

# Warm mix asphalts – cool and green

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- Chief Executive
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- February 2020

# I'm going to cover

- The recycled material market
- Gimmicks or game changers
- Easy wins
- APPG report of warm Mix

# The recycled material market

- Green is the agenda
- Any carbon reduction initiative is worth considering
- Traditional methods may be delivering already

# Possible recycled options - 1

Crushed concrete and masonry	<ul style="list-style-type: none"><li>• often becomes available from demolition waste from the building industry</li><li>• recently, recycled crushed concrete has been produced and supplied to a wide range of road applications, including the stabilization of subbases</li><li>• recycled concrete and masonry materials can be processed into unbound granular materials, aggregates and concrete manufactured from recycled aggregate</li></ul>
Bitumen and asphalts	<ul style="list-style-type: none"><li>• milled or excavated asphalt pavement</li><li>• obtained from the road and other sources; can be collected as a co-mingled stockpile, processed by crushing and screening to a graded material, free of contamination, ready for use in new asphalt manufacture</li><li>• In the form of crushed slab asphalt it can be used as an unbound granular subbase and base course material on minor roads and as a low-dust surfacing in unsealed road applications</li></ul>



# Possible recycled options - 2

glass	<ul style="list-style-type: none"><li>• used as a fine aggregate when crushed</li><li>• replacement for sand as it has a similar particle density</li><li>• typically 5% of reclaimed glass in the form of cullet is permitted in granular products</li></ul>
slags	Blast furnace slags used in coated material
Ash /fly ash	<ul style="list-style-type: none"><li>• about 13% of coal combustion products is used in cementitious applications or concrete manufacture</li><li>• about 6% is used in non-cementitious applications</li><li>• About 27% is used in projects offering some beneficial use (e.g. mine site remediation, local haul roads, etc.)</li></ul>
Crumb rubber	<ul style="list-style-type: none"><li>• obtained from the recycling of vehicle tyres</li><li>• mixes with up to 20% of crumb rubber by mass of bitumen binder can be used in sprayed sealing work</li></ul>

# Possible recycled options -3

Plastics	<p>The idea behind the product was inspired by practice in Southern India of retrieving waste plastic to fill up potholes. Diesel was then poured over it and the mix set on fire until the plastic melted into the craters and formed a makeshift plastic pothole filler. Cumbria County Council was the first highway authority in the UK to trial MacRebur's plastic-based material in 2017. It was reported that an equivalent of 500,000 plastic bottles and over 800,000 one-time-use plastic bags were recycled for a 400 m long by 20 m wide strip of road (Cumbria County Council 2017; Barry 2018). MacRebur also claimed that the company aims to use a ratio of 50/ 50 domestic and commercial waste for local road applications.</p>

# Gimmicks or game changers

## Plastics-

- Occupational Health and Safety
- Microplastics

## Other Products-

- No independent research
- Word of mouth

## Other options

## Warm mix



The All Party Parliamentary Group on Highways

# Working for better roads

Warm Mix Asphalt:  
reducing carbon emissions and improving efficiencies



September 2019

# Easy wins with warm mix

- An innovative approach to road construction and maintenance offering enhanced efficiencies and a lower-carbon production process is already here.
- Asphalt technology has come a long way since its earliest use in road construction and a more recent advance has been the development of modern Warm Mix Asphalts (WMA).

- The simple principle behind WMA technologies is to manufacture and lay the asphalt at lower temperatures, thereby using less energy and delivering meaningful carbon savings, without compromising performance.
- WMA can be produced at temperatures up to 40°C lower than traditional Hot Mix Asphalt (HMA) and requires limited modification of existing plant. It can also be laid using existing equipment.
- WMA now accounts for significant volumes worldwide – almost 40% of production in the USA and over 15% in France – but remains under-utilised in the UK, where it represents less than 4% of asphalt production.

- There is a significant lost opportunity of not switching to WMA. Not only does its use save time and provide a safer working environment for road contractors, but the carbon emissions associated with the production of WMA are also less than those for HMA.
- If all asphalt production in Great Britain in 2017 (the last year for which data is available) had been switched to WMA, it would have saved at least 61,000 tonnes of CO<sub>2</sub> – the equivalent of cutting almost 300 million miles of car journeys

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# APSE Southern Region: Highways and Street Lighting AG

11th February 2020

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# Background

- Programme replaced 21,000 street lighting lanterns with LED and a Central Management System
- Salix capital funding of £5m
- Total programme budget £6.5m (£1.2m less than the business case forecast)
- Competitive tenders reduced costs further
- Revenue savings of £850k p.a. from energy and maintenance, rising to £950k p.a. in 2020/21
- LED lantern lifespan, and CMS fault reporting
- More than 60% of street lighting carbon emissions eliminated

# Not without a hitch...

- Installation provider already in place under a 20 year PFI
- CMS supply contract awarded January 2016
- LED lantern supply contract award challenged
- ...and not finally awarded until May 2017
- Manufacture then proceeded smoothly
- But installation agreement was legally complex...
- ... and commenced in November 2017
- Completed in January 2019

# Manage Complexity

- Complex procurement and delivery
  - DW Windsor: manufacturer of LED and CMS
  - Design for Lighting: design sub-contractor
  - PFI Ltd: street lighting PFI contractor
  - Bouygues: lighting maintenance and installation sub-contractor
- Installation was not complete when the PFI ended
- Short term maintenance contract placed with Bouygues to ensure they could finish the programme
- PFI Ltd retained to provide risk management & support
- Legal and Procurement input all the way

# Programme Management

- Simple design solution for residential streets first
- Then, manufacture started with these lanterns
- Linked to the installation schedule...
- Easiest and quietest streets first: non-CPZ wards
- Then moved on to residential streets in CPZs
- Once momentum has gathered...
- ...precise design, manufacture and installation in the more complex town centres and on main roads
- Don't leave them to last; Manage the risk
- Finally, returned to residential settings for micro-redesign

# Constant Improvement

- CMS 'future-proofs' the investment
- Town centres and main roads designed to meet BS5489 (EN13201) right from the start
- Concerns over 'fear of crime' in residential areas, so...
- Residential streets set at 70% (or BS5489 level if higher)
- Residential street baseline output then reduced to 50%: no complaints
- Residential street baseline output then reduced to 40%: still no complaints
- Now, dimming right down to BS5489 level from 01:30 am to dawn

# Unconventional Street Design

New Park Road, Brixton, Lambeth

Feras Fathallah Principal Urban Designer





# Vision

Streets are places for people

In dense populated cities, streets are seen as extensions to peoples living rooms





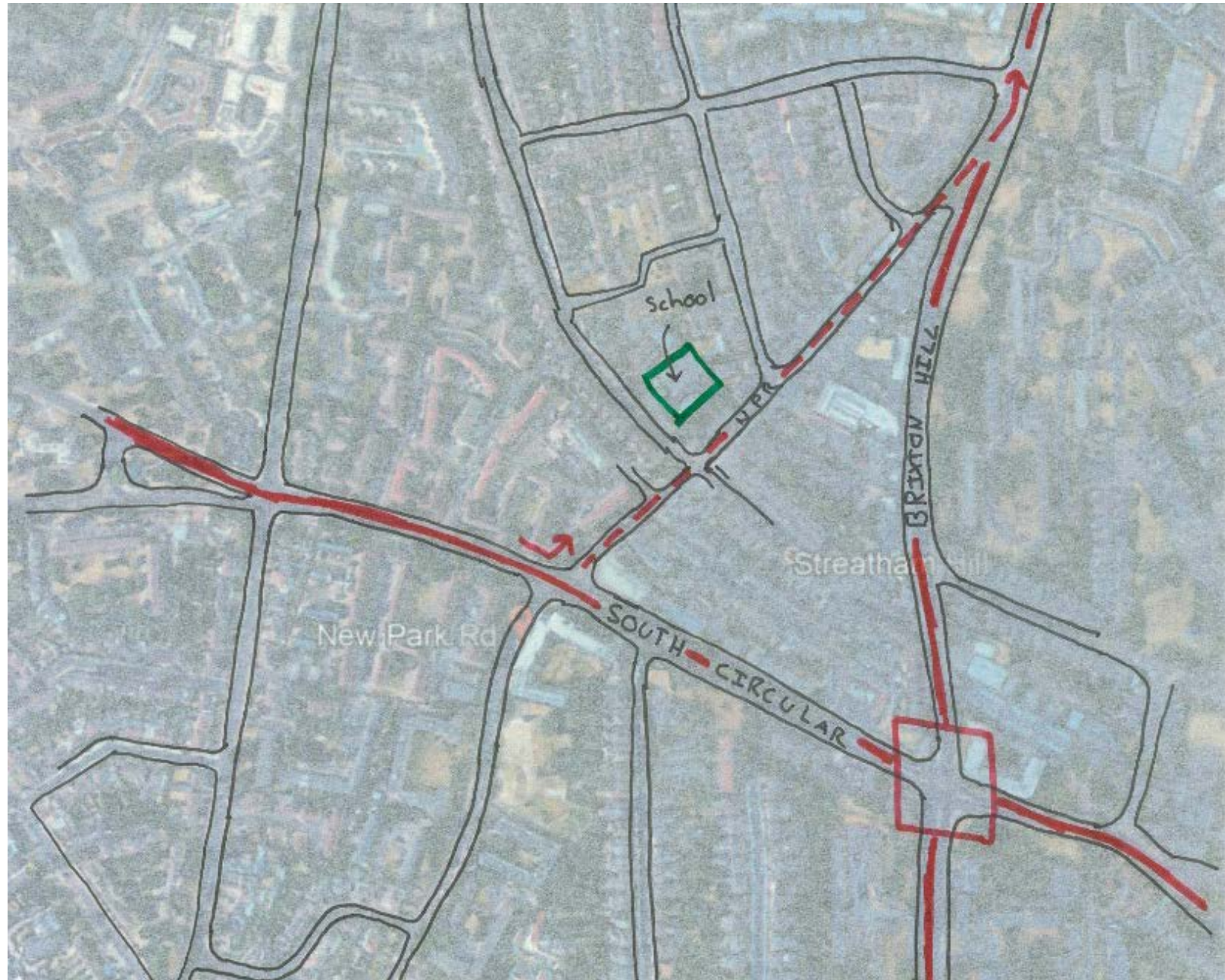




# Context

New park Road is a rat run between South Circular & Brixton Hill

- 6227 vehicles per day
- 50% 20mph compliance
- Home to Richard Atkins Primary School
- 12 hit and runs- 4 children





# Issues

## Unsafe

- High Volumes
- High Speeds





# Issues

Wide Carriageway- encouraging car dominance





# Issues

## Poor Crossing Facilities





# Issues

Over-parked





# Issues

- Poor air quality
- Street clutter (guard railing)
- No active frontages
- Noisy
- Narrow footways
- Low social interactions





# The Brief

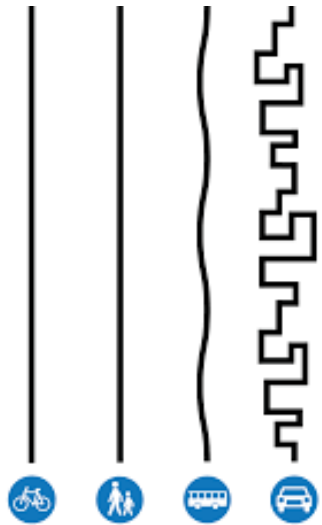
- Filter New Park Road with additional filters





# The Brief

- Flip the priority of streets
- Create a sense of place
- Encourage more walking & Cycling
- Deter non local traffic without filtering
- Improve safety & accessibility



Source: Copenhagenize  
Mikael Colville Anderson



Orford Road- Waltham Forest

Before



Gerard Doustraat 1976 © Stadsarchief



Orford Road- Waltham Forest

After



Gerard Doustraat 2017 © Floris Lok



# Community Engagement



We created a stakeholder group including:

- Richard Atkins Primary School
- Local Residents
- Local Businesses
- Community groups
- Politicians
- Local authority

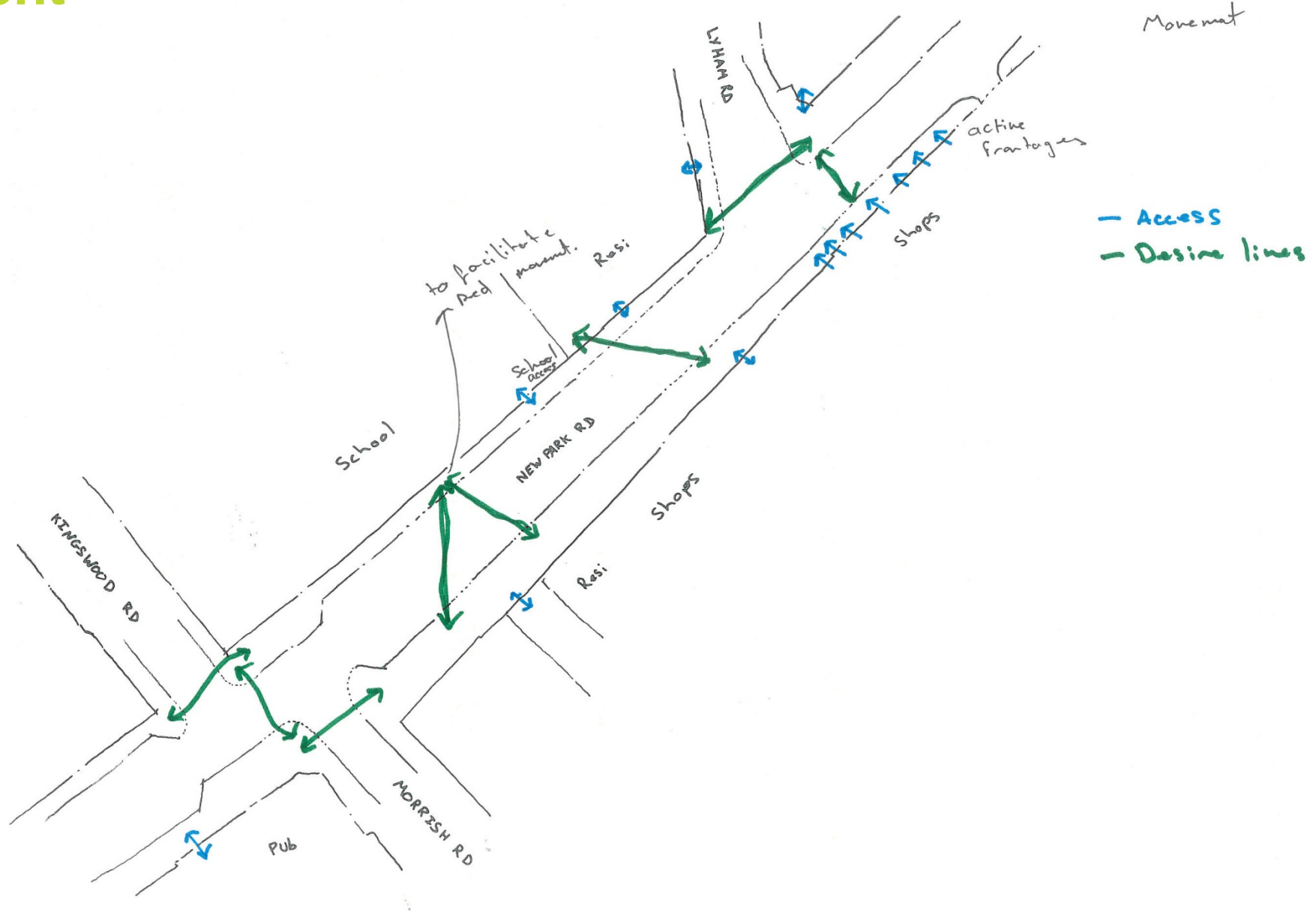




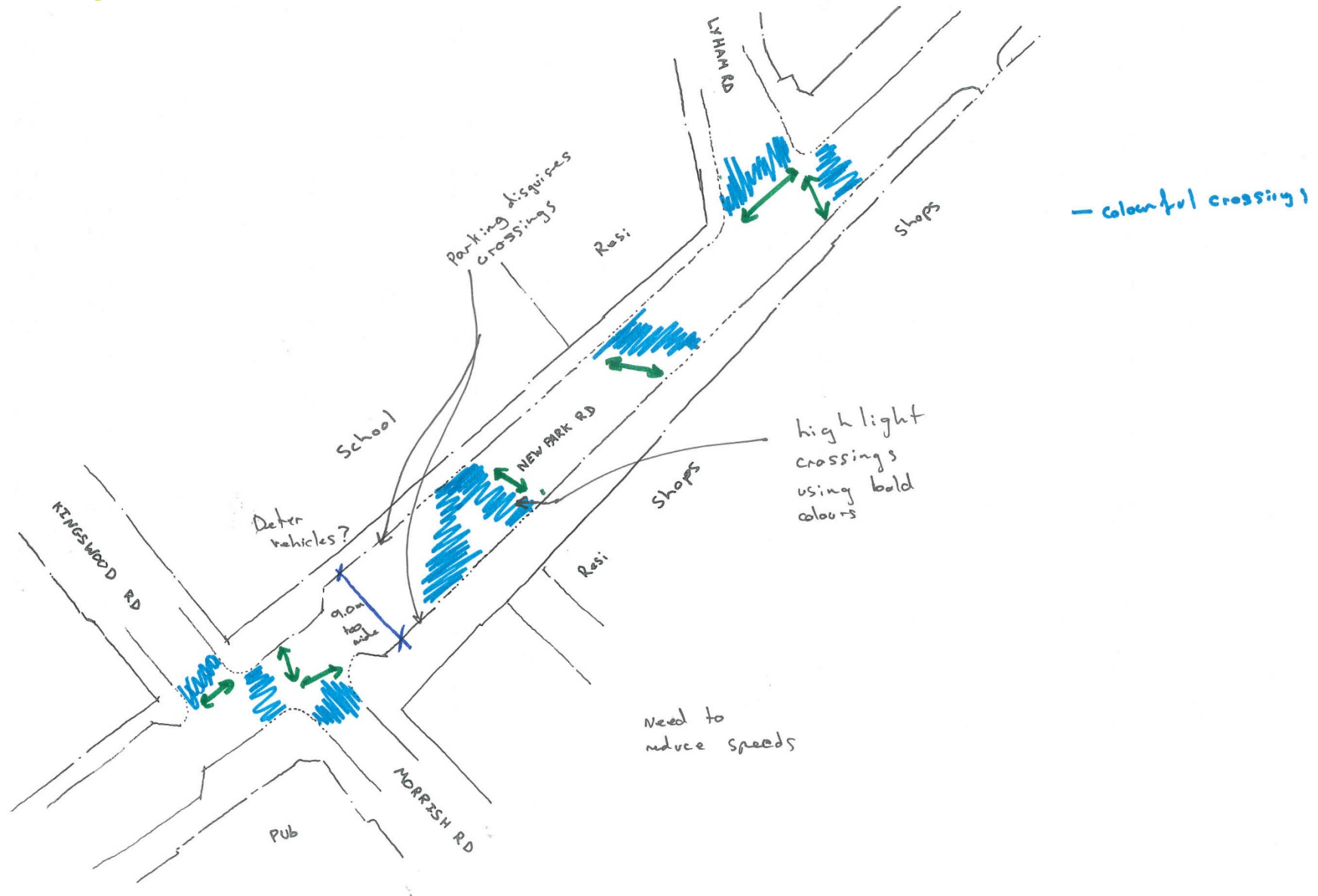




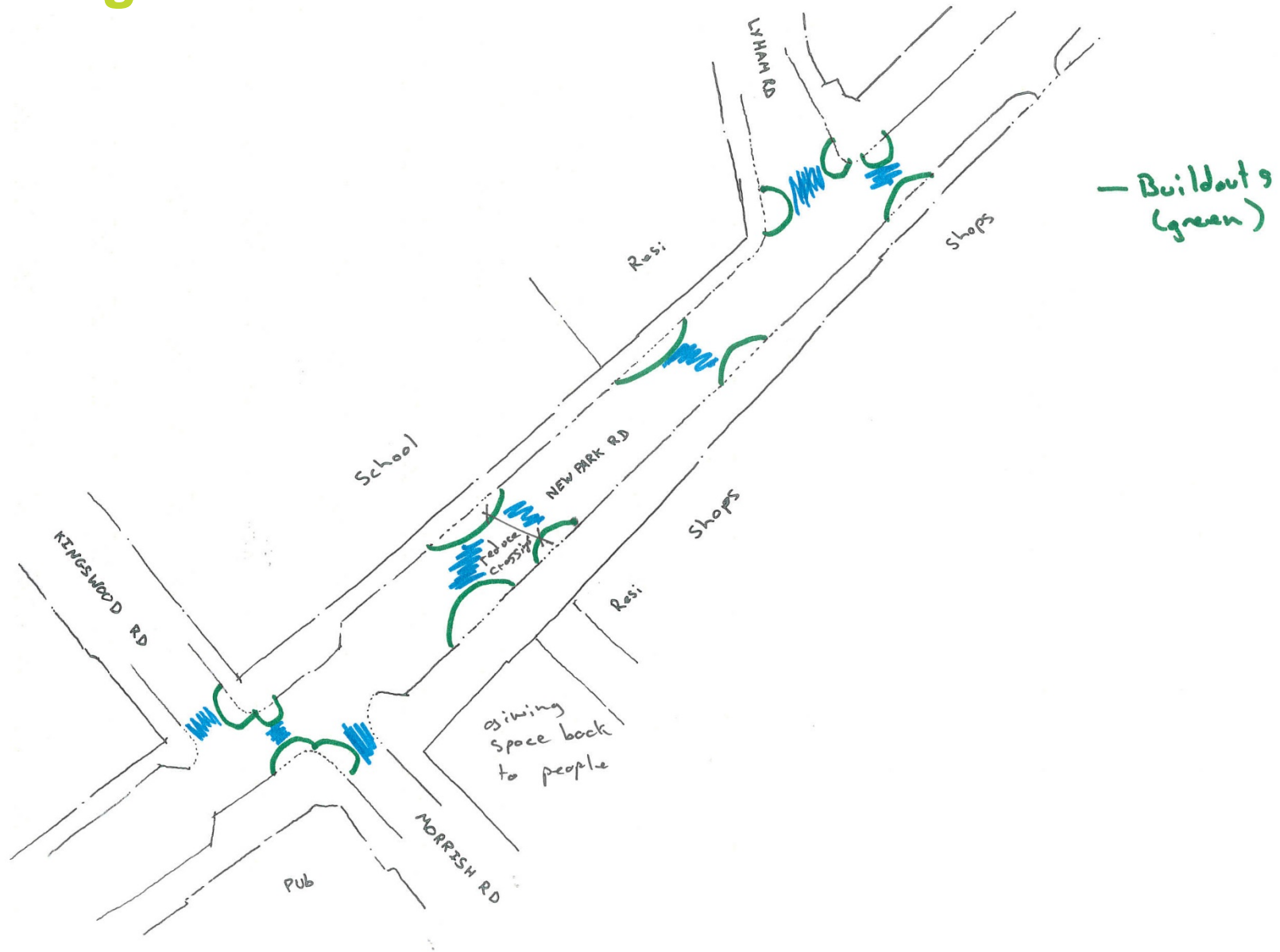
# Movement



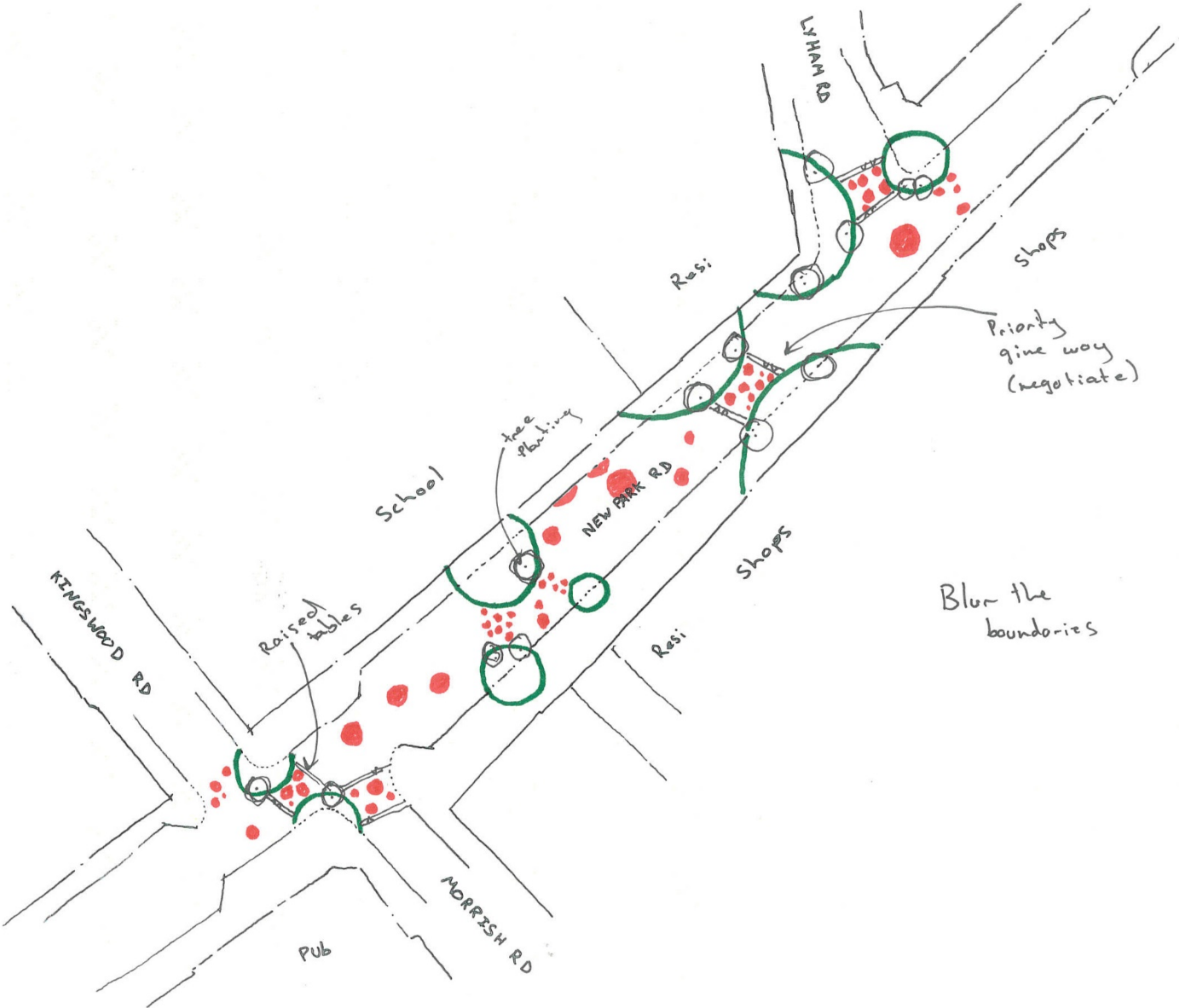
# Accessibility



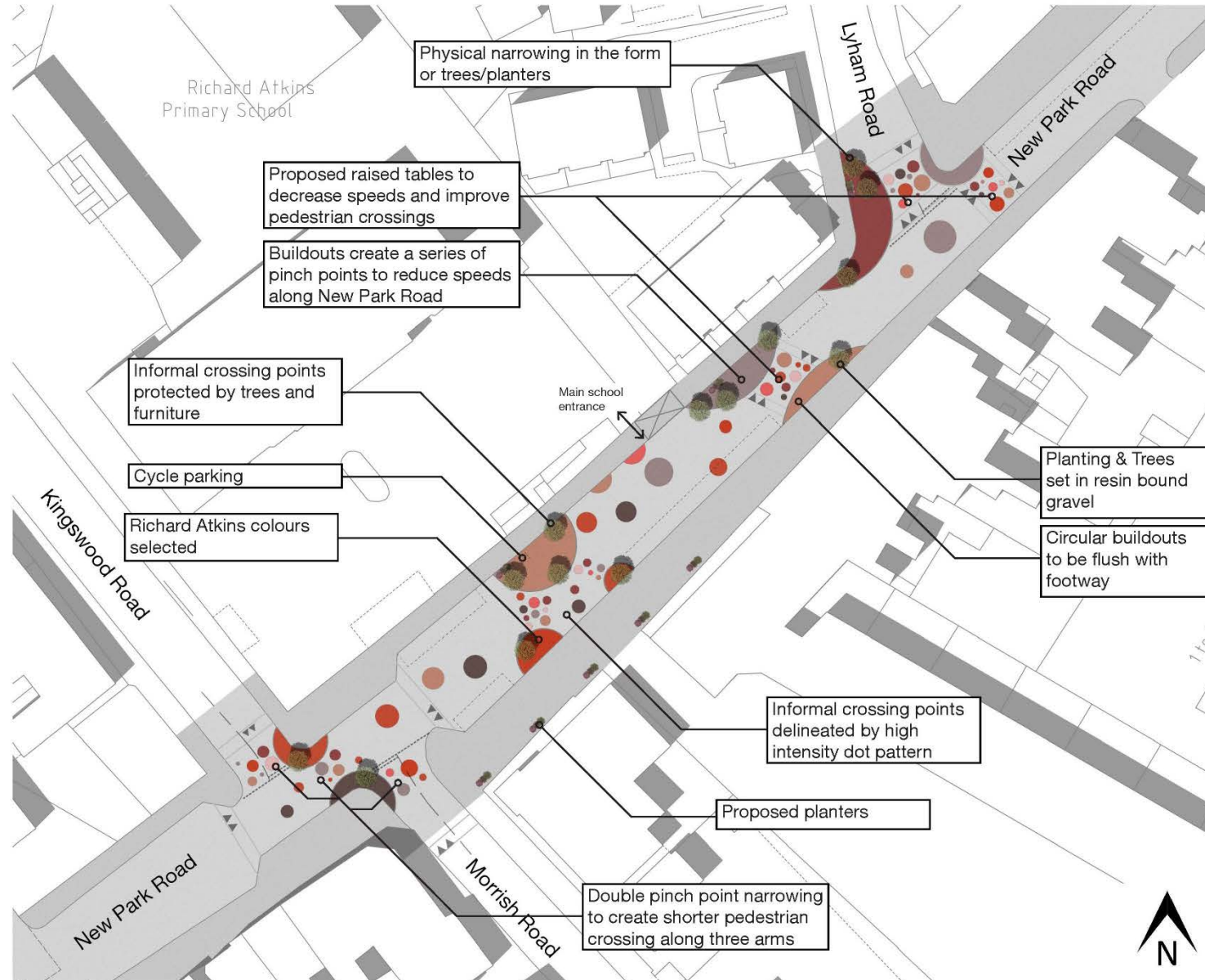
# Placemaking



# Concept



# Concept



## Proposal

At previous engagement events residents highlighted high traffic volumes and speeds along New Park Road particularly the section outside Richard Atkins Primary School where carriageway widths can reach up to 9m. Pedestrian crossing facilities were also raised as an issue especially in regards to the children's safety. Three main locations were identified including the junction of New Park Road and Lyham Road, New Park Road directly outside the school opposite the shops and the junction of New Park, Morrish and Kingswood Roads that require interventions to eliminate these issues.

The design solution attempts to eliminate issues raised at the engagement stage. It proposes to do this through a series of physical interventions within the carriageway in the form of buildouts, planters, trees and cycle stands to reduce road width and create an environment to accommodate 20mph vehicle behaviour.

Residents proposed give way/ priority intervals outside the school to create safer conditions for children. The circular buildouts provide a physical narrowing of the street supported by trees and planters. The circles provide informal crossing points with raised tables that tie into existing desire lines. This allows pedestrians to wait safely behind trees and planters before crossing a reduced distance. The intensity of dots increase nearer the crossing points to inform the driver they have to proceed with caution.

The design encourages a radically different, inviting street environment for all road users with slower speeds and more trees to tackle air quality and safety. This provides better health for children, parents and older people which will benefit the school and local businesses. The colours used to delineate the circles are a variation of the Richard Atkins red which creates a sense that the schools is spilling out onto the street and emphasising that this is a school zone.



# Concept







Trial



Trial





























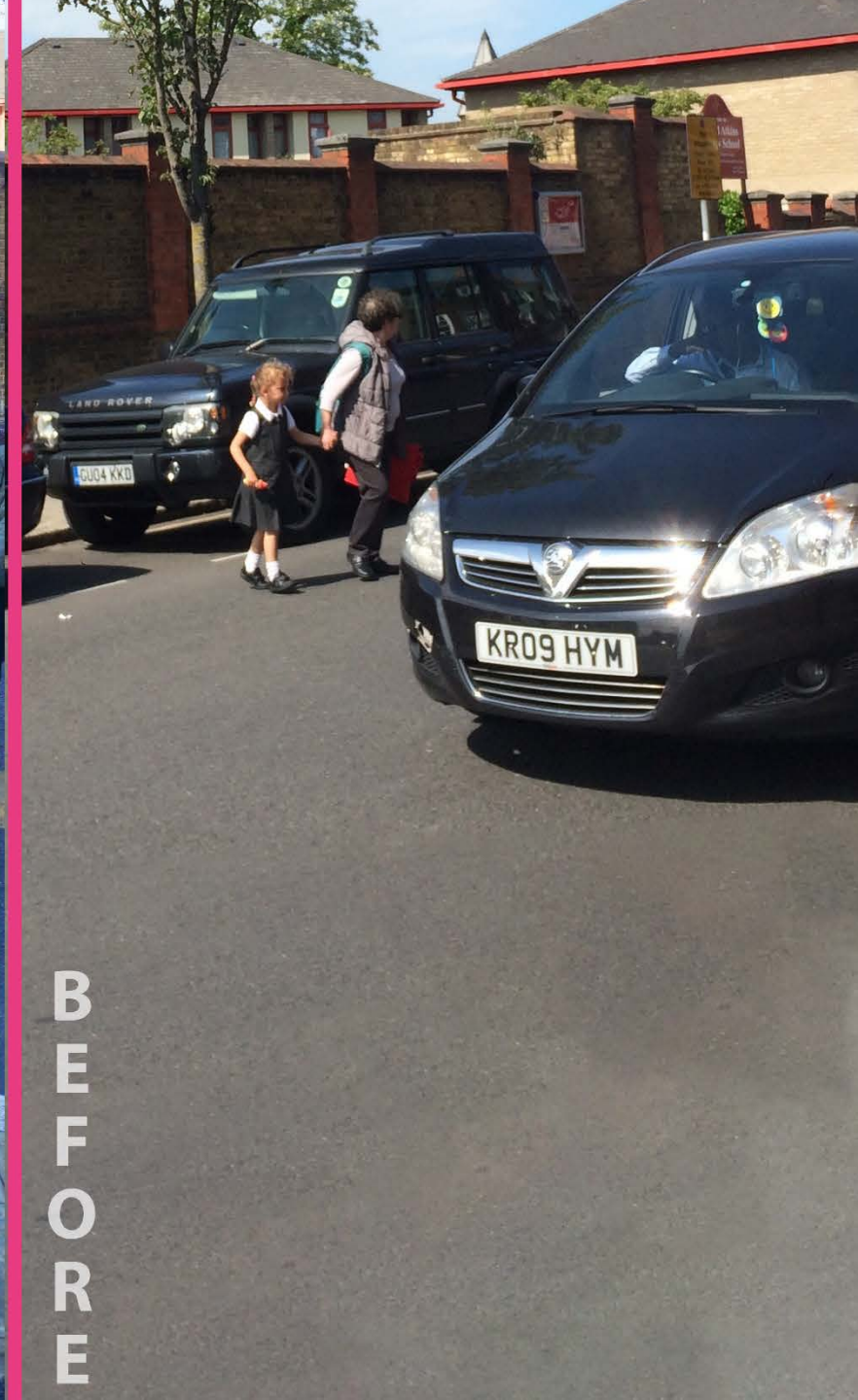


**BEFORE  
ORDER  
TRADITIONAL**



**AFTER  
CHAOS  
INNOVATIVE**





A  
F  
T  
E  
R

B  
E  
F  
O  
R  
E



“I cannot express enough how delighted I am with the outcome of the project. The scheme looks great and is exemplar on what can be achieved to improve road safety”.

*Councillor Jennifer Brathwaite: Cabinet Member for Environment and Transport, Lambeth Council.*

“Slower speeds already! This will be great for children and older people”

*Cyril, Local resident*

