

PART THREE – ISSUE BASED CHARRETTE

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SECTION B – PEDESTRIAN ORIENTED TRANSPORTATION

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SECTION A - TRANSPORTATION

A.1 AUTO ORIENTED PATTERN

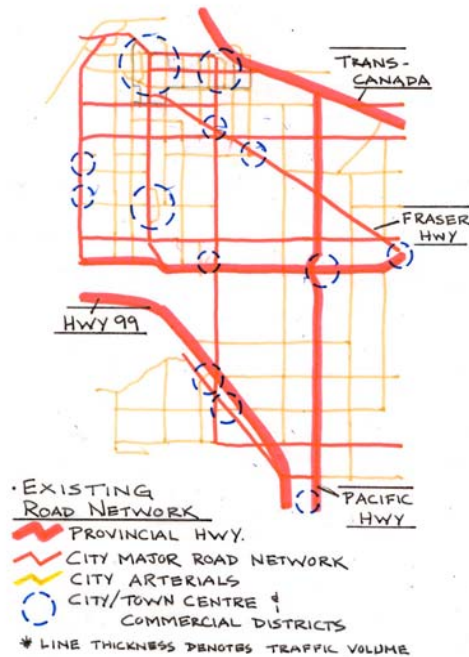
Addressing transportation issues in a community that has grown, and that continues to grow, as rapidly as Surrey is a complex task. In light of this fact, the need to form strategies for sustainability at the district, corridor, block, and parcel scale is critical for the future. While it may be impossible to completely alter the make-up of Surrey as a whole, steps can be taken to insure the viability of this growing urban area.

It is important to recognise that the pursuit of sustainability in urban areas such as Surrey needs to be approached not only from the vantagepoint of the entire region, but is especially important at the neighbourhood level. There is no cookie-cutter approach that can be applied to magically transform these communities. It takes a commitment of time and a willingness to see through the approaches to their conclusion. It is with this in mind that the following proposals to transportation issues are made.

Surrey suffers from the problems that beset nearly all auto oriented communities: increased traffic congestion, long commute times, limited access to amenities without using a car, and lack of transportation options. The main issues to be addressed here are those concerning connection of flows, reduction or elimination of the street hierarchy, and increasing transportation modes, thereby increasing accessibility. With the amount of congestion currently experienced in Surrey, the importance of reducing the amount of cars on the roads cannot be overstated. Additionally, with buses running mainly on arterial roads, the need for cross regional/cross town service is great. Traffic congestion makes bus service unreliable, which discourages many from taking advantage of it. As is often the case, unless access to transit is convenient for the user, people will choose their cars instead. By connecting flows, both pedestrian and auto related, it becomes easier for people to get where they need to without having to either take their cars or take a circuitous route to get to their destination. Reducing the amount of kilometres commuters have to travel each day involves making a variety of transit options readily available. Making the walk to a bus stop a trip of five minutes or less is an important beginning to encourage an increase in transit ridership.

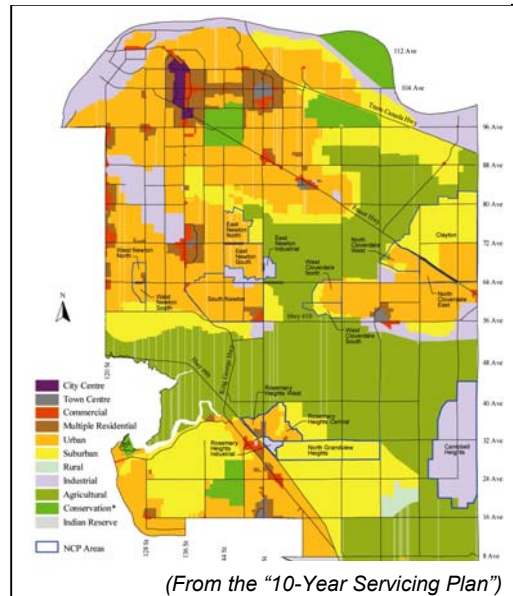
A.1.1 District Level

PROBLEM 1: EXISTING HIERARCHICAL ROAD SYSTEM



- “Funneling” effect of collector, arterial, and highway road systems concentrates traffic volumes
- Limited avenues of movement to and from district commercial centre
- Resultant culture of auto-dependency (VKT=76.3/person)
- Limited connections between the district and community scales
- Current modal split: Car (88.5%); Transit (8.5%); Walk (1.3%); Other (1.6%)

How this relates to Surrey's land use...



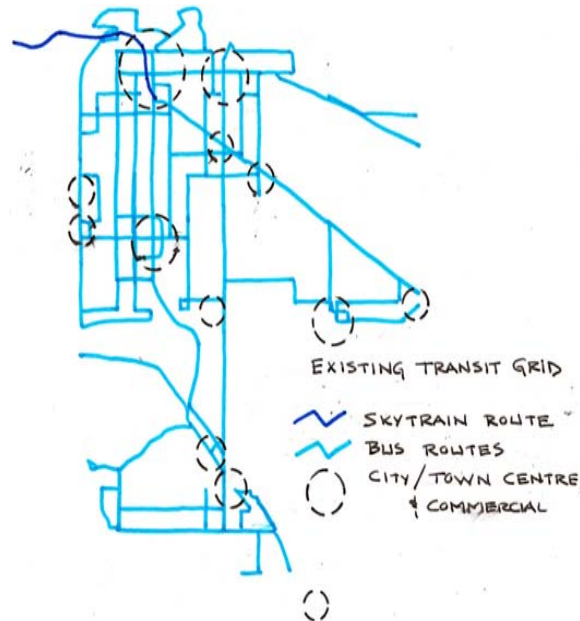
Reasons for auto-dependency in Surrey begin to emerge when comparing the proximity of commercial centres to housing distribution. For many Surrey residents, the 5-min walking radius to basic community amenities simply does not exist, and residents need to access a major roadway to get to the major city centres. One solution involves re-distributing these hubs of activity throughout the district, providing each neighbourhood with a small commercial centre of their own. In the long run, this could combine with mixed-use zoning to create vibrant, identifiable, and self-reliant neighbourhoods.

VISION FOR THE FUTURE: the next 20 years and beyond



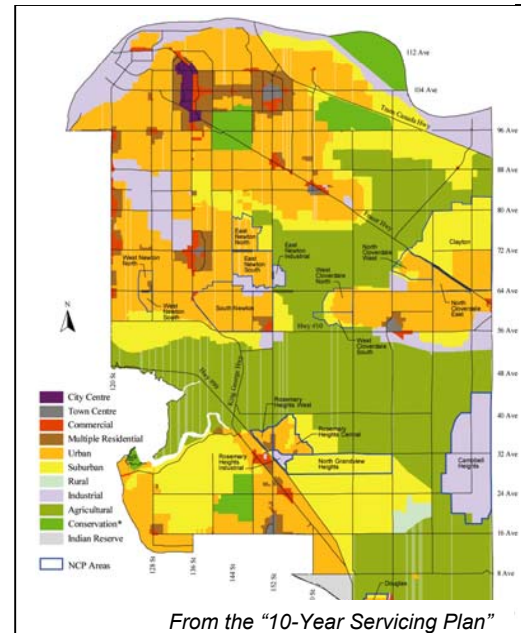
- Increase transit quality and accessibility on all major routes, thereby decreasing auto-dependency
- Develop a grid system that disperses traffic volume and movement
- Eliminate concept of “collector” street
- Improve choice for movement between district commercial centres
- With dispersed traffic volumes, streets can now be oriented towards pedestrian and bike movement
- Decreasing Surrey's VKT to 35/person

PROBLEM 2: TRANSIT INACCESSIBILITY



- Lack of cross-regional service
- Lack of cross-town service
- Lack of intra-neighbourhood service
- Decreasing service reliability due to increase in traffic congestion
- Bus routes are inaccessible to many neighbourhoods within a 5 minute walking radius

How this relates to Surrey's land use...

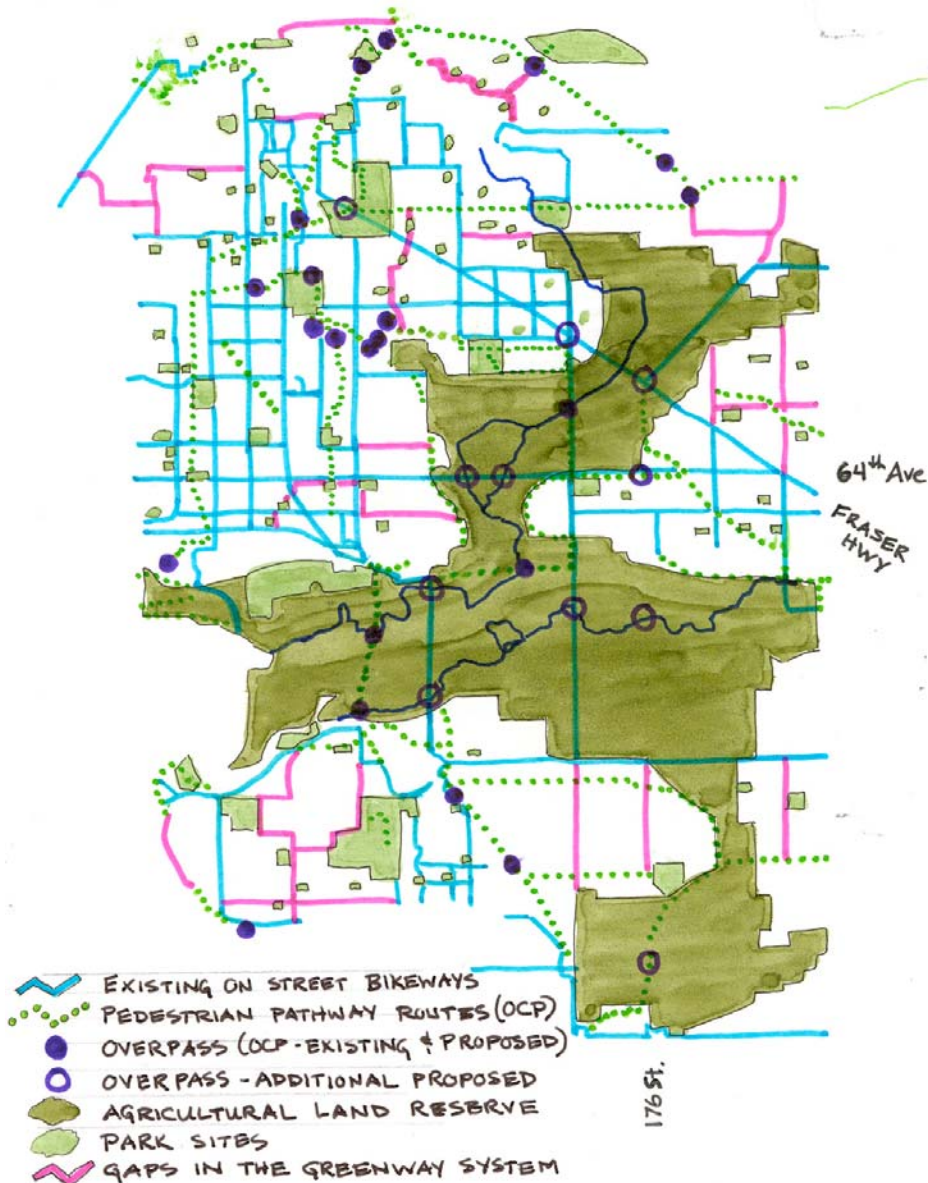


Transit inaccessibility becomes evident when overlaying the existing bus route system with some of the urban residential areas. Many residents are too distant from bus routes to consider transit an option. Another problem is the overlapping of major bus and car routes; this leads to more congestion, from which bus riders grow increasingly impatient and frustrated. A well distributed bus system incorporating more LRT for regional movement and more bus-oriented routes at the community and neighbourhood level would help to curb these trends.

VISION FOR THE FUTURE: the next 20 years and beyond



- Transit will serve a greater percentage of the grid system
- Transit accessibility will greatly improve within acceptable walking distances
- District and commercial centres will be better served by transit system
- LRT system will be expanded to along major road arterials to reduce auto-dependency on these routes



From the City of Surrey OCP, 2001

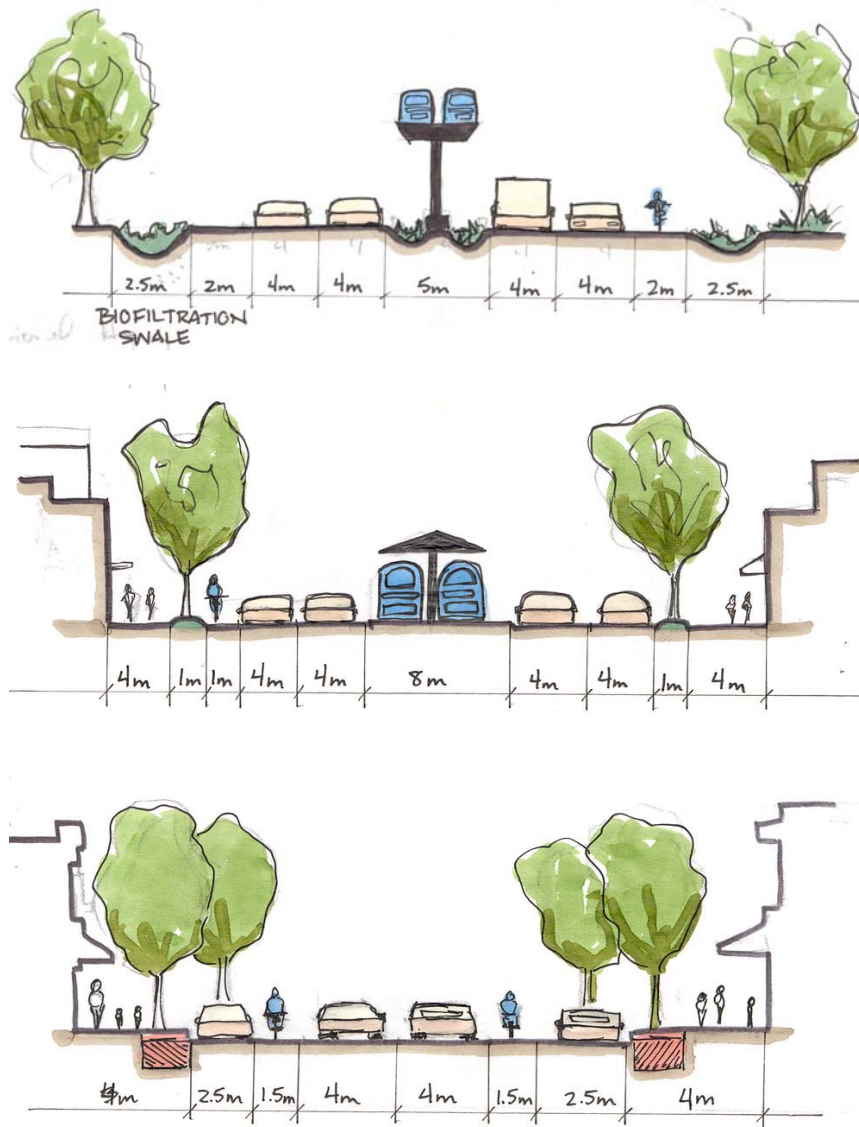
PROBLEM 3: PEDESTRIAN AND BIKE ROUTES FRAGMENTATION

- Despite commitments to develop extensive pathway and bikeway system, few people actually use these modes of transportation
- Greenway system fails to address 5 minute walkability radius in numerous neighbourhoods
- Pedestrian and bike crossings at major intersections and over major roads may deter locals from using these modes
- When cars, pedestrians and bikes share a roadway, the latter two are usually the subordinates

VISION FOR THE FUTURE: the next 20 years and beyond

- Create a connected ecological system by filling in system gaps (see map at left)
- Take better advantage of the natural resources
- Employ pedestrian and bike path overpasses over major arterials and streams to improve continuity and safety (see map at left)
- Enhance route options for bikes and pedestrians, especially off-road
- Greenway system will improve walkability to and from parks, schools, and commercial centres

The Cumulative Vision for the next 20 years: A transit-oriented system of roads at the regional and community scales that incorporate pedestrian and bikeway routes to increased modal diversity and decrease auto-dependency.



**note: Typologies based on "Green Streets" and the "Design Manual for BC Communities".*

Regional Interurban

- Above-grade LRT transit to accommodate higher speeds
- Bike lanes for commuters
- Bio-infiltration swales for stormwater management
- *Examples:* Trans Canada Hwy, Hwy 99

Urban Corridor

- Merging transit and auto in a single ROW
- LRT system along centre and at-grade to blend with human scale
- Narrower road ways to accommodate a bikeway-friendly system
- *Examples:* King George Hwy, Pacific Hwy, Fraser Hwy

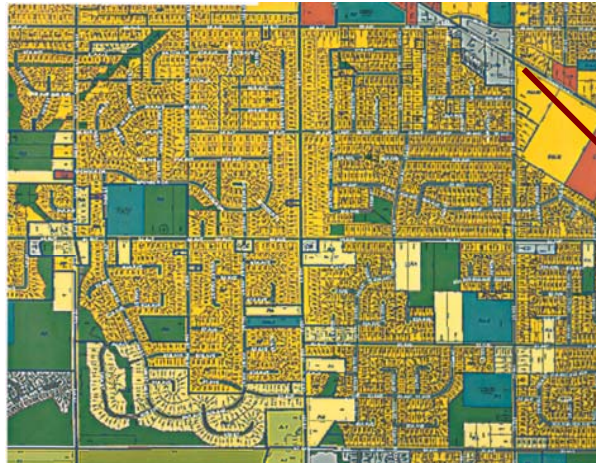
Community Blvd

- Single lane two-way auto with heavy emphasis on bike lane, pedestrian sidewalks, and transit
- Bulb-outs and tree infiltration wells to reduce street speed and improve stormwater management
- *Examples:* Scott Rd., 64th St., 152nd St.

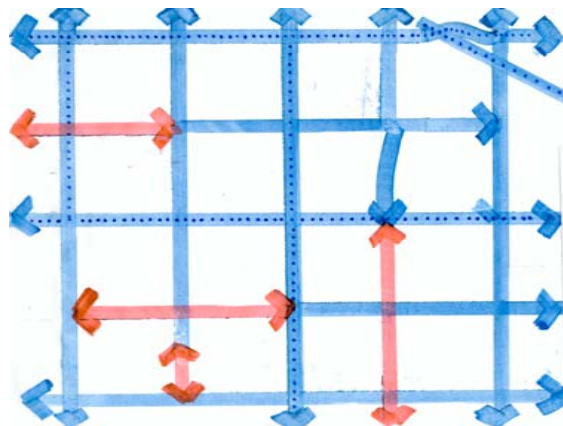
A.1.2 Corridor Level

PROBLEM 1: DISCONNECTED FLOWS

STUDY AREA: low-density single family housing



(From Surrey-Official site")



Study area's movement system:

- Existing corridors
- Proposed grid linkages
- ● ● Existing transit

VISION FOR THE FUTURE: the next 20 years and beyond

In order to connect the flows of people and services we have to design a **network of interconnecting streets**. This will make common destinations accessible and the neighbourhood legible.

In the study area we proposed to make changes to the street network as shown:

- To provide walkable neighbourhoods
- To reduce street congestion
- To have direct and safe trips rather than circulation for multiple users, including pedestrians and cyclists
- To facilitate the capture and flow of the rainwater

In some Arterial intersections, such as Fraser Highway and 88 Ave, we propose to have pedestrian overpass to allow pedestrians pass fluently and safely (see illustration below).



Pedestrian Overpass

PROBLEM 2: LACK OF PEDESTRIAN AND BICYCLE OPTIONS

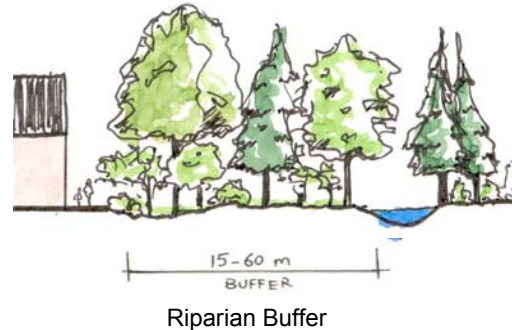
Study site aerial:



(From the City of Surrey .MAPPING)



Proposed Greenways



Rear back lanes, alternative routes
for cars, bikes and pedestrians

VISION FOR THE FUTURE: the next 20 years and beyond

In order to reach a pedestrian oriented site, creating a connected ecological network will help to connect the flows of pedestrians and cyclists in the site.

Green fingers:

- Bringing the streams onto the surface and allow these natural features to shape the block without eroding interconnectivity
- Using bridges on the crossings, rather than culverts In local roads and residential collector roads
- Preserve and enhance riparian areas
- Creating significant gateway features and focal points for the community which will further encourages walking and bicycling
- Protecting streams with wide forested buffers
- Provide bike and pedestrian trails (greenways) in the riparian areas with a minimum 15 meters from top of the bank while maintaining natural stream width

Greenways and Trails:

Linking the pedestrian and cyclists routes to the surrounding community (commercial nodes) and regional open space system (parks, school yards, riparian areas) will create linear recreational, travel, and habitat corridors and further encourages walking and biking.

- Using rear lanes for pedestrian and bicyclists
- Retrofitting large blocks and opening up the cul-de-sacs to foot and bicycle traffic
- Creating mid block paths with minimum width of 6 meters

A.1.3 Block Level

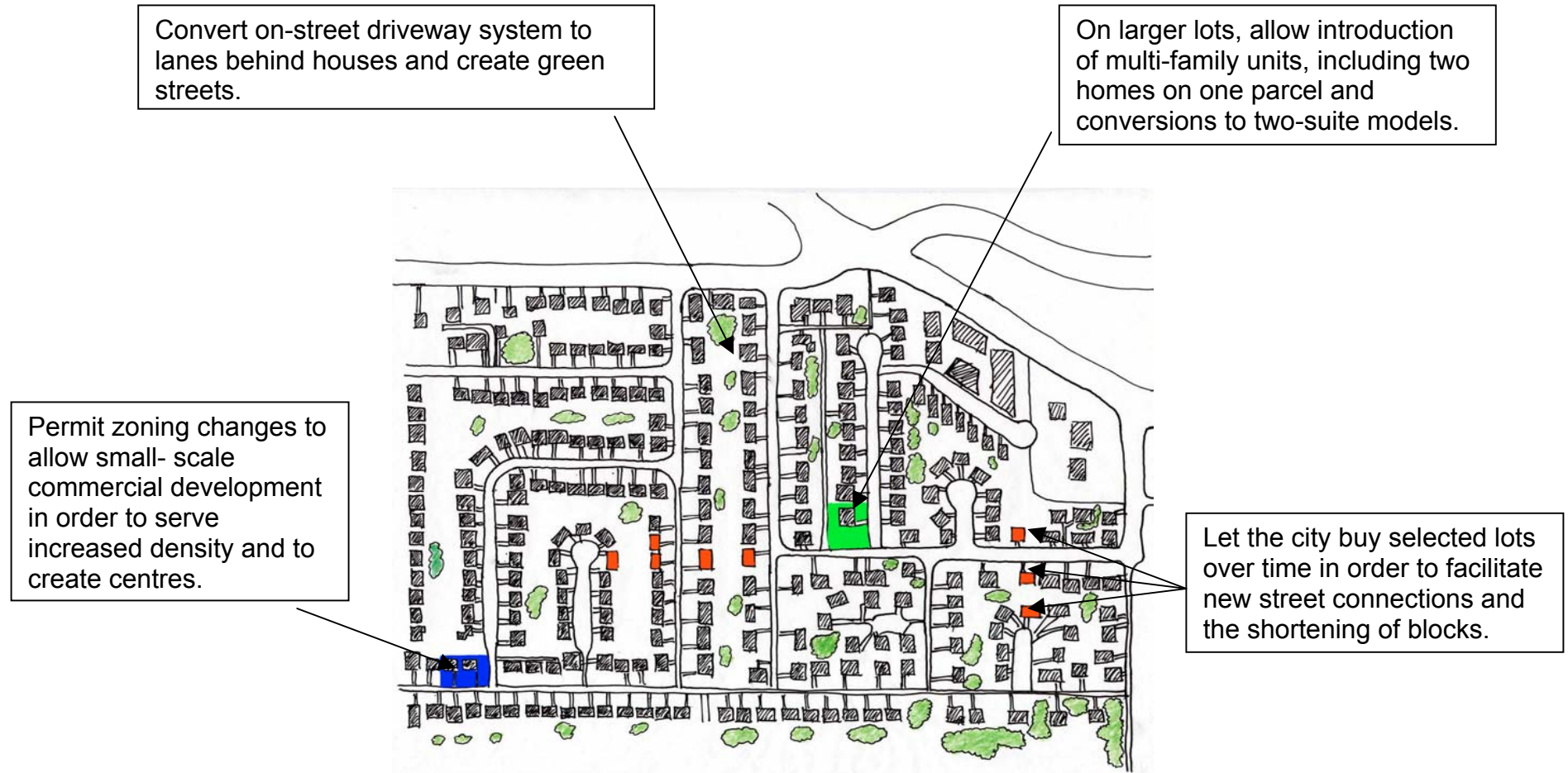
PROBLEM: EXISTING BLOCK SYSTEM LACKS A WIDE RANGE OF CONNECTIONS AND FLOWS



Reducing the reliance on cars in neighbourhoods that feature many cul de sacs and street patterns that are disconnected presents several challenges. Not only does this pattern make it difficult for car trips to be taken by the shortest possible route, but the streets themselves are not well suited for walkability or transit access. By retrofitting existing street networks to make connections easier and by implementing a pedestrian and bicycle friendly structure, transportation that does not involve use of main arterials is encouraged. It would be unrealistic to expect to be able to retrofit entire neighbourhoods that are long established and quite dense. However, this strategy could be implemented in neighbourhoods that are not as tightly packed and then used more selectively in other areas. The most important aspects here are to improve the grid, connect the flows, and tie the neighbourhoods to greater transit options.

Changing the character of streets is also important. Many of the neighbourhood streets in Surrey are three lanes wide, do not always have sidewalks, and are not walkable. By narrowing streets and creating buffered sidewalks, movement by foot is made more accessible. Trailways that take advantage of green belts and natural features are also an important part of this overall framework. Tree-lined streets that increase the green canopy also have a positive effect on air quality, as well as creating a more pleasant urban environment. Improved connections between streets will also favour the creation of centres.

VISION FOR THE FUTURE: the next 20 years and beyond



The Future Auto Oriented Block System



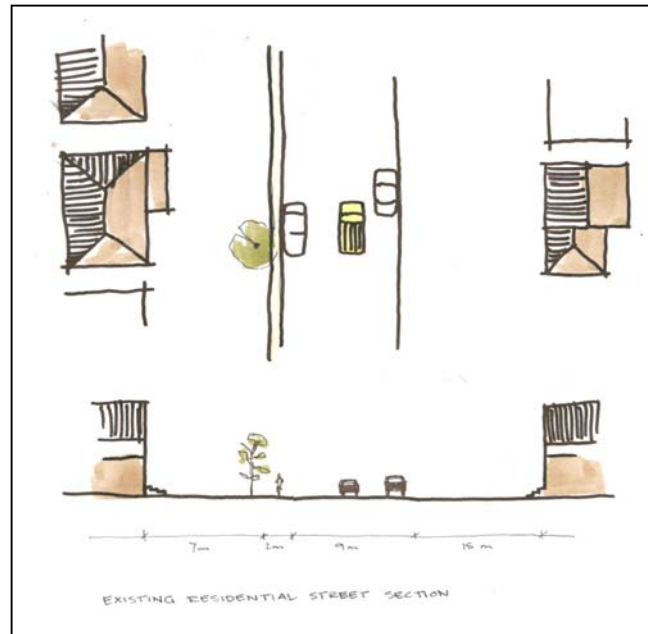
Two views of Surrey: The current setting of single-family homes on unadorned lots contrasted with a vision for the future: sustainable, green, and connected.



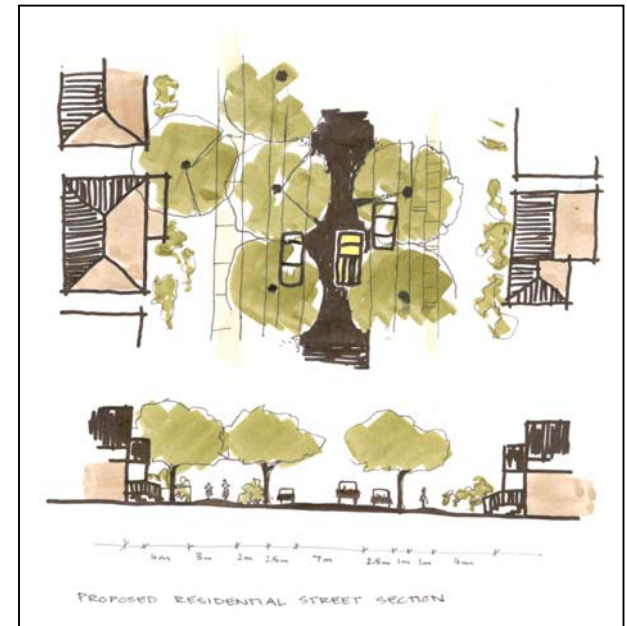
A.1.4 Parcel Level

- Cycle ways and pedestrian paths are used to link major points of destination within the neighbourhood eg. schools, corner stores, commercial areas through the connection of cul-de-sacs.
- Selected corner houses will be zoned for commercial use to form nodes within 5 minute walking distance from every household.
- Street trees link both sides of the street, slow traffic and create a shaded pedestrian orientated space.
- A porch and/or the conversion of the garage area into living space through the addition of a back lane, will create narrower, more pedestrian friendly streets, taking the focus off the car to create safer areas for community interaction.

Perspective view of the integrated high density live/work dwellings and the commercial blocks



Existing Pedestrian Section



Proposed Pedestrian Section

ILLUSTRATIVE CONCEPT PLAN:

A vision for a vibrant, multi-use, pedestrian-oriented neighbourhood in Surrey that incorporates a range of housing and land-use densities, and improves movement and connections with back lanes and neighbourhood greenways.



- 1 Creation of back lanes to foster a "friendly face" community character
- 2 Combining Live/Work and two-storey commercial/residential areas to create new neighbourhood centres.
- 3 "Daylighting" streams and incorporating into neighbourhood greenway.
- 4 Street trees, narrow streets, and bulb-outs to reduce speeds and to foster a welcoming neighbourhood character.
- 5 Merging the neighbourhood layout with the district system of transportation corridors
- 6 Retro-fitting the existing grid pattern to eliminate "dead end" mentality of cul-de-sacs.

LEGEND

