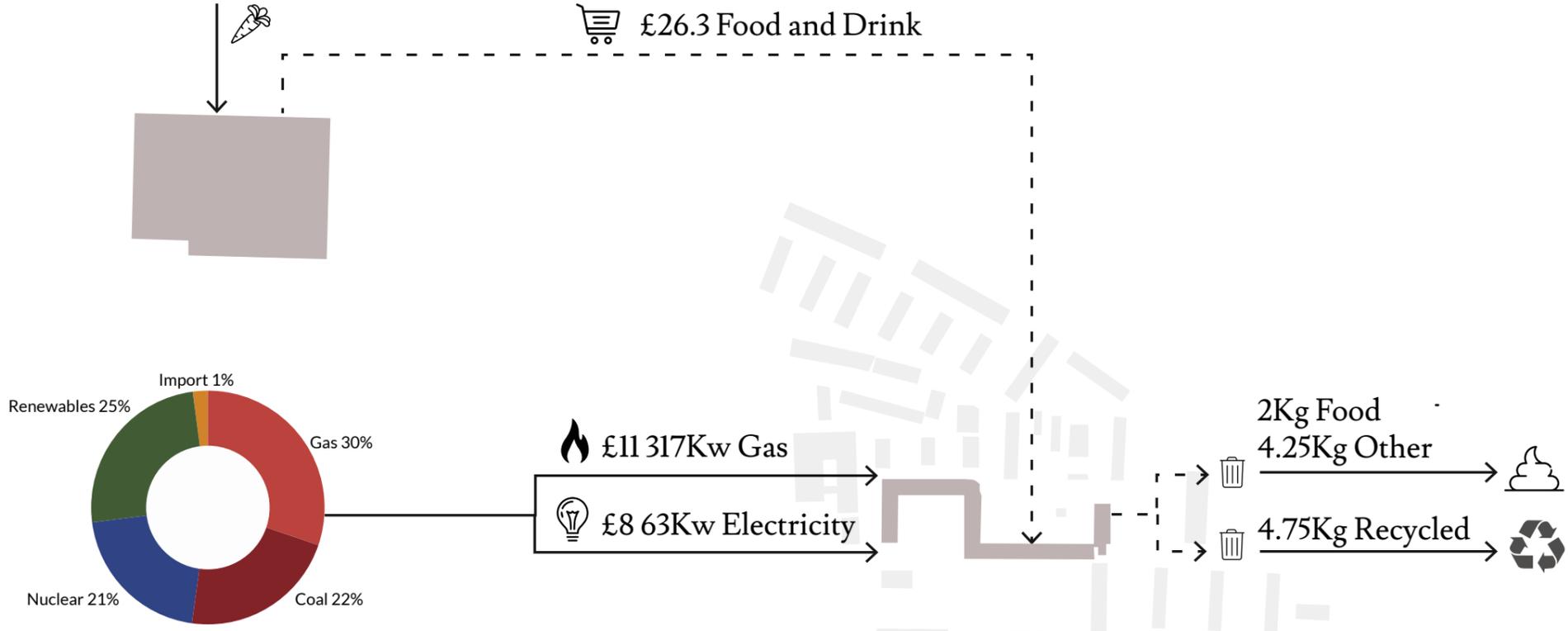


Fig 30. Resource use and waste for a single household

Calculations are generated from the following sources:

Food Expenditure: DEFRA, 2014

Energy Provision: Energy-uk.org.uk, 2015

Energy Use and food waste produced in inner city housing estates: Yaman, 2012

Waste: Arup, 2017, Vaughan, 2016

Impact as a result of circular economy strategies

Food: Urban agriculture using compost and fertiliser produced on site could result in the production of at least 21% fresh vegetable requirements (Arup, 2017).

Energy: Up to 34% and 49% of Londons electricity and heat respectively could be met through renewable resources within greater london reducing CO2 emissions by £54 million tonnes annually (Greater London Authority, 2011)

Waste: All biomass/ food waste could be processed via composting or anaerobic digestion into a usable product. Greater awareness would increase uptake of traditional recycling.

Refurbishing over demolition: would result in the prevention of building material entering landfill and associated released CO2

UCL Bartlett School of Planning: MSc Major Research Project

PLAGIARISM

Work submitted by you for assessment must be your own. If you try to pass off the work of others as your own you will be guilty of plagiarism. *Plagiarism refers to any work by others, whether published or not, and can include the work of other candidates.* Any quotation from the published or unpublished works of other persons, including other candidates, must be clearly identified as such being placed inside quotation marks and a full reference to their sources must be provided in proper form. A series of short quotations from several different sources, if not clearly identified as such, constitutes as plagiarism just as much as does a single unacknowledged long quotation from a single source.

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Candidate Name:	MSc Programme:
Date due in:	Submitted:
Supervisor:	Second marker:
Module Code: BENVGSU4 Major Research Project	

PLEASE REFER TO THE FULL MARKING CRITERIA DESCRIPTORS FOR MSC MAJOR RESEARCH PROJECTS, REPEATED OVERLEAF

KEY CRITERIA

RESEARCH: Abstract and introduction · Well formulated critical question · Conceptualisation of the problem being researched · Clear and logical division of project objectives · Clear explanation of contribution to practice · Critical reading of literature (demonstration of knowledge in the chosen topic through a critical and reflexive literature and practice based debates and or case-studies review) ·

APPLICATION: Clear framework of issues to be explored through project-work · Clearly defined methodology and work-plan in line with the project objectives · Appropriate choice of project site · Quality and appropriateness of site analysis · Clear definition and explanation of project · Creativity and innovation through project-work · Quality and level of in-depth explorations of proposals ·

Reflective concluding section · Quality of graphics, writing, structure and originality · Layout and presentation · Referencing

MARKER'S COMMENTS

INITIAL GRADE AWARDED BY MARKER: %

Marker's name and signature.....
Date.....

** TO BE COMPLETED BY SUPERVISOR ONLY **	
FINAL GRADE AGREED:	%
JUSTIFICATION:	

THE KEY INGREDIENTS OF AN MSC MAJOR RESEARCH PROJECT (FROM MODULE GUIDE)

1. A word count;
2. A brief **abstract** of not more than 300 words;
3. An introduction including a **well-formulated research question** and clearly setting out **the problem(s)** and the **issues or objectives** to be explored, and carefully justifying **the significance**, including its **contribution to practice, and originality** of the major project;
4. A **discussion of relevant literature and the practice-based dimension** to which the project will contribute, establishing **the current 'state of the art'** in the chosen area of study. Where appropriate you should draw from **examples of current practice** as found/discussed within the academic and professional literature. The literature review will play a part in conceptual development and may, of itself, be part of the operationalisation of objectives;
5. An evidence-based **explanation of project approach**
6. **Graphic presentation** of both analysis and final proposals for change accompanied with respective **explanations**
7. **Conclusion:** a brief summary of what was done and a **clear narrative explaining why final proposals were opted for**, including **alternatives considered and rejected**, its appropriateness, originality and contribution to practice. **Careful reference to the evidence** gathered in the first part (in literature and any practice debates, or case-study analysis) **which support the approach taken to the project**. As appropriate, the concluding section should also **reflect on** i) the broader but reasoned conclusions (for planning, urban regeneration, design and so forth) that can be drawn from this focused empirical and applied research study; also reflect on ii) **practice implications** iii) any shortcoming or failings of the project and iv) **further questions arising from the research**;
8. The project should be **logically structured and well written**. It should **demonstrate both intellectual and skills achievement**. The very best projects will offer a degree of **originality** in their analysis and application of a topic and may display creativity and innovation in the way they approach a subject (methods of data collection and propositions for change and its graphic representation).
9. It will be **well-presented** in terms of graphics and layout; and
It will be **fully referenced** throughout, always in Harvard style, including any written sources, data and illustrative material that you have used in your work
10. **A bibliography**
11. Appendices briefly presenting any background analysis / data gathered (this is not accounted for as the main presentation/text of the project and may or may not be read, left to the discretion of the markers).